Port of Seattle
Lora Lake Apartments Site

2021 Annual Compliance Monitoring Report

Prepared for

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2021 Annual Compliance Monitoring Report

This document was prepared for
The Port of Seattle
under the supervision of:

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Date: October 27, 2021

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List of Acronyms and Abbreviations

Acronym/ Abbreviation	Definition
ARI	Analytical Resources, Inc.
CD	Consent Decree
CMP	Compliance Monitoring Plan
DMCA	1982 Dredged Material Containment Area
Ecology	Washington State Department of Ecology
µg/L	Micrograms per liter
pg/g	Picograms per gram
pg/L	Picograms per liter
Port	Port of Seattle
Site	Lora Lake Apartments Site
TEQ	Toxic equivalent
USEPA	U.S. Environmental Protection Agency

1.0 Introduction

This Annual Compliance Monitoring Report was prepared by Floyd|Snider on behalf of the Port of Seattle (Port) to document the compliance monitoring events conducted in 2021 at the Lora Lake Apartments Site (Site) in Burien, Washington. Compliance monitoring activities were conducted in accordance with the 2015 Compliance Monitoring Plan (CMP), revised and finalized in 2020 and included as Appendix R to the Construction As-Built Report for the Site (Floyd|Snider 2020a, 2021a).

The objective of this report is to describe the compliance monitoring program activities performed from January through December 2021. This report includes the results from compliance monitoring activities including groundwater compliance monitoring, sediment remedy compliance monitoring, and wildlife barrier and cap performance inspections at the Site. The cumulative data from these events will be used to confirm the effectiveness of the remedial action and identify when site-wide compliance with groundwater cleanup standards for the Site have been achieved.

1.1 BACKGROUND

1.1.1 Site Description

The Site is located at 15001 Des Moines Memorial Drive South in Burien, Washington, and straddles the boundary between the Cities of Burien and SeaTac, Washington (refer to Figure 1.1). The Site, as defined by Washington Administrative Code 173-340-200, consists of three areas: the Lora Lake Apartments Parcel, and areas within the Lora Lake Parcel and 1982 Dredged Material Containment Area (DMCA), where contamination has come to be located. Historical operations at the Lora Lake Apartments Parcel included barrel-washing and auto-wrecking operations, which along with site regrading led to soil and groundwater contamination throughout the Site. The Site is owned by the Port and located within the security fencing for the Seattle-Tacoma International Airport with the exception of the portion of the Lora Lake Apartments Parcel owned by the Washington State Department of Transportation (WSDOT), described below. Descriptions of the Site areas are as follows:

- The Lora Lake Apartments Parcel is located on the west side of Des Moines Memorial Drive in the City of Burien and consists of approximately 8.3 acres of previously vacant land. A portion of the Lora Lake Apartments Parcel in the northeast corner was sold to WSDOT in May 2017 for the construction of State Road-518 off-ramp. This area is retained within the Site boundary although no longer owned by the Port. To the south of the Lora Lake Apartments Parcel is the former Seattle City Light Sunnydale Substation Parcel, which was purchased by the Port in 2011. Contamination has come to be located on a portion of the former Sunnydale Substation Parcel and this area therefore falls within the Site boundary.
- The Lora Lake Parcel is located on the east side of Des Moines Memorial Drive in the City of SeaTac and consists of approximately 7.1 acres of land, including the former

approximately 3-acre Lora Lake and a Port-constructed wetland aquatic habitat mitigation area.

- The DMCA is an approximately 2.75-acre area located adjacent to the Lora Lake Parcel, to the northeast. The DMCA was constructed in 1982, when King County dredged approximately 4 feet of Lora Lake sediments and placed the dredged material in a specifically constructed facility, now referred to as the DMCA.

The Port and the Washington State Department of Ecology (Ecology) entered a Consent Decree (CD) in September 2015 under the mutual objective of providing remedial action at the Site. The CD required the Port to perform a final cleanup action and associated compliance monitoring at the Site as described in the Cleanup Action Plan (CAP; State of Washington 2015).

1.1.2 Remedial Actions Implemented

As described in the CAP, the remedial actions at the Site were determined for each parcel. The Lora Lake Apartments Parcel remedial actions taken include excavation of soils with a dioxin/furan toxic equivalent (TEQ) greater than 100 picograms per gram (pg/g), construction of a temporary clean soil cap, and future implementation of a constructed engineered surface to contain remaining soils with concentrations greater than the dioxin/furan TEQ cleanup level of 13 pg/g at the time of future site redevelopment. The final engineered surface shall be installed by October 31, 2026, as approved by Ecology via email on September 8, 2021. The excavation and temporary clean soil cap were completed in 2018. The Lora Lake Parcel remedial actions taken include construction of a sand cap, followed by site restoration into an intermittent scrub/shrub wetland. The sand cap was completed in 2019, and the wetland restoration was completed in early 2020. DMCA remedial actions completed include construction of a wildlife barrier. Restrictive Covenants limiting future site uses will also be implemented for all parcels, for protection from contact with contamination remaining in place. At the time of this report, Restrictive Covenants had been drafted, and reviewed, but have not yet been signed by Ecology. Compliance monitoring of the remedial actions is being conducted under the CMP (Floyd|Snider 2020a).

1.1.3 Compliance Monitoring Requirements

In accordance with Washington Administrative Code 173-340-410, compliance monitoring of site groundwater is required to confirm that human health and the environment are adequately protected, the remedial action has achieved the cleanup standards, and the cleanup action remains protective after cleanup standards have been met.

The Ecology-approved CMP includes requirements for each of the three parcels of the Site. Requirements for the Lora Lake Apartments Parcel include analysis of groundwater for arsenic, pentachlorophenol, and dioxins/furans, and four consecutive events with concentrations less than the established cleanup levels throughout the monitoring network prior to termination of sampling. The CMP also includes annual inspections of the soil cap to identify and document

general condition, as well as any areas of exposed underlying soil, loss of barrier material, or substantial plant growth that may impact the functionality of the cap.

The Lora Lake Parcel requirements include annual analysis of groundwater for arsenic and dioxins/furans. Groundwater data will be subject to a 5-year periodic review to assess appropriate monitoring frequency for the next 5 years, and subsequent 5-year reviews will set the frequency for the following 5-year period. Additionally, as described in the CMP, sediment remedy compliance will also be evaluated every 5 years, through a statistical comparison of Lora Lake Parcel groundwater quality to site vicinity groundwater quality, for assessment of the sediment cap performance to contain contamination in the now-contained subsurface sediment beneath the restored wetland.

Compliance monitoring requirements at the DMCA include annual wildlife barrier physical inspections to identify and document general condition, as well as any areas of exposed underlying soil, loss of barrier material, or substantial plant growth that may impact the functionality of the wildlife barrier.

2.0 Lora Lake Apartments Parcel

2.1 COMPLIANCE MONITORING PLAN ACTIVITIES COMPLETED

2.1.1 Groundwater Monitoring Completed

Compliance monitoring at the Lora Lake Apartments Parcel began in December 2018. Four consecutive quarters of groundwater samples with pentachlorophenol and dioxin/furan concentrations less than cleanup levels were collected at MW-C1, MW-C2, and MW-C3 during the December 2018, March 2019, June 2019, and September 2019 monitoring events. With Ecology's approval, sampling for pentachlorophenol and dioxin/furan analysis was terminated after the September 2019 event. Sampling for dissolved arsenic continues as discussed below.

Groundwater samples, as described in this report, were collected from the full monitoring network (MW-C1, MW-C2, MW-C3, and MW-C4) on March 30, 2020, and June 20, 2020. In August 2020, Floyd|Snider submitted the *Evaluation of Arsenic in Groundwater at the Lora Lake Apartments Site* memorandum (hereafter referred to as the Arsenic Evaluation Memorandum; Floyd|Snider 2020b) to Ecology on behalf of the Port to describe outlier arsenic data trends observed at MW-C2 and propose a change in the monitoring approach.

As described in the Arsenic Evaluation Memorandum, seasonal exceedances of arsenic concentrations correlated with elevated pH and high groundwater table elevation, likely associated with the crushed concrete fill placed after the demolition of the Lora Lake Apartments buildings and excavation of underlying impacted soil. This recycled concrete was placed above the historical high water table elevation but may be impacting pH and arsenic in groundwater during the wet season. Because the pattern observed at MW-C2 is unique to the location and not observed within the rest of the monitoring network, the Port requested termination of quarterly sampling of the full monitoring network. The Port proposed annual sampling of MW-C2 and downgradient location MW-C3 during the wet season to continue to confirm that elevated arsenic concentrations are not migrating off-site.

On September 21, 2020, Ecology approved the proposed approach of terminating quarterly sampling at the Lora Lake Apartments Parcel and coordinating annual sampling of MW-C2 and the downgradient location, MW-C3, concurrent with Lora Lake annual monitoring each spring (refer to Appendix A of the 2020 Annual Compliance Monitoring Report [Floyd|Snider 2021b]). Annual monitoring of MW-C2 and MW-C3 will monitor trends and confirm arsenic-impacted waters are not migrating off property. The first round of annual monitoring of MW-C2 and MW-C3 occurred on October 27, 2020, rather than in the spring, due to sampling schedule impacts related to the COVID-19 pandemic. The second round of annual monitoring of MW-C2 and MW-C3 occurred on March 16, 2021, to return to the intended spring schedule. The 2021 annual monitoring is described in this report.

2.1.2 Maintenance Activities Completed

Temporary soil cap repairs and maintenance were required at the Lora Lake Apartments Parcel, as detailed in the 2020 Annual Compliance Monitoring Report (Floyd|Snider 2021b). During the 2020 cap inspection, areas in need of repair were documented along the southern property fence due to animal burrowing and exposed geofabric material placed on slopes. Site-wide plant overgrowth requiring general maintenance and landscaping was also noted. In April 2021, the remediation contractor removed weeds and small volunteer trees from the Gravel Access Road, mowed site-wide and replanted in bare dirt areas, and completed maintenance and reseeding of the temporary soil cap. The maintenance items were completed by April 16, 2021. Attachment D.2 documents the reseeding of the temporary soil cap.

2.2 GROUNDWATER COMPLIANCE MONITORING SUMMARY

MW-C2 and MW-C3 were sampled in coordination with the Lora Lake Parcel annual groundwater monitoring event on March 16, 2021. The groundwater monitoring network is presented on Figure 2.1.

Groundwater samples were collected using standard low-flow sampling methods. A duplicate sample was collected at MW-C3 for laboratory quality control. The collected samples were generally clear, with no apparent odor. Purge water was collected and placed in an on-site, labeled, 55-gallon drum for future disposal by the Port. All samples were submitted to Analytical Resources, Inc. (ARI) under chain-of-custody procedures for analysis of arsenic. Groundwater sample collection forms for the event are included in Appendix A.

2.3 GROUNDWATER ANALYTICAL SUMMARY

This section summarizes the analytical results for arsenic. Analytical results are presented in Figure 2.1 and Table 2.1, and laboratory reports and data validation summaries are included in Appendix B.

2.3.1 Arsenic

The arsenic concentrations in the sample collected from MW-C3 was 0.21 micrograms per liter (µg/L), less than the Site cleanup level of 5 µg/L. The arsenic concentration in the sample collected from MW-C2 was 22 µg/L, exceeding the Site cleanup level.

The elevated arsenic concentration on March 16, 2021, is consistent with the trend observed in 2019 and 2020. The likely cause of elevated arsenic at MW-C2 was evaluated and described in Section 2.1.1 and in the Arsenic Evaluation Memorandum (Floyd|Snider 2020b). Arsenic concentrations in MW-C2 and field parameters collected during sample collection are shown in Table 2.2.

2.3.2 Data Validation

A Compliance Screening (Stages 1 and 2A) data quality review was performed on metals data resulting from laboratory analysis by U.S. Environmental Protection Agency (USEPA) Methods 200.8. The analytical data were validated by Floyd|Snider in accordance with the USEPA *National Functional Guidelines for Inorganic Superfund Methods Data Review* (USEPA 2020).

For all analyses, the analytical holding times were met, and the method blanks had no detections. The surrogate, matrix spike, matrix spike duplicate, and laboratory control sample recoveries and sample/sample duplicate relative percent differences all met USEPA requirements. No qualifiers were added to the analytical results for metals based on the data quality review. Metals data are determined to be of acceptable quality for use as reported by the laboratory.

2.4 TEMPORARY SOIL CAP INSPECTION

On March 16, 2021, a cap inspection was conducted to document the integrity of the temporary soil cap that was installed at the Lora Lake Apartments Parcel in October 2017. The cap inspection was conducted in accordance with the CMP. During the cap inspection, a large area along the Northern property line (stations LLA 05, LLA 06, and LLA 25) and areas just south of the access road (stations LLA 11, LLA 12, LLA 18, and LLA 21) were identified as requiring maintenance to address exposed underlying soils. The temporary soil cap inspection log and photographs are included in Appendix C. Instruction for required maintenance of the temporary soil cap was provided to the remediation contractor, as part of required landscape operations and maintenance. Maintenance activities were completed on the Lora Lake Apartments Parcel in April 2021, as described in Section 2.1.2.

3.0 Lora Lake Parcel

3.1 COMPLIANCE MONITORING PLAN ACTIVITIES COMPLETED

3.1.1 Groundwater Monitoring Completed

Annual monitoring of the Lora Lake Parcel began in October 2020. The second round of annual monitoring occurred on March 16 and 17, 2021, and is described in this report. In accordance with the CMP, on-site and vicinity well locations were sampled for arsenic and dioxins/furans. The full monitoring network includes on-site well locations MW-CP1, MW-CP2, MW-CP3, MW-CP4, MW-CP5, MW-CP6, and MW-CP-7, as well as vicinity well locations MW-VB1, MW-VB2, MW-VB3, and HCOO-B312 (Figure 3.1). During the 2020 monitoring event, location MW-VB2 was unable to be sampled because it was dry with noted potential buildup at the bottom of the well. MW-VB2 was redeveloped in March 2021 and successfully sampled during the March 2021 monitoring event.

3.1.2 Maintenance Activities Completed

On January 26, 2021, Environmental Science Associates provided a Plant Replacement Inspection Report to the Port with recommended maintenance activities (refer to Appendix D for the Plant Replacement Inspection Report). Maintenance activities including plant replacement, mulch placement, and stabilization of new and existing plants at the lake area were conducted in January and February 2021 and were completed by February 25, 2021, prior to the Lora Lake Parcel annual monitoring. In April 2021, the lake access road was hydroseeded; photographs are presented in Appendix D. These maintenance activities were not required for remedy maintenance, but instead for plant survival requirements associated with the area's wetland habitat status.

3.2 GROUNDWATER COMPLIANCE MONITORING SUMMARY

This section summarizes the compliance monitoring events at the Lora Lake Parcel in 2021. The monitoring network is presented in Figure 3.1, and the groundwater sample collection forms are in Appendix A.

The full monitoring network (MW-CP1, MW-CP2, MW-CP3, MW-CP4, MW-CP5, MW-CP6, MW-CP-7, MW-VB1, MW-VB2, MW-VB3, and HCOO-B312) were sampled on March 16 and 17, 2021. Groundwater samples were collected using standard low-flow groundwater sampling methods. A duplicate sample was collected at MW-CP2 for laboratory quality control. Samples were generally clear with no visible turbidity and no apparent odor. Purge water was collected and placed in an on-site, labeled, 55-gallon drum for future disposal by the Port. All samples were submitted to ARI under chain-of-custody procedures for analysis of arsenic and dioxins/furans.

3.3 GROUNDWATER ANALYTICAL SUMMARY

This section summarizes the analytical results for arsenic and dioxins/furans. Analytical results are presented in Figure 3.1 and Table 3.1, and laboratory reports and data validation summaries are included in Appendix B.

3.3.1 Arsenic

Arsenic concentrations in all samples collected from all on-site wells and all vicinity wells were less than the Site cleanup level of 5 µg/L. Within the monitoring well network, arsenic concentrations were typically less than 0.5 µg/L, with the exception of MW-CP5 and MW-CP6 located south and southeast of the former Lora Lake footprint (Figure 3.1). MW-CP5 and MW-CP6 had the greatest arsenic concentrations with results of 2.1 and 1.1 µg/L, respectively.

3.3.2 Dioxins/Furans

Dioxin/furan concentrations from all on-site wells and vicinity wells were less than the Site cleanup level of 6.7 picograms per liter (pg/L). Dioxins/furans were not detected in the on-site wells. Dioxin/furan TEQ was detected in two vicinity wells (MW-VB2 and HCOO-B312) at concentrations of 1.46 and 5.45 pg/L, respectively.

3.3.3 Data Validation

A Compliance Screening (Stages 1 and 2A) data quality review was performed on metals data resulting from laboratory analysis by USEPA Method 200.8. The analytical data were validated by Floyd|Snider in accordance with the USEPA *National Functional Guidelines for Inorganic Superfund Methods Data Review* (USEPA 2020). A Full Validation (Level IV, Tier III Data Quality Review) was performed on dioxin/furan data resulting from laboratory analysis by USEPA Method 1613B. The dioxin/furan data were validated by EcoChem. EcoChem data validation reports are included in Appendix B.

For all analyses, the analytical holding times were met, and the method blanks had no detections. The surrogate, matrix spike, matrix spike duplicate, and laboratory control sample recoveries and sample/sample duplicate relative percent differences all met USEPA requirements. Three results were flagged J by the laboratory to indicate they were detected at concentrations less than the practical quantitation limit (PQL) but greater than the method detection limit (MDL). In general, the convention that is used by most analytical laboratories for reporting values that are greater than the MDL and less than the PQL is to label these values with a J flag, indicating that the value is an estimate. Metals data are determined to be of acceptable quality for use as reported by the laboratory. Data validation qualifiers were added to the analytical results for dioxins/furans, as needed. Dioxin/furan data, as qualified, were also determined to be acceptable for use.

3.3.4 Sediment Remedy Confirmation Monitoring

As detailed in the CMP, the sediment cap is designed to achieve compliance with surface water quality criteria at the cap surface. The surface water quality criterion of 0.005 pg/L dioxin/furan

TEQ is significantly less than current laboratory PQLs. As described in the CMP, statistical comparison of groundwater confirmation samples collected within and downgradient of the former Lora Lake cleanup area to vicinity background groundwater samples will be conducted for confirmation of the sediment remedy performance. This statistical comparison method for confirmation monitoring samples provides a measurable method to determine if groundwater samples collected immediately above the sediment cap are different than samples collected from site vicinity background locations. This statistical analysis will be conducted after 5 years of annual monitoring, to provide vicinity background and site data sets with a minimum of 20 results each. Statistical comparison will be conducted in accordance with the procedures described in the CMP.

4.0 1982 Dredged Material Containment Area

4.1 WILDLIFE BARRIER INSPECTION

The DMCA wildlife barrier was inspected on March 16, 2021. Although replanting and debris removal were conducted in February 2021 (refer to photographs in Appendix D), dust and organic debris associated with a large deciduous tree were documented at the southwest corner (station DMCA 09) of the DMCA area during the inspection. This area will be cleared following leaf fall in the fall/winter. Overall, the general integrity and condition of the pervious pavement was in good condition, with no deficiencies observed. The wildlife barrier inspection log and photographs are included in Appendix C.

5.0 Upcoming Events and Next Steps

5.1 2022 COMPLIANCE MONITORING

Annual groundwater and sediment remedy compliance monitoring at the Lora Lake Parcel will continue in spring 2022. Annual groundwater sampling of Lora Lake Apartments Parcel well locations MW-C2 and MW-C3 for arsenic monitoring will be coordinated with the Lora Lake Parcel sampling schedule.

The temporary soil cap at the Lora Lake Apartments Parcel and the wildlife barrier at the DMCA will be inspected concurrent with the annual groundwater and sediment remedy compliance monitoring event.

6.0 References

Floyd|Snider. 2020a. *Port of Seattle Lora Lake Apartments Site Compliance Monitoring Plan.* Originally published September 2015, figures revised May 2020.

_____. 2020b. *Evaluation of Arsenic in Groundwater at the Lora Lake Apartments Site.* Memorandum from Adia Jumper, Mark Jusayan, and Megan King, Floyd|Snider, to Sunny Becker, Washington State Department of Ecology. 17 August.

_____. 2021a. *Port of Seattle Lora Lake Apartments Site Construction As-Built Report.* 22 January.

_____. 2021b. *Port of Seattle Lora Lake Apartments Site 2020 Annual Compliance Monitoring Report.* March.

State of Washington. 2015. *Consent Decree re: Lora Lake Apartments Site, Burien, Washington*. 9 September.

U.S. Environmental Protection Agency (USEPA). 2020. *National Functional Guidelines for Inorganic Superfund Methods Data Review*. EPA-540-R-20-006. November.

Lora Lake Apartments Site

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Tables

Table 2.1
Lora Lake Apartments Parcel Groundwater Analytical Data

Location				MW-C1									
Sample ID				MW-C1-121218	MW-C1-121218-D	MW-C1-031519	MW-C1-031519-D	MW-C1-062119	MW-C1-062119-D	MW-C1-092019	MW-C1-092019-D	MW-C1-121819	MW-C1-121819-D
Sample Date				12/12/2018	12/12/2018	3/15/2019	3/15/2019	6/21/2019	6/21/2019	9/20/2019	9/20/2019	12/18/2019	12/18/2019
Analyte	**CAS No.**	**Units**	**Site CUL**										
Dissolved Metals by USEPA 200.8													
Arsenic	7440-38-2	µg/L	5	0.11 JQ	0.11 JQ	0.11 JQ	0.10 JQ	0.15	0.12	0.16 JQ	0.15 JQ	0.1 JQ	0.09 JQ
Phenols by USEPA 8041A													
Pentachlorophenol	87-86-5	µg/L	1	0.025 U	0.025 U	0.025 U	0.025 U	0.025	0.025	0.025 U	0.025 U		
Dioxins/Furans by USEPA 1613B													
2,3,7,8-TCDD	1746-01-6	pg/L	--	0.52 U	0.29 U	2.68 U	1.65 U	1.01 U	0.86 U	2.11 U	1.53 U		
1,2,3,7,8-PeCDD	40321-76-4	pg/L	--	0.49 U	0.35 U	3.25 U	1.64 U	1.02 U	0.99 U	1.17 U	1.48 U		
1,2,3,4,7,8-HxCDD	39227-28-6	pg/L	--	0.47 U	0.33 U	3.02 U	1.71 U	0.85 U	0.92 U	1.28 U	1.83 U		
1,2,3,6,7,8-HxCDD	57653-85-7	pg/L	--	0.43 U	0.32 U	2.95 U	1.72 U	0.79 U	0.86 U	1.11 U	1.68 U		
1,2,3,7,8,9-HxCDD	19408-74-3	pg/L	--	0.47 U	0.34 U	3.11 U	1.79 U	0.85 U	0.92 U	1.22 U	1.8 U		
1,2,3,4,6,7,8-HpCDD	35822-46-9	pg/L	--	1.48 U	0.98 U	11 U	2.11 UJ	1.54 UJ	1.24 UJ	2.04 U	1.6 U		
OCDD	3268-87-9	pg/L	--	3.37 J	5.71 J	148 J	9.9 J	4.65 UJ	5.59 UJ	7.48 UJ	15.5 U		
2,3,7,8-TCDF	51207-31-9	pg/L	--	0.38 U	0.34 U	2.64 U	1.67 U	1.32 U	1.1 U	1.95 U	1.45 U		
1,2,3,7,8-PeCDF	57117-41-6	pg/L	--	0.45 U	0.31 U	3.47 U	1.71 U	1.89 UJ	1.5 U	1.16 U	1.42 U		
2,3,4,7,8-PeCDF	57117-31-4	pg/L	--	0.41 U	0.28 U	3.14 U	1.53 U	1.43 U	1.24 U	0.93 U	1.15 U		
1,2,3,4,7,8-HxCDF	70648-26-9	pg/L	--	0.26 U	0.24 U	1.8 U	1.01 U	0.47 UJ	0.43 U	0.98 U	1.34 U		
1,2,3,6,7,8-HxCDF	57117-44-9	pg/L	--	0.26 U	0.25 U	1.86 U	1.01 U	0.5 UJ	0.45 UJ	0.96 U	1.42 U		
1,2,3,7,8,9-HxCDF	72918-21-9	pg/L	--	0.28 U	0.65 U	2.1 U	1.11 U	0.53 UJ	0.46 U	1.04 U	1.45 U		
2,3,4,6,7,8-HxCDF	60851-34-5	pg/L	--	0.26 U	0.24 U	1.66 U	0.96 U	0.45 UJ	0.41 UJ	0.98 U	1.34 U		
1,2,3,4,6,7,8-HpCDF	67562-39-4	pg/L	--	0.27 U	0.29 U	1.74 U	1.2 U	0.42 UJ	0.58 UJ	1.02 U	0.72 U		
1,2,3,4,7,8,9-HpCDF	55673-89-7	pg/L	--	0.37 U	0.25 U	2.36 U	1.7 UJ	0.6 UJ	0.86 UJ	1.69 U	1.06 U		
OCDF	39001-02-0	pg/L	--	1.22 UJ	0.86 UJ	11.2 UJ	4.23 UJ	1.53 UJ	1.99 UJ	2.65 UJ	2.15 U		
Dioxin/furan TEQ	--	pg/L	6.7	0.726 J	0.512 J	4.57 J	2.48 J	1.56 UJ	1.43 UJ	2.3 UJ	2.3 U		

Notes:

Blank cells are intentional.

-- Not available.

1 In 2018, location MW-C4 was found to be filled with sand and was not sampled in December 2018, March 2019, or June 2019. Following coordination with Ecology, this well was abandoned and a replacement well was installed within a few feet of the original well location in August 2019.

RED/BOLD Analyte detected at a concentration greater than the site CUL.

Abbreviations:

CAS Chemical Abstracts Service
CUL Cleanup level
HpCDD Heptachlorodibenzo-p-dioxin
HpCDF Heptachlorodibenzofuran
HxCDD Hexachlorodibenzo-p-dioxin
HxCDF Hexachlorodibenzofuran
µg/L Micrograms per liter
OCDD Octachlorodibenzodioxin
OCDF Octachlorodibenzofuran
PeCDD Pentachlorodibenzo-p-dioxin
PeCDF Pentachlorodibenzofuran
pg/L Picograms per liter
TCDD Tetrachlorodibenzo-p-dioxin
TCDF Tetrachlorodibenzofuran
TEQ Toxic equivalent

Qualifiers:

J Analyte was detected; concentration is considered to be an estimate.
JQ Analyte was detected between the method detection limit and reporting limit; concentration is considered to be an estimate.
U Analyte was not detected at the given reporting limit.
UJ Analyte was not detected; concentration given is the reporting limit, which is considered to be an estimate.

Table 2.1
Lora Lake Apartments Parcel Groundwater Analytical Data

Location				MW-C1 (cont.)				MW-C2					
Sample ID				MW-C1-033020	MW-C1-033020-D	MW-C1-061720	MW-C1-061720-D	MW-C2-121218	MW-C2-031519	MW-C2-062119	MW-C2-092019	MW-C2-121819	MW-C2-033020
Sample Date				3/30/2020	3/30/2020	6/17/2020	6/17/2020	12/12/2018	3/15/2019	6/21/2019	9/20/2019	12/18/2019	3/30/2020
Analyte	**CAS No.**	**Units**	**Site CUL**										
Dissolved Metals by USEPA 200.8													
Arsenic	7440-38-2	µg/L	5	0.12 JQ	0.13 JQ	0.14 JQ	0.14 JQ	2.6	**14**	3.7	2.1	1.9	**27**
Phenols by USEPA 8041A													
Pentachlorophenol	87-86-5	µg/L	1					0.062	0.69	0.051	0.031		
Dioxins/Furans by USEPA 1613B													
2,3,7,8-TCDD	1746-01-6	pg/L	--					0.37 U	2.41 U	1.94 U	1.94 U		
1,2,3,7,8-PeCDD	40321-76-4	pg/L	--					0.44 U	3.25 U	1.82 U	1.17 U		
1,2,3,4,7,8-HxCDD	39227-28-6	pg/L	--					0.53 U	3.69 U	1.2 U	1.5 U		
1,2,3,6,7,8-HxCDD	57653-85-7	pg/L	--					0.9 U	4.96 J	1.11 U	1.29 U		
1,2,3,7,8,9-HxCDD	19408-74-3	pg/L	--					0.55 U	3.65 U	1.19 U	1.42 U		
1,2,3,4,6,7,8-HpCDD	35822-46-9	pg/L	--					22.5	86.5	47.8	14.8		
OCDD	3268-87-9	pg/L	--					232 J	553	515 J	126 J		
2,3,7,8-TCDF	51207-31-9	pg/L	--					0.45 U	3.49 U	1.87 U	1.69 U		
1,2,3,7,8-PeCDF	57117-41-6	pg/L	--					0.67 U	2.62 U	1.67 U	1.42 U		
2,3,4,7,8-PeCDF	57117-31-4	pg/L	--					0.4 U	2.35 U	1.42 U	1.1 U		
1,2,3,4,7,8-HxCDF	70648-26-9	pg/L	--					0.55 J	1.87 U	1.26 U	1.11 U		
1,2,3,6,7,8-HxCDF	57117-44-9	pg/L	--					0.45 U	1.89 U	1.27 U	1.12 U		
1,2,3,7,8,9-HxCDF	72918-21-9	pg/L	--					0.33 U	2.08 U	1.31 U	1.25 U		
2,3,4,6,7,8-HxCDF	60851-34-5	pg/L	--					0.53 J	1.7 U	1.15 U	1.1 U		
1,2,3,4,6,7,8-HpCDF	67562-39-4	pg/L	--					4.71 J	13.8	12 U	3.6 U		
1,2,3,4,7,8,9-HpCDF	55673-89-7	pg/L	--					0.58 U	2.03 U	1.84 U	0.74 U		
OCDF	39001-02-0	pg/L	--					21.2 J	40.5	45.2 J	13.8 J		
Dioxin/furan TEQ	--	pg/L	6.7					1.09 J	5.83 J	3.35 J	2.48 J		

Notes:

Blank cells are intentional.

-- Not available.

1 In 2018, location MW-C4 was found to be filled with sand and was not sampled in December 2018, March 2019, or June 2019. Following coordination with Ecology, this well was abandoned and a replacement well was installed within a few feet of the original well location in August 2019.

RED/BOLD Analyte detected at a concentration greater than the site CUL.

Abbreviations:

CAS Chemical Abstracts Service
CUL Cleanup level
HpCDD Heptachlorodibenzo-p-dioxin
HpCDF Heptachlorodibenzofuran
HxCDD Hexachlorodibenzo-p-dioxin
HxCDF Hexachlorodibenzofuran
µg/L Micrograms per liter
OCDD Octachlorodibenzodioxin
OCDF Octachlorodibenzofuran
PeCDD Pentachlorodibenzo-p-dioxin
PeCDF Pentachlorodibenzofuran
pg/L Picograms per liter
TCDD Tetrachlorodibenzo-p-dioxin
TCDF Tetrachlorodibenzofuran
TEQ Toxic equivalent

Qualifiers:

J Analyte was detected; concentration is considered to be an estimate.
JQ Analyte was detected between the method detection limit and reporting limit; concentration is considered to be an estimate.
U Analyte was not detected at the given reporting limit.
UJ Analyte was not detected; concentration given is the reporting limit, which is considered to be an estimate.

Table 2.1
Lora Lake Apartments Parcel Groundwater Analytical Data

				Location	MW-C2 (cont.)			MW-C3						
				Sample ID	MW-C2-061720	MW-C2-102820	MW-C2-031621	MW-C3-121218	MW-C3-031519	MW-C3-062119	MW-C3-092019	MW-C3-121819	MW-C3-033020	MW-C3-061720
				Sample Date	6/17/2020	10/28/2020	3/16/2021	12/12/2018	3/15/2019	6/21/2019	9/20/2019	12/18/2019	3/30/2020	6/17/2020
Analyte	**CAS No.**	**Units**	**Site CUL**											
Dissolved Metals by USEPA 200.8														
Arsenic	7440-38-2	µg/L	5	**11.4**	3.1	**22**	0.24	0.26	0.20	0.22	0.22	0.25	0.22
Phenols by USEPA 8041A														
Pentachlorophenol	87-86-5	µg/L	1				0.025 U	0.025 U	0.025	0.025 U				
Dioxins/Furans by USEPA 1613B														
2,3,7,8-TCDD	1746-01-6	pg/L	--				0.35 U	0.65 U	2.01 U	1.71 U				
1,2,3,7,8-PeCDD	40321-76-4	pg/L	--				0.33 U	0.67 U	1.14 U	1.34 U				
1,2,3,4,7,8-HxCDD	39227-28-6	pg/L	--				0.39 U	0.77 U	1.02 U	1.55 UJ				
1,2,3,6,7,8-HxCDD	57653-85-7	pg/L	--				0.38 U	0.73 U	0.94 U	1.39 U				
1,2,3,7,8,9-HxCDD	19408-74-3	pg/L	--				0.4 U	0.78 U	1.01 U	1.5 U				
1,2,3,4,6,7,8-HpCDD	35822-46-9	pg/L	--				0.52 U	1.03 U	1.45 U	1.6 U				
OCDD	3268-87-9	pg/L	--				3.23 J	9.11 J	4.34 J	4.98 UJ				
2,3,7,8-TCDF	51207-31-9	pg/L	--				0.31 U	0.71 U	1.49 U	1.92 U				
1,2,3,7,8-PeCDF	57117-41-6	pg/L	--				0.31 U	0.82 U	1.23 U	1.19 U				
2,3,4,7,8-PeCDF	57117-31-4	pg/L	--				0.29 U	0.75 U	1 U	0.96 U				
1,2,3,4,7,8-HxCDF	70648-26-9	pg/L	--				0.18 U	0.54 U	0.8 U	0.75 U				
1,2,3,6,7,8-HxCDF	57117-44-9	pg/L	--				0.18 U	0.51 U	0.83 U	0.72 U				
1,2,3,7,8,9-HxCDF	72918-21-9	pg/L	--				0.52 U	0.54 U	0.87 U	0.83 U				
2,3,4,6,7,8-HxCDF	60851-34-5	pg/L	--				0.18 U	0.5 U	0.76 U	0.74 U				
1,2,3,4,6,7,8-HpCDF	67562-39-4	pg/L	--				0.14 U	0.33 U	0.58 U	0.55 U				
1,2,3,4,7,8,9-HpCDF	55673-89-7	pg/L	--				0.18 U	0.44 U	0.75 UJ	0.81 U				
OCDF	39001-02-0	pg/L	--				0.69 UJ	1.02 U	2.82 UJ	2.76 UJ				
Dioxin/furan TEQ	--	pg/L	6.7				0.52 J	1.05 J	2.15 J	2.17 UJ				

Notes:

Blank cells are intentional.

-- Not available.

1 In 2018, location MW-C4 was found to be filled with sand and was not sampled in December 2018, March 2019, or June 2019. Following coordination with Ecology, this well was abandoned and a replacement well was installed within a few feet of the original well location in August 2019.

RED/BOLD Analyte detected at a concentration greater than the site CUL.

Abbreviations:

CAS Chemical Abstracts Service
CUL Cleanup level
HpCDD Heptachlorodibenzo-p-dioxin
HpCDF Heptachlorodibenzofuran
HxCDD Hexachlorodibenzo-p-dioxin
HxCDF Hexachlorodibenzofuran
µg/L Micrograms per liter
OCDD Octachlorodibenzodioxin
OCDF Octachlorodibenzofuran
PeCDD Pentachlorodibenzo-p-dioxin
PeCDF Pentachlorodibenzofuran
pg/L Picograms per liter
TCDD Tetrachlorodibenzo-p-dioxin
TCDF Tetrachlorodibenzofuran
TEQ Toxic equivalent

Qualifiers:

J Analyte was detected; concentration is considered to be an estimate.
JQ Analyte was detected between the method detection limit and reporting limit; concentration is considered to be an estimate.
U Analyte was not detected at the given reporting limit.
UJ Analyte was not detected; concentration given is the reporting limit, which is considered to be an estimate.

Table 2.1
Lora Lake Apartments Parcel Groundwater Analytical Data

Location				MW-C3 (cont.)			MW-C4[1]			
Sample ID				MW-C3-102820	MW-C3-031621	MW-C3-031621-D	MW-10-092019	MW-10-121819	MW-C4-033020	MW-C4-061720
Sample Date				10/28/2020	3/16/2021	3/16/2021	9/20/2019	12/18/2019	3/30/2020	6/17/2020
Analyte	**CAS No.**	**Units**	**Site CUL**							
Dissolved Metals by USEPA 200.8										
Arsenic	7440-38-2	µg/L	5	0.22	0.19 JQ	0.21	0.47	0.42	0.37	0.49
Phenols by USEPA 8041A										
Pentachlorophenol	87-86-5	µg/L	1				0.025 U			
Dioxins/Furans by USEPA 1613B										
2,3,7,8-TCDD	1746-01-6	pg/L	--				1.73 U			
1,2,3,7,8-PeCDD	40321-76-4	pg/L	--				0.98 U			
1,2,3,4,7,8-HxCDD	39227-28-6	pg/L	--				0.96 U			
1,2,3,6,7,8-HxCDD	57653-85-7	pg/L	--				0.87 U			
1,2,3,7,8,9-HxCDD	19408-74-3	pg/L	--				0.93 U			
1,2,3,4,6,7,8-HpCDD	35822-46-9	pg/L	--				1.45 U			
OCDD	3268-87-9	pg/L	--				10.7 U			
2,3,7,8-TCDF	51207-31-9	pg/L	--				1.82 U			
1,2,3,7,8-PeCDF	57117-41-6	pg/L	--				1.03 U			
2,3,4,7,8-PeCDF	57117-31-4	pg/L	--				0.85 U			
1,2,3,4,7,8-HxCDF	70648-26-9	pg/L	--				0.72 U			
1,2,3,6,7,8-HxCDF	57117-44-9	pg/L	--				0.7 U			
1,2,3,7,8,9-HxCDF	72918-21-9	pg/L	--				0.75 U			
2,3,4,6,7,8-HxCDF	60851-34-5	pg/L	--				0.7 U			
1,2,3,4,6,7,8-HpCDF	67562-39-4	pg/L	--				0.59 U			
1,2,3,4,7,8,9-HpCDF	55673-89-7	pg/L	--				0.86 U			
OCDF	39001-02-0	pg/L	--				2.8 U			
Dioxin/furan TEQ	--	pg/L	6.7				1.89 U			

Notes:

Blank cells are intentional.

-- Not available.

1 In 2018, location MW-C4 was found to be filled with sand and was not sampled in December 2018, March 2019, or June 2019. Following coordination with Ecology, this well was abandoned and a replacement well was installed within a few feet of the original well location in August 2019.

RED/BOLD Analyte detected at a concentration greater than the site CUL.

Abbreviations:

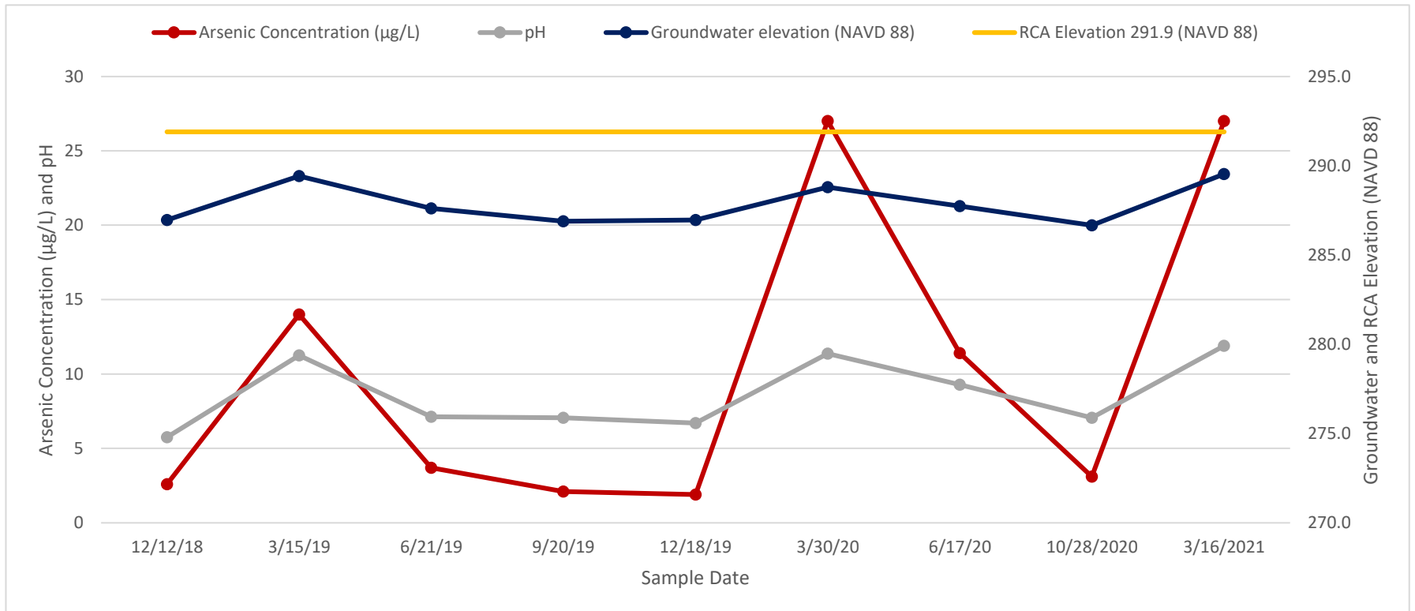
CAS Chemical Abstracts Service
CUL Cleanup level
HpCDD Heptachlorodibenzo-p-dioxin
HpCDF Heptachlorodibenzofuran
HxCDD Hexachlorodibenzo-p-dioxin
HxCDF Hexachlorodibenzofuran
µg/L Micrograms per liter
OCDD Octachlorodibenzodioxin
OCDF Octachlorodibenzofuran
PeCDD Pentachlorodibenzo-p-dioxin
PeCDF Pentachlorodibenzofuran
pg/L Picograms per liter
TCDD Tetrachlorodibenzo-p-dioxin
TCDF Tetrachlorodibenzofuran
TEQ Toxic equivalent

Qualifiers:

J Analyte was detected; concentration is considered to be an estimate.
JQ Analyte was detected between the method detection limit and reporting limit; concentration is considered to be an estimate.
U Analyte was not detected at the given reporting limit.
UJ Analyte was not detected; concentration given is the reporting limit, which is considered to be an estimate.

Table 2.2
MW-C2 Field Parameters and Arsenic Results

Date	12/12/2018	3/15/2019	6/21/2019	9/20/2019	12/18/2019	3/30/2020	6/17/2020	10/28/2020	3/16/2021
Parameter									
Arsenic (µg/L)	2.6	**14**	3.7	2.1	1.9	**27**	**11**	3.1	**27**
Depth to water (feet BTOC)	17.4	14.9	16.7	17.4	17.4	15.5	16.6	17.7	14.8
Groundwater elevation (NAVD 88)	287.0	289.4	287.6	286.9	287.0	288.8	287.7	286.7	289.5
Distance from groundwater to RCA (feet)	4.9	2.5	4.3	5.0	4.9	3.1	4.2	5.2	2.4
Distance from max capillary fringe to RCA (feet) (1)	3.9	1.4	3.2	4.0	3.9	2.0	3.1	4.2	1.3
pH	5.8	11.3	7.1	7.1	6.7	11.4	9.3	7.1	11.9
Dissolved oxygen (mg/L)	0.00	0.57	0.24	0.32	1.76	0.37	0.35	0.40	2.47
Conductivity (mS/cm)	0.63	0.60	0.39	0.39	0.41	0.69	0.47	0.44	0.58
Turbidity (NTU)	0.0	14.2	3.0	5.3	1.8	2.3	3.1	1.1	1.9
ORP (mV)	41	26	-74	-96	21	-243	-105	-39	-254



Notes:

Arsenic results are rounded to two significant figures; field parameter results are presented to equipment precision.

RED/BOLD Indicates exceedance of the site cleanup level of 5 µg/L.

1 The capillary fringe is the zone directly above the water table where groundwater seeps up into pore spaces through capillary action. Capillary fringe range for sand (feet): 0.56–1.05 (Shen, R., K. G. Pennell, and E. M. Suuberg. 2013. "Influence of Soil Moisture on Soil Gas Vapor Concentration for Vapor Intrusion." *Environmental Engineering Science.* 30(10): 628–637).

Abbreviations:

BTOC Below top of casing
µg/L Micrograms per liter
mg/L Milligrams per liter
mS/cm Millisiemens per centimeter
mV Millivolts
NAVD 88 North American Vertical Datum of 1988
NTU Nephelometric turbidity units
ORP Oxidation-reduction potential
RCA Recycled concrete aggregate

Table 3.1
Lora Lake Parcel Groundwater Analytical Data

			Location Group	On-Site Wells							
			Location Name	MW-CP1		MW-CP2				MW-CP3	
			Sample ID	MW-CP1-102720	MW-CP1-031721	MW-CP2-102720	MW-CP2-102720-D	MW-CP2-031721	MW-CP2-031721-D	MW-CP3-102720	MW-CP3-031721
			Sample Date	10/27/2020	3/17/2021	10/27/2020	10/27/2020	3/17/2021	3/17/2021	10/27/2020	3/17/2021
Analyte	**CAS No.**	**Unit**	**Site CUL**								
Arsenic By EPA 200.8 UCT-KED											
Arsenic	7440-38-2	µg/L	5	0.46	0.46	0.21	0.24	0.21	0.21	0.41	0.33
Dioxins/Furans by USEPA 1613B											
2,3,7,8-TCDD	1746-01-6	pg/L	--	1.05 U	0.58 U	0.96 U	0.8 U	0.63 U	0.45 U	1.03 U	0.8 U
1,2,3,7,8-PeCDD	40321-76-4	pg/L	--	0.87 U	0.72 U	0.95 U	0.62 U	0.76 U	0.5 U	0.84 U	0.73 U
1,2,3,4,7,8-HxCDD	39227-28-6	pg/L	--	1.37 U	0.78 U	1.06 U	0.78 U	0.7 U	0.66 U	1.36 U	0.65 U
1,2,3,6,7,8-HxCDD	57653-85-7	pg/L	--	1.2 U	0.71 U	0.9 U	0.65 U	0.65 U	0.67 U	1.18 U	0.62 U
1,2,3,7,8,9-HxCDD	19408-74-3	pg/L	--	1.43 U	0.77 U	1.09 U	0.79 U	0.69 U	0.71 U	1.41 U	0.65 U
1,2,3,4,6,7,8-HpCDD	35822-46-9	pg/L	--	9.24 U	0.99 U	1.68 U	1.26 U	0.82 U	0.62 U	2.03 U	0.7 U
OCDD	3268-87-9	pg/L	--	165 J	6.64 U	27 UJ	21.3 UJ	6.64 U	3.1 U	33 UJ	9.26 U
2,3,7,8-TCDF	51207-31-9	pg/L	--	1.16 U	0.64 U	1.15 U	0.8 U	0.62 U	0.53 U	1.39 U	0.71 U
1,2,3,7,8-PeCDF	57117-41-6	pg/L	--	1.64 U	0.7 U	1.39 U	1.11 U	0.82 U	0.94 U	1.29 U	0.9 U
2,3,4,7,8-PeCDF	57117-31-4	pg/L	--	1.51 U	0.63 U	1.26 U	0.99 U	0.75 U	0.69 U	1.17 U	0.86 U
1,2,3,4,7,8-HxCDF	70648-26-9	pg/L	--	0.85 U	0.64 U	0.61 U	0.44 U	0.66 U	0.62 U	0.79 U	0.59 U
1,2,3,6,7,8-HxCDF	57117-44-9	pg/L	--	0.88 U	0.66 U	0.57 U	0.43 U	0.67 U	0.63 U	0.74 U	0.59 U
1,2,3,7,8,9-HxCDF	72918-21-9	pg/L	--	1.25 U	0.74 U	0.9 U	0.63 U	0.77 U	0.71 U	1.2 U	0.7 U
2,3,4,6,7,8-HxCDF	60851-34-5	pg/L	--	0.9 U	0.62 U	0.6 U	0.46 U	0.64 U	0.61 U	0.82 U	0.59 U
1,2,3,4,6,7,8-HpCDF	67562-39-4	pg/L	--	2.35 U	0.62 U	0.56 U	0.55 U	0.55 U	0.94 U	0.88 U	1.13 U
1,2,3,4,7,8,9-HpCDF	55673-89-7	pg/L	--	1.23 U	0.79 U	0.84 U	0.79 U	0.72 U	0.69 U	1.14 U	0.69 U
Dioxins/Furans (MTCA TEQ-HalfND)	DF_TEQ (U=1/2)	pg/L	6.7	1.78 J	0.72 U	0.48 UJ	0.4 UJ	0.76 U	0.5 U	0.515 UJ	0.8 U

Notes:

-- Not available.

RED/BOLD Analyte detected at a concentration greater than the site CUL.

1 On October 28, 2020 MW-VB2 was dry and samples were unable to be collected.

Abbreviations:

CAS	Chemical Abstracts Service	OCDD	Octachlorodibenzodioxin
CUL	Cleanup level	OCDF	Octachlorodibenzofuran
HpCDD	Heptachlorodibenzo-p-dioxin	PeCDD	Pentachlorodibenzo-p-dioxin
HpCDF	Heptachlorodibenzofuran	PeCDF	Pentachlorodibenzofuran
HxCDD	Hexachlorodibenzo-p-dioxin	pg/L	Picograms per liter
HxCDF	Hexachlorodibenzofuran	TCDD	Tetrachlorodibenzo-p-dioxin
µg/L	Micrograms per liter	TCDF	Tetrachlorodibenzofuran
NS	Not sampled	TEQ	Toxic equivalent

Qualifiers:

J	Analyte was detected; concentration is considered to be an estimate.
JQ	Analyte was detected between the method detection limit and reporting limit; concentration is considered to be an estimate.
U	Analyte was not detected at the given reporting limit.
UJ	Analyte was not detected; concentration given is the reporting limit, which is considered to be an estimate.

Table 3.1
Lora Lake Parcel Groundwater Analytical Data

			Location Group	On-Site Wells (cont.)							
			Location Name	MW-CP4		MW-CP5		MW-CP6		MW-CP7	
			Sample ID	MW-CP4-102720	MW-CP4-031621	MW-CP5-102720	MW-CP5-031621	MW-CP6-102720	MW-CP6-031621	MW-CP7-102720	MW-CP7-031621
			Sample Date	10/27/2020	3/16/2021	10/27/2020	3/16/2021	10/27/2020	3/16/2021	10/27/2020	3/16/2021
Analyte	**CAS No.**	**Unit**	**Site CUL**								
Arsenic By EPA 200.8 UCT-KED											
Arsenic	7440-38-2	µg/L	5	0.098 JQ	0.14 JQ	3.2	2.1	1.1	1.1	0.42	0.43
Dioxins/Furans by USEPA 1613B											
2,3,7,8-TCDD	1746-01-6	pg/L	--	1.05 U	0.63 U	0.78 U	0.69 U	0.93 U	1.33 U	0.67 U	1.15 U
1,2,3,7,8-PeCDD	40321-76-4	pg/L	--	0.94 U	0.95 U	0.67 U	0.93 U	0.92 UJ	2.26 U	0.66 U	1.08 U
1,2,3,4,7,8-HxCDD	39227-28-6	pg/L	--	1.41 U	0.96 U	0.67 U	0.72 U	1.4 U	1.95 U	0.81 U	1.36 U
1,2,3,6,7,8-HxCDD	57653-85-7	pg/L	--	1.21 U	0.93 U	0.63 UJ	0.72 U	1.2 U	1.93 U	0.68 U	1.29 U
1,2,3,7,8,9-HxCDD	19408-74-3	pg/L	--	1.46 U	0.97 U	0.72 U	0.74 U	1.44 U	2 U	0.83 U	1.36 U
1,2,3,4,6,7,8-HpCDD	35822-46-9	pg/L	--	2.57 U	1.74 U	2.18 J	2.12 U	1.32 U	1.77 U	3.02 J	1.85 U
OCDD	3268-87-9	pg/L	--	54.1 UJ	5.92 U	23.8 UJ	10.6 U	28.6 UJ	2.46 U	36.1 UJ	10.5 U
2,3,7,8-TCDF	51207-31-9	pg/L	--	1.23 U	0.55 U	0.78 U	0.68 U	0.99 U	1.34 U	0.74 U	1.2 U
1,2,3,7,8-PeCDF	57117-41-6	pg/L	--	1.83 U	0.85 U	1.32 U	1.07 U	1.53 UJ	1.83 U	1.14 U	1.04 U
2,3,4,7,8-PeCDF	57117-31-4	pg/L	--	1.65 U	0.77 U	1.18 U	0.78 U	1.42 UJ	1.73 U	1.01 U	0.95 U
1,2,3,4,7,8-HxCDF	70648-26-9	pg/L	--	0.72 U	0.66 U	0.59 U	0.64 U	0.7 U	1.59 U	0.54 U	1.25 U
1,2,3,6,7,8-HxCDF	57117-44-9	pg/L	--	0.65 U	0.63 U	0.57 U	0.67 U	0.69 U	1.63 U	0.5 U	1.25 U
1,2,3,7,8,9-HxCDF	72918-21-9	pg/L	--	1.05 U	0.81 U	0.76 U	0.75 U	1.09 U	2.04 U	0.79 U	1.55 U
2,3,4,6,7,8-HxCDF	60851-34-5	pg/L	--	0.77 U	0.66 U	0.56 U	0.63 U	0.72 U	1.81 U	0.57 U	1.25 U
1,2,3,4,6,7,8-HpCDF	67562-39-4	pg/L	--	0.6 U	1.07 U	0.68 U	1.26 U	0.66 U	1.02 U	0.51 U	1.43 U
1,2,3,4,7,8,9-HpCDF	55673-89-7	pg/L	--	0.96 U	1.49 U	0.76 U	0.71 U	1.06 U	1.44 U	0.73 U	1.96 U
Dioxins/Furans (MTCA TEQ-HalfND)	DF_TEQ (U=1/2)	pg/L	6.7	1.73 J	0.95 U	1.22 J	0.93 U	0.465 UJ	2.26 U	1.15 J	1.15 U

Notes:

-- Not available.

RED/BOLD Analyte detected at a concentration greater than the site CUL.

1 On October 28, 2020 MW-VB2 was dry and samples were unable to be collected.

Abbreviations:

CAS	Chemical Abstracts Service	OCDD	Octachlorodibenzodioxin
CUL	Cleanup level	OCDF	Octachlorodibenzofuran
HpCDD	Heptachlorodibenzo-p-dioxin	PeCDD	Pentachlorodibenzo-p-dioxin
HpCDF	Heptachlorodibenzofuran	PeCDF	Pentachlorodibenzofuran
HxCDD	Hexachlorodibenzo-p-dioxin	pg/L	Picograms per liter
HxCDF	Hexachlorodibenzofuran	TCDD	Tetrachlorodibenzo-p-dioxin
µg/L	Micrograms per liter	TCDF	Tetrachlorodibenzofuran
NS	Not sampled	TEQ	Toxic equivalent

Qualifiers:

J	Analyte was detected; concentration is considered to be an estimate.
JQ	Analyte was detected between the method detection limit and reporting limit; concentration is considered to be an estimate.
U	Analyte was not detected at the given reporting limit.
UJ	Analyte was not detected; concentration given is the reporting limit, which is considered to be an estimate.

Table 3.1
Lora Lake Parcel Groundwater Analytical Data

			Location Group	Vicinity Wells								
			Location Name	HCOO-B312		MW-C1/VB1			MW-VB2		MW-VB3	
			Sample ID	HCOO-B312-102820	HCOO-B312-031621	MW-C1/VB1-102820	MW-C101-102820	MW-C1/VB1-031721	--	MW-VB2-031721	MW-VB3-102720	MW-VB3-031621
			Sample Date	10/28/2020	3/16/2021	10/28/2020	10/28/2020	3/17/2021	10/28/20 [(1)]	3/17/2021	10/27/2020	3/16/2021
Analyte	**CAS No.**	**Unit**	**Site CUL**									
Arsenic By EPA 200.8 UCT-KED												
Arsenic	7440-38-2	µg/L	5	0.17 JQ	0.17 JQ	0.16 JQ	0.16 JQ	0.11 JQ	NS	0.47	0.45	0.39
Dioxins/Furans by USEPA 1613B												
2,3,7,8-TCDD	1746-01-6	pg/L	--	0.87 U	2.89 UJ	0.75 U	0.86 U	0.46 U	NS	0.75 U	1.1 U	0.55 U
1,2,3,7,8-PeCDD	40321-76-4	pg/L	--	0.91 U	3.16 UJ	0.9 U	0.82 UJ	0.56 U	NS	1 U	0.91 U	0.51 U
1,2,3,4,7,8-HxCDD	39227-28-6	pg/L	--	1.08 U	3.33 U	1.03 U	0.99 U	1.08 U	NS	0.9 U	1.07 U	0.59 U
1,2,3,6,7,8-HxCDD	57653-85-7	pg/L	--	1 U	3.21 U	0.92 U	0.84 U	1.03 U	NS	0.86 U	0.96 U	0.58 U
1,2,3,7,8,9-HxCDD	19408-74-3	pg/L	--	1.16 U	3.36 U	1.08 U	1.02 U	1.08 U	NS	0.91 U	1.13 U	0.6 U
1,2,3,4,6,7,8-HpCDD	35822-46-9	pg/L	--	1.1 U	6.85 UJ	1.76 U	1.42 U	2.16 U	NS	1.32 U	1.74 U	1.25 U
OCDD	3268-87-9	pg/L	--	10.2 UJ	16.4 UJ	49.1 UJ	66.5 UJ	10.8 U	NS	7.27 U	35.3 UJ	9.72 U
2,3,7,8-TCDF	51207-31-9	pg/L	--	0.87 U	4.22 UJ	1.11 U	0.81 U	0.47 U	NS	0.68 U	1.29 U	0.66 U
1,2,3,7,8-PeCDF	57117-41-6	pg/L	--	1.19 U	4.27 UJ	1.41 U	1.29 U	0.66 U	NS	0.8 U	1.63 U	0.68 U
2,3,4,7,8-PeCDF	57117-31-4	pg/L	--	1.07 U	4.39 UJ	1.36 U	1.18 UJ	0.49 U	NS	0.73 U	1.47 U	0.62 U
1,2,3,4,7,8-HxCDF	70648-26-9	pg/L	--	0.6 U	2.67 U	0.71 U	0.65 U	0.62 U	NS	0.94 U	0.78 U	0.46 U
1,2,3,6,7,8-HxCDF	57117-44-9	pg/L	--	0.57 U	2.67 U	0.73 U	0.59 U	0.59 U	NS	0.89 U	0.69 U	0.45 U
1,2,3,7,8,9-HxCDF	72918-21-9	pg/L	--	0.85 U	6.79 UJ	1.11 U	0.94 U	0.71 U	NS	1.13 U	1.15 U	0.57 U
2,3,4,6,7,8-HxCDF	60851-34-5	pg/L	--	0.64 U	5.2 UJ	0.75 U	0.69 U	0.6 U	NS	1.3 J	0.82 U	0.45 U
1,2,3,4,6,7,8-HpCDF	67562-39-4	pg/L	--	0.59 U	4.44 J	0.66 U	0.77 U	0.55 U	NS	0.82 U	1.35 U	1.24 U
1,2,3,4,7,8,9-HpCDF	55673-89-7	pg/L	--	0.82 U	6.37 UJ	0.94 U	1.25 U	0.7 U	NS	1.16 U	1.3 U	0.68 U
Dioxins/Furans (MTCA TEQ-HalfND)	DF_TEQ (U=1/2)	pg/L	6.7	0.455 UJ	5.45 J	0.45 UJ	1.39 J	0.56 U	NS	1.46 J	1.67 J	0.55 U

Notes:

-- Not available.

RED/BOLD Analyte detected at a concentration greater than the site CUL.

1 On October 28, 2020 MW-VB2 was dry and samples were unable to be collected.

Abbreviations:

CAS	Chemical Abstracts Service	OCDD	Octachlorodibenzodioxin
CUL	Cleanup level	OCDF	Octachlorodibenzofuran
HpCDD	Heptachlorodibenzo-p-dioxin	PeCDD	Pentachlorodibenzo-p-dioxin
HpCDF	Heptachlorodibenzofuran	PeCDF	Pentachlorodibenzofuran
HxCDD	Hexachlorodibenzo-p-dioxin	pg/L	Picograms per liter
HxCDF	Hexachlorodibenzofuran	TCDD	Tetrachlorodibenzo-p-dioxin
µg/L	Micrograms per liter	TCDF	Tetrachlorodibenzofuran
NS	Not sampled	TEQ	Toxic equivalent

Qualifiers:

J	Analyte was detected; concentration is considered to be an estimate.
JQ	Analyte was detected between the method detection limit and reporting limit; concentration is considered to be an estimate.
U	Analyte was not detected at the given reporting limit.
UJ	Analyte was not detected; concentration given is the reporting limit, which is considered to be an estimate.

Lora Lake Apartments Site

2021 Annual Compliance Monitoring Report

Figures

Legend

- Combined Groundwater Confirmation and Sediment Cap Performance Site Vicinity Monitoring Location
- Groundwater Confirmation Monitoring Location
- Sediment Cap Performance Monitoring Location
- Sediment Cap Performance Site Vicinity Monitoring Location
- City Boundary
- Lora Lake Apartments Site Extent
- Tax Parcel Boundary

SR 518
CITY OF BURIEN
CITY OF SEATAC
WSDOT PROPERTY
MW-C1/VB1
LORA LAKE APARTMENTS PARCEL
MW-C2
MW-VB2
SOUTH 150TH STREET
MW-C3
FORMER SEATTLE CITY LIGHT SUNNYDALE SUBSTATION
DES MOINES MEMORIAL DRIVE SOUTH
MW-C4
LORA LAKE SHALLOW SOIL
HCOO-B312
1982 DREDGED MATERIAL CONTAINMENT AREA
MW-CP1
MW-VB3
PORT OF SEATTLE PROPERTY
MW-CP2
Former Lora Lake
MW-CP3
SEATTLE-TACOMA INTERNATIONAL AIRPORT 3RD RUNWAY APPROACH LIGHTING SYSTEM
MW-CP4
MW-CP7
MW-CP5
LORA LAKE PARCEL
MW-CP6
8TH AVE SOUTH
PORT OF SEATTLE PROPERTY

Notes:
- Tax parcel boundaries based on King County tax parcel data.
- City boundary data provided by King County.
- Orthoimagery obtained from Nearmap, 2020.

Abbreviation:
WSDOT = Washington State Department of Transportation

0 150 300
Scale in Feet

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2021 Annual Compliance Monitoring Report
Lora Lake Apartments Site
Burien, Washington

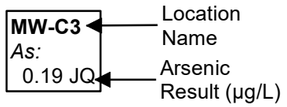
Figure 1.1
Site Map

I:\GIS\Projects\POS_LLA\MXD\Task8140\Annual Compliance Monitoring Report\2021\Figure 1.1 Site Map.mxd
10/22/2021

Legend

- Combined Groundwater Confirmation and Sediment Cap Performance Site Vicinity Monitoring Location
- Groundwater Confirmation Monitoring Location
- Sediment Cap Performance Monitoring Location
- Sediment Cap Performance Site Vicinity Monitoring Location
- City Boundary
- Tax Parcel Boundary

Label Key



Notes:
1. Per the *Evaluation of Arsenic in Groundwater at the Lora Lake Apartments Site* memorandum (Floyd|Snider 2020b) and subsequent Ecology approval, monitoring at MW-C1/VB1 and MW-C4 is no longer required.
   - Results shown in **RED BOLD** exceed the site cleanup level for arsenic of 5 µg/L.
   - Analytical results for duplicate samples are not presented.
   - Tax parcel boundaries based on King County tax parcel data.
   - City boundary data provided by King County.
   - Orthoimagery obtained from Nearmap, 2020.

Abbreviations:
As = Arsenic
µg/L = Micrograms per liter
NS = Not sampled

Qualifier:
JQ = Analyte was detected between the method detection limit and reporting limit; concentration is considered to be an estimate.

0 100 200
Scale in Feet

N

SR 518
CITY OF BURIEN
CITY OF SEATAC
WSDOT PROPERTY
MW-C1/VB1
As:
NS(1)
LORA LAKE APARTMENTS PARCEL
MW-C2
As:
22
DES MOINES MEMORIAL DRIVE SOUTH
MW-VB2
MW-C3
As:
0.19 JQ
FORMER SEATTLE CITY LIGHT SUNNYDALE SUBSTATION
MW-C4
As:
NS(1)
MW-CP1
Former Lora Lake
MW-CP2
PORT OF SEATTLE PROPERTY
MW-CP3

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Lora Lake Apartments Site
Burien, Washington

Figure 2.1
Lora Lake Apartments Parcel
2021 Groundwater Analytical Results

I:\GIS\Projects\POS_LLA\MXD\Task8140\Annual Compliance Monitoring Report\2021\Figure 2.1 Lora Lake Apartments Parcel 2021 Groundwater Analytical Results.mxd
10/22/2021

Legend

- Combined Groundwater Confirmation and Sediment Cap Performance Site Vicinity Monitoring Location
- Groundwater Confirmation Monitoring Location
- Sediment Cap Performance Monitoring Location
- Sediment Cap Performance Site Vicinity Monitoring Location
- City Boundary
- Tax Parcel Boundary

Label Key

MW-C1/VB1
As:
0.16 JQ
D/F:
0.450 UJ

- Location Name
- Arsenic Result (µg/L)
- Dioxin/Furan Result (pg/L)

Notes:
- Cleanup levels for arsenic and dioxins/furans are 5 µg/L and 6.7 pg/L, respectively.
- All results are from samples collected on 3/16/21 or 3/17/21.
- Analytical results for duplicate samples are not presented.
- Tax parcel boundaries based on King County tax parcel data.
- City boundary data provided by King County.
- Orthoimagery obtained from Nearmap, 2020.

Abbreviation:
As = Arsenic
D/F = Dioxins/Furans
µg/L = Micrograms per liter
pg/L = Picograms per liter

Qualifiers:
J = Analyte was detected; concentration is considered to be an estimate.
JQ = Analyte was detected between the method detection limit and reporting limit; concentration is considered to be an estimate.
UJ = Analyte was not detected; concentration given is the reporting limit, which is considered to be an estimate.

0 150 300
Scale in Feet
N

SR 518
CITY OF BURIEN
CITY OF SEATAC
WSDOT PROPERTY
LORA LAKE APARTMENTS PARCEL
MW-C1/VB1
As: 0.11 JQ
D/F: 0.56 U
MW-C2
MW-VB2
As: 0.47
D/F: 1.46 J
MW-C3
FORMER SEATTLE CITY LIGHT SUNNYDALE SUBSTATION
MW-C4
HCOO-B312
As: 0.17 JQ
D/F: 5.45 J
1982 DREDGED MATERIAL CONTAINMENT AREA
PORT OF SEATTLE PROPERTY
MW-CP1
As: 0.46
D/F: 0.72 U
MW-VB3
As: 0.39
D/F: 0.55 U
MW-CP2
As: 0.21
D/F: 0.76 U
Former Lora Lake
MW-CP3
As: 0.33
D/F: 0.8 U
MW-CP4
As: 0.14 JQ
D/F: 0.95 U
MW-CP5
As: 2.1
D/F: 0.93 U
MW-CP6
As: 1.1
D/F: 2.26 U
MW-CP7
As: 0.43
D/F: 1.15 U
SEATTLE-TACOMA INTERNATIONAL AIRPORT 3RD RUNWAY APPROACH LIGHTING SYSTEM
PORT OF SEATTLE PROPERTY
LORA LAKE PARCEL
8TH AVE SOUTH
DES MOINES MEMORIAL DRIVE SOUTH

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Lora Lake Apartments Site
Burien, Washington

Figure 3.1
Lora Lake Parcel 2021 Groundwater Analytical Results

I:\GIS\Projects\POS_LLA\MXD\Task8140\Annual Compliance Monitoring Report\2021\Figure 3.1 Lora Lake Parcel 2021 Groundwater Analytical Results.mxd
10/22/2021

Lora Lake Apartments Site

2021 Annual Compliance Monitoring Report

Appendix A
Groundwater Sample Collection Forms

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project: POS-LLA
Date of Collection: 3/16/2021
Task: 8140 Quarterly GW
Field Personnel: TB

Purge Data

Well ID: 1100-B312 Secure: ☒ Yes ☐ No Ecology Tag #: — Casing Type/Diameter/Screened Interval 2"

Replacement Required: ☐ Monument ☐ Lid ☐ Lock ☐ Bolts: Missing (#) ~ Stripped (#) — Other Damage: —

Depth Sounder decontaminated Prior to Placement in Well: ☒ Yes ☐ No One Casing Volume (gal):

Depth of water (from TOC): 11.76' Time: 12:13

Total Depth (from log or field measurement):

After 5 minutes of purging (from top of casing): 11.75'

Begin purge (time): 12:14 End purge (time):

Volume purged: 6.25L Purge water disposal method drum

Volume of Schedule 40 PVC Pipe

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water (ft)	Vol. Purged (L)	pH (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
12:30	11.75	2.25	6.01	4.30	251.2	1.30	11.9	144.6	
12:35	11.75	3.25	6.01	2.64	249.8	0.73	11.9	160.9	
12:40	11.75	4.25	6.01	2.13	249.4	1.80	11.9	164.2	
12:45	11.75	5.25	6.02	1.91	248.5	1.57	11.8	164.2	
12:50	11.75	6.25	6.02	1.76	247.0	1.80	11.9	164.4	

Sampling Data

Sample No: 1100-B312-031621 Location and Depth: ~20' from TOC

Date Collected (mo/dy/yr): 03/16/21 Time Collected: 12:55 Weather: Sunny - warming ~55°F

Type: ☒ Ground Water ☐ Surface Water Other: — Sample: ☐ Filtered ☒ Unfiltered Filter Type: —

Sample Collected with: ☐ Bailer ☒ Pump Other: — Type: ☒ Peristaltic ☐ Bladder ☐ Submersible Other: —

Water Quality Instrument Data Collected with: Type: ☒ YSI ProDSS ☒ Tudbidity Meter ☐ Other: —

Sample Decon Procedure: Sample collected with: ☐ decontaminated all tubing; ☐ disposable tubing ☒ dedicated silicon and poly tubing; ☐ dedicated tubing replaced

Sample Description (Color, Turbidity, Odor, Other): clear; no odor

Sample Analyses

Analyte	Analysis Method	Sample Container	Quantity	Preservative	Notes
Diss. As		500mL Poly	1	—	
Dioxin		1L Amber	2	—	

QC samples

Duplicate Sample No: — Duplicate Time: — MS/MSD: ☐ Yes ☒ No

Signature: TB Date: 3/16/21

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project: Lora Lake (PCS-LL) Date of Collection: 3/16/2021

Task: 1846 Field Personnel: N. Schachtman

Purge Data

Well ID: MW-C2 Secure: ☑ Yes ☐ No Ecology Tag #: BKA 341 Casing Type/Diameter/Screened Interval —

Replacement Required: ☑ Monument ☐ Lid ☐ Lock ☐ Bolts: Missing (#) ____ Stripped (#) ____ Other Damage: —

Depth Sounder decontaminated Prior to Placement in Well: ☐ Yes ☐ No One Casing Volume (gal): —

Depth of water (from TOC): 14.78 Time: 0915

Total Depth (from log or field measurement): 23.70

After 5 minutes of purging (from top of casing): 14.87

Begin purge (time): 0918 End purge (time): 1033

Volume purged: 14.0L Purge water disposal method 1 DW drum

Volume of Schedule 40 PVC Pipe

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water (ft)	Vol. Purged (L)	pH (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
~~0950~~ NS	~~1117~~								
~~0948~~ recalibrate YSI due to erroneous pH readings (>11). Keep peri-pump running	~~14.55~~		11.89	2.58	567	2.08	11.1	-246.8	
1023	14.85	12.5	↓	↓	↓	↓	↓	↓	NS
1028	14.86	13.25	11.90	2.49	577	1.90	11.1	~~-265.4~~	255.9
1033	14.86	14.0	11.89	2.47	575	1.90	11.1	-253.8	

Again confirms normal ↓ proceed to Sample

Sampling Data

Sample No: MW-C2-031621 Location and Depth: MW-C2

Date Collected (mo/dy/yr): 3/16/21 Time Collected: 1035 Weather: Sunny, high 51°F

Type: ☑ Ground Water ☐ Surface Water Other: — Sample: ☐ Filtered ☑ Unfiltered Filter Type: —

Sample Collected with: ☐ Bailer ☑ Pump Other: — Type: ☑ Peristaltic ☐ Bladder ☐ Submersible Other: —

Water Quality Instrument Data Collected with: Type: ☑ YSI ProDSS ☑ Tudbidity Meter ☐ Other: —

Sample Decon Procedure: Sample collected with: ☐ decontaminated all tubing; ☐ disposable tubing ☑ dedicated silicon and poly tubing; ☐ dedicated tubing replaced

Sample Description (Color, Turbidity, Odor, Other): light brown/yellow

Sample Analyses

Analyte	Analysis Method	Sample Container	Quantity	Preservative	Notes
As (dissolved)		500mL poly	1	—	Lab filter

QC samples

Duplicate Sample No: — Duplicate Time: — MS/MSD: ☐ Yes ☑ No

Signature: [signature] Date: 3/16/21

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project: P03-LLA
Date of Collection: 3/16/2021
Task: 8140 Quarterly GW
Field Personnel: TS

Purge Data

Well ID: MW-C3 Secure: ☒ Yes ☐ No Ecology Tag #: BKA 342 Casing Type/Diameter/Screened Interval 2"

Replacement Required: ☐ Monument ☐ Lid ☐ Lock ☐ Bolts: Missing (#) — Stripped (#) — Other Damage:

Depth Sounder decontaminated Prior to Placement in Well: ☒ Yes ☐ No One Casing Volume (gal):

Depth of water (from TOC): 16.68 Time: 09:21

Total Depth (from log or field measurement): 25.15'

After 5 minutes of purging (from top of casing): 16.70

Begin purge (time): 09:24 End purge (time): 10:12

Volume purged: 10.5 Purge water disposal method drum

Volume of Schedule 40 PVC Pipe

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water (ft)	Vol. Purged (L)	pH (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
09:50	16.71	5.5	6.38	9.03	100.7	3.07	10.6	129.5	
09:55	16.71	6.75	6.39	8.89	102.5	3.33	10.7	130.4	
10:00	16.71	8.5	6.42	8.64	110.0	3.27	10.8	129.6	
10:05	16.71	9.5	6.42	8.59	112.8	2.57	10.8	129.6	

Sampling Data

Sample No: MW-C3-031621 Location and Depth:

Date Collected (mo/dy/yr): 03/16/21 Time Collected: 10:10 Weather: clear/cool -warming

Type: ☒ Ground Water ☐ Surface Water Other: — Sample: ☐ Filtered ☒ Unfiltered Filter Type: —

Sample Collected with: ☐ Bailer ☒ Pump Other: — Type: ☒ Peristaltic ☐ Bladder ☐ Submersible Other: —

Water Quality Instrument Data Collected with: Type: ☒ YSI ProDSS ☒ Turbidity Meter ☐ Other:

Sample Decon Procedure: Sample collected with: ☐ decontaminated all tubing; ☐ disposable tubing; ☒ dedicated silicon and poly tubing; ☐ dedicated tubing replaced

Sample Description (Color, Turbidity, Odor, Other): Clear; no odor

Sample Analyses

Analyte	Analysis Method	Sample Container	Quantity	Preservative	Notes
As, Diss.		500mL Poly	2	—	Field Dup

QC samples

Duplicate Sample No: MW-C3-031621-D Duplicate Time: 10:15 MS/MSD: ☐ Yes ☒ No

Signature: Date: 3/16/21

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project: POS-LLA
Task: 8140 Quarterly GW

Date of Collection: 3/17/21
Field Personnel: TS

Purge Data

Well ID: MW-C1/VB1 Secure: ☒ Yes ☐ No Ecology Tag #: BKA343 Casing Type/Diameter/Screened Interval 2"

Replacement Required: ☐ Monument ☐ Lid ☐ Lock ☐ Bolts: Missing (#) — Stripped (#) — Other Damage: —

Depth Sounder decontaminated Prior to Placement in Well: ☒ Yes ☐ No One Casing Volume (gal): —

Depth of water (from TOC): 8.41 Time: 12:22

Total Depth (from log or field measurement): —

After 5 minutes of purging (from top of casing): 8.56

Begin purge (time): 12:23 End purge (time): 13:09

Volume purged: BLS Purge water disposal method drum

Volume of Schedule 40 PVC Pipe

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water (ft)	Vol. Purged (L)	pH (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
12:45	8.56	5	6.39	9.65	124.9	0.95	10.5	128.5	
12:50	8.56	6	6.36	9.40	130.6	0.72	10.7	133.4	
12:55	8.56	7	6.34	9.24	133.7	1.01	10.6	133.9	

Sampling Data

Sample No: MW-C1/VB1-031721 Location and Depth: —

Date Collected (mo/dy/yr): 03/17/21 Time Collected: 13:00 Weather: Sunny/Clear

Type: ☒ Ground Water ☐ Surface Water Other: — Sample: ☐ Filtered ☒ Unfiltered Filter Type: —

Sample Collected with: ☐ Bailer ☒ Pump Other: — Type: ☒ Peristaltic ☐ Bladder ☐ Submersible Other: —

Water Quality Instrument Data Collected with: Type: ☒ YSI ProDSS ☒ Tudbidity Meter ☐ Other: —

Sample Decon Procedure: Sample collected with: ☐ decontaminated all tubing; ☐ disposable tubing; ☒ dedicated silicon and poly tubing; ☐ dedicated tubing replaced

Sample Description (Color, Turbidity, Odor, Other): Clear; no odor

Sample Analyses

Analyte	Analysis Method	Sample Container	Quantity	Preservative	Notes
Dioxin		1L Amber	2	—	
Diss. As		500mL Poly	1	—	

QC samples

Duplicate Sample No: — Duplicate Time: — MS/MSD: ☐ Yes ☒ No

Signature: _____ **Date:** _____

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project: POS-LLA Date of Collection: 3/17/22

Task Number: _____ Field Personnel: AJ + TS + NS

Purge Data

Well ID: MW-VB2 Secure: ☑ Yes ☐ No Ecology Tag #: _____ Casing Type/Diameter/Screened Interval _____

Replacement Required: ☐ Monument ☐ Lid ☑ Lock ☐ Bolts: Missing (#) ____ Stripped (#) ____ Other Damage: _____

Depth Sounder decontaminated Prior to Placement in Well: ☑ Yes ☐ No One Casing Volume (gal): _____

Depth of water (from top of well casing): 9.30 Total Depth (from log or field measurement): 11.34

After 5 minutes of purging (from top of casing): 9.35

Begin purge (time): _____

End purge (time): _____

Volume purged: 24 L

Purge water disposal method: on-site drum

Volume of Schedule 40 PVC Pipe

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water (ft)	Vol. Purged (L)	pH (std.) DTB	DO (mg/L)	Specific Conductivity (ms/cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
	9.35	5	12.20						
	9.35	10	17.61						
	9.35	15	17.61						
	9.35	20	17.61						
	9.35	24	17.61						

Sampling Data Redevelopment

Sample No: _____ Location and Depth: _____

Date Collected (mo/dy/yr): _____ Time Collected: _____ Weather: _____

Type: ☐ Ground Water ☐ Surface Water Other: _____ Sample: ☐ Filtered ☐ Unfiltered Other: _____

Sample Collected with: ☐ Bailer ☐ Pump Other: _____ Type: ☐ Peristaltic ☐ Bladder ☐ Submersible Other: _____

Water Quality Instrument Data Collected with: Type: ☐ YSI ProDSS Other: _____

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing; new tubing

Sample Description (Color, Turbidity, Odor, Other): _____

Sample Analyses

Analyte	Analysis Method	Sample Container	Quantity	Preservative

QC samples

Duplicate Sample No: _____ Duplicate Time: _____ MS/MSD: ☐ Yes ☒ No Other QC Sample: _____

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project: POS-CL Date of Collection: 3/17/21

Task: 1840 Field Personnel: N. Schachtman

Purge Data

Well ID: MW-VB2 Secure: ☑ Yes ☐ No Ecology Tag #: BKA 340 Casing Type/Diameter/Screened Interval

Replacement Required: ☐ Monument ☐ Lid ☐ Lock ☐ Bolts: Missing (#) ____ Stripped (#) ____ Other Damage:

Depth Sounder decontaminated Prior to Placement in Well: ☑ Yes ☐ No One Casing Volume (gal):

Depth of water (from TOC): 9.34 Time:

Total Depth (from log or field measurement): 17.56

After 5 minutes of purging (from top of casing): 9.38

Begin purge (time): 1208 End purge (time): 1323

Volume purged: 16.25L Purge water disposal method: IDW Drum

Volume of Schedule 40 PVC Pipe

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water (ft)	Vol. Purged (L)	pH (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
1306 ~~1228~~ NS	9.38	13.5	5.89	0.25	350.2	~~19.4~~ NS 9.24	10.9	-7.6	Turbidity >20
1313	9.38	14.75	5.91	0.23	379.6	6.83	11.0	-10.1	for first ~ 30 min,
1318	9.38	15.50	5.90	0.23	379.4	7.18	11.0	-10.2	Slowly decreasing
1323	9.39	16.25	5.91	0.23	378.4	6.88	11.1	-12.1	and Stabilizing

Sampling Data

Sample No: MW-VB2-031721 Location and Depth: MW-VB2 (~13'), pulled up to

Date Collected (mo/dy/yr): 3/17/21 Time Collected: 1325 Weather: Sunny high 34°F ~10.5'

Type: ☑ Ground Water ☐ Surface Water Other: Sample: ☐ Filtered ☐ Unfiltered Filter Type:

Sample Collected with: ☐ Bailer ☑ Pump Other: Type: ☑ Peristaltic ☐ Bladder ☐ Submersible Other:

Water Quality Instrument Data Collected with: Type: ☑ YSI ProDSS ☑ Turbidity Meter ☐ Other:

Sample Decon Procedure: Sample collected with: ☐ decontaminated all tubing; ☐ disposable tubing ☐ dedicated silicon and poly tubing; ☑ dedicated tubing replaced

Sample Description (Color, Turbidity, Odor, Other): Clear, No odor

Sample Analyses

Analyte	Analysis Method	Sample Container	Quantity	Preservative	Notes
As (diss)		500mL poly	1	–	lab preserve/filter
D/F		1L Amber	2	–	

QC samples

Duplicate Sample No: Duplicate Time: MS/MSD: ☐ Yes ☑ No

Signature: Date: 3/17/21

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project: DoS-LL
Date of Collection: 3/16/21
Task: 1840
Field Personnel: W. Schuchman

Purge Data

Well ID: MW-VB3 Secure: ☑ Yes ☐ No Ecology Tag #: BLK 794 Casing Type/Diameter/Screened Interval

Replacement Required: ☑ Monument ☐ Lid ☐ Lock ☐ Bolts: Missing (#) ____ Stripped (#) ____ Other Damage:

Depth Sounder decontaminated Prior to Placement in Well: ☑ Yes ☐ No One Casing Volume (gal):

Depth of water (from TOC): 10.51 Time:

Total Depth (from log or field measurement): ~20.85

After 5 minutes of purging (from top of casing): 10.55

Begin purge (time): 1124 End purge (time): 1159

Volume purged: 6.5L Purge water disposal method IDW Drum

Volume of Schedule 40 PVC Pipe

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water (ft)	Vol. Purged (L)	pH (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
1144	10.55	3.0	5.88	2.21	240.4	5.22	11.5	162.5	
1149	10.55	4.5	5.88	1.89	238.4	3.15	11.4	166.9	
1154	10.55	5.5	5.88	1.74	237.3	2.67	11.4	172.6	
1159	10.55	6.5	5.88	1.63	236.4	2.33	11.2	172.3	

Sampling Data

Sample No: MW-VB3-031621 Location and Depth: MW-VB3

Date Collected (mo/dy/yr): 3/16/21 Time Collected: 1200 Weather: Sunny, 51°F

Type: ☑ Ground Water ☐ Surface Water Other: Sample: ☐ Filtered ☑ Unfiltered Filter Type:

Sample Collected with: ☐ Bailer ☑ Pump Other: Type: ☑ Peristaltic ☐ Bladder ☐ Submersible Other:

Water Quality Instrument Data Collected with: Type: ☑ YSI ProDSS ☑ Turbidity Meter ☐ Other:

Sample Decon Procedure: Sample collected with: ☐ decontaminated all tubing; ☐ disposable tubing ☑ dedicated silicon and poly tubing; ☐ dedicated tubing replaced

Sample Description (Color, Turbidity, Odor, Other): Clear, no odor

Sample Analyses

Analyte	Analysis Method	Sample Container	Quantity	Preservative	Notes
As (d33)		500mL poly	1	—	Lab filter/preserve
D/F		1L Amber	2	—	

QC samples

Duplicate Sample No: Duplicate Time: MS/MSD: ☐ Yes ☑ No

Signature: Date: 3/16/21

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project: ~~NS~~ POS-LL — Date of Collection: 3/17/21

Task: 1840 — Field Personnel: NS + TS

Purge Data

Well ID: MW-CP1 Secure: ☐ Yes ☐ No Ecology Tag #: — Casing Type/Diameter/Screened Interval

Replacement Required: ☐ Monument ☐ Lid ☐ Lock ☐ Bolts: Missing (#) ____ Stripped (#) ____ Other Damage:

Depth Sounder decontaminated Prior to Placement in Well: ☑ Yes ☐ No One Casing Volume (gal):

Depth of water (from TOC): 3.19 Time: 1025

Total Depth (from log or field measurement): 7.78

After 5 minutes of purging (from top of casing): 3.20

Begin purge (time): 1008 End purge (time): 1048

Volume purged: 8.0L Purge water disposal method: IDW-Drum

Volume of Schedule 40 PVC Pipe

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water (ft)	Vol. Purged (L)	pH (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
1028	3.20	4.0	6.60	3.32	264.0	0.88	8.5	6.3	
1033	3.19	5.0	6.66	0.73	263.2	1.10	8.6	-1.6	
1038	3.18	6.0	6.67	0.38	264.3	0.43	8.4	-5.6	
1043	3.18	7.0	6.70	0.29	264.5	0.46	8.6	-9.6	
1048	3.18	8.0	6.71	0.28	264.5	0.58	8.6	-11.7	

Sampling Data

Sample No: MW-CP1-031721 Location and Depth: MW-CP1

Date Collected (mo/dy/yr): 3/17/21 Time Collected: 1050 Weather: Sunny, High 54°F

Type: ☑ Ground Water ☐ Surface Water Other: Sample: ☐ Filtered ☑ Unfiltered Filter Type:

Sample Collected with: ☐ Bailer ☑ Pump Other: Type: ☑ Peristaltic ☐ Bladder ☐ Submersible Other:

Water Quality Instrument Data Collected with: Type: ☑ YSI ProDSS ☑ Turbidity Meter ☐ Other:

Sample Decon Procedure: Sample collected with: ☐ decontaminated all tubing; ☐ disposable tubing ☑ dedicated silicon and poly tubing; ☐ dedicated tubing replaced

Sample Description (Color, Turbidity, Odor, Other): Clear, no odor

Sample Analyses

Analyte	Analysis Method	Sample Container	Quantity	Preservative	Notes
As (diss)		500mL poly	1	—	lab pressure filter
D/F		1L Amber	2	—	

QC samples

Duplicate Sample No: Duplicate Time: MS/MSD: ☐ Yes ☑ No

Signature: Date: 3/17/21

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project: 4 POS-LL Date of Collection: 3/17/21

Task: 1840 Field Personnel: N. Schaublman

Purge Data

Well ID: MW-CP2 Secure: ☑ Yes ☐ No Ecology Tag #: — Casing Type/Diameter/Screened Interval

Replacement Required: ☐ Monument ☐ Lid ☐ Lock ☐ Bolts: Missing (#) ____ Stripped (#) ____ Other Damage:

Depth Sounder decontaminated Prior to Placement in Well: ☑ Yes ☐ No One Casing Volume (gal):

Depth of water (from TOC): 3.74 Time: 0854

Total Depth (from log or field measurement): 9.72

After 5 minutes of purging (from top of casing): 9.74

Begin purge (time): 0857 End purge (time): 0927

Volume purged: 5.5L Purge water disposal method: IDW Drum

Volume of Schedule 40 PVC Pipe

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water (ft)	Vol. Purged (L)	pH (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
0912	9.74	2.5	6.49	0.70	251.6	2.09	9.4	-4.4	
0917	9.74	3.5	6.46	0.50	253.6	1.72	9.7	-9.7	
0922	9.74	4.25	6.43	0.38	255.0	1.79	9.7	-12.0	
0927	9.74	5.50	6.43	0.33	255.7	1.36	9.8	-14.6	

Sampling Data

Sample No: MW-CP2-031721 Location and Depth: MW-CP2

Date Collected (mo/dy/yr): 3/17/21 Time Collected: 0930 Weather: Sunny, High 54°F

Type: ☑ Ground Water ☐ Surface Water Other: Sample: ☐ Filtered ☑ Unfiltered Filter Type:

Sample Collected with: ☐ Bailer ☑ Pump Other: Type: ☑ Peristaltic ☐ Bladder ☐ Submersible Other:

Water Quality Instrument Data Collected with: Type: ☑ YSI ProDSS ☐ Turbidity Meter ☐ Other:

Sample Decon Procedure: Sample collected with: ☐ decontaminated all tubing; ☐ disposable tubing ☑ dedicated silicon and poly tubing; ☐ dedicated tubing replaced

Sample Description (Color, Turbidity, Odor, Other): Clear, no odor

Sample Analyses

Analyte	Analysis Method	Sample Container	Quantity	Preservative	Notes
As (ABS)		500mL poly	1	—	Lab filter/preserve
D/F		1L Amber	2	—	

QC samples

Duplicate Sample No: MW-CP2-031721-D Duplicate Time: 0940 MS/MSD: ☐ Yes ☑ No

Signature: Date: 3/17/21

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project: POS-LLA Date of Collection: 3/17/21

Task: 8140 Quarterly GW Field Personnel: TS

Purge Data

Well ID: MW-CP3 Secure: ☒ Yes ☐ No Ecology Tag #: missing Casing Type/Diameter/Screened Interval: 2"

Replacement Required: ☐ Monument ☐ Lid ☐ Lock ☐ Bolts: Missing (#) 2 Stripped (#) — Other Damage: ✓

Depth Sounder decontaminated Prior to Placement in Well: ☒ Yes ☐ No One Casing Volume (gal):

Depth of water (from TOC): 3.13 Time:

Total Depth (from log or field measurement):

After 5 minutes of purging (from top of casing): 3.13

Begin purge (time): 09:03 End purge (time): 09:50

Volume purged: 10 L Purge water disposal method: drum

Volume of Schedule 40 PVC Pipe

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water (ft)	Vol. Purged (L)	pH (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
9:20	3.14	6	6.83	3.18	204.4	1.12	6.8	42.6	pump slowed
9:25	3.14	7	6.82	2.70	205.1	1.02	6.8	44.9	
9:30	3.14	8	6.83	2.44	204.2	1.07	6.9	47.9	
9:35	3.14	9	6.82	2.20	204.3	0.91	6.9	50.0	

Sampling Data

Sample No: MW-CP3-031721 Location and Depth:

Date Collected (mo/dy/yr): 03/17/21 Time Collected: 9:40 Weather: Sunny-Cool/warming

Type: ☒ Ground Water ☐ Surface Water Other: — Sample: ☐ Filtered ☒ Unfiltered Filter Type: —

Sample Collected with: ☐ Bailer ☒ Pump Other: — Type: ☒ Peristaltic ☐ Bladder ☐ Submersible Other: —

Water Quality Instrument Data Collected with: Type: ☒ YSI ProDSS ☒ Tudbidity Meter ☐ Other: —

Sample Decon Procedure: Sample collected with: ☐ decontaminated all tubing; ☐ disposable tubing ☒ dedicated silicon and poly tubing; ☐ dedicated tubing replaced

Sample Description (Color, Turbidity, Odor, Other): Clear; no odor

Sample Analyses

Analyte	Analysis Method	Sample Container	Quantity	Preservative	Notes
As, Diss		500 mL Poly	1	—	
Dioxin		1 L Amber	2	—	

QC samples

Duplicate Sample No: — Duplicate Time: — MS/MSD: ☐ Yes ☒ No

Signature: TS Date: 3/17/21

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project: PUS-LL Date of Collection: 3/16/21

Task: 1840 Field Personnel: N. Silverstman

Purge Data

Well ID: MW-CP4 Secure: ☑ Yes ☐ No Ecology Tag #: — Casing Type/Diameter/Screened Interval _____

Replacement Required: ☐ Monument ☐ Lid ☐ Lock ☐ Bolts: Missing (#) ____ Stripped (#) ____ Other Damage: _____

Depth Sounder decontaminated Prior to Placement in Well: ☐ Yes ☐ No One Casing Volume (gal): _____

Depth of water (from TOC): 2.10 Time: 1448

Total Depth (from log or field measurement): 6.35

After 5 minutes of purging (from top of casing): 2.11

Begin purge (time): 1449 End purge (time): _____

Volume purged: _____ Purge water disposal method IDW Drum

Volume of Schedule 40 PVC Pipe

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water (ft)	Vol. Purged (L)	pH (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
1517	2.11	4.0	6.30	0.22	257.8	0.40	8.8	-2.9	
1522	2.11	5.0	6.26	0.17	257.3	0.49	8.8	-5.5	
1527	2.11	6.0	6.28	0.15	257.3	0.55	8.9	-8.1	

Sampling Data

Sample No: MW-CP4-03162l Location and Depth: MW-CP4

Date Collected (mo/dy/yr): 3/16/21 Time Collected: 1530 Weather: Sunny, 51°F

Type: ☑ Ground Water ☐ Surface Water Other: _____ Sample: ☐ Filtered ☑ Unfiltered Filter Type: _____

Sample Collected with: ☐ Bailer ☑ Pump Other: _____ Type: ☑ Peristaltic ☐ Bladder ☐ Submersible Other: _____

Water Quality Instrument Data Collected with: Type: ☑ YSI ProDSS ☑ Tudbidity Meter ☐ Other: _____

Sample Decon Procedure: Sample collected with: ☐ decontaminated all tubing; ☐ disposable tubing ☑ dedicated silicon and poly tubing; ☐ dedicated tubing replaced

Sample Description (Color, Turbidity, Odor, Other): Clear, no odor

Sample Analyses

Analyte	Analysis Method	Sample Container	Quantity	Preservative	Notes
As (diss)		500mL poly	1	—	lab present/filter
D/F		1L Amber	2		

QC samples

Duplicate Sample No: _____ Duplicate Time: _____ MS/MSD: ☐ Yes ☑ No

Signature: _____ **Date:** 3/16/21

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project: POS-LLA
Date of Collection: 3/16/21
Task: 8140 Quarterly GW
Field Personnel: TS

Purge Data

Well ID: MW-CP5 Secure: ☒ Yes ☐ No Ecology Tag #: BLK315 Casing Type/Diameter/Screened Interval 2"

Replacement Required: ☐ Monument ☐ Lid ☐ Lock ☐ Bolts: Missing (#) — Stripped (#) — Other Damage: —

Depth Sounder decontaminated Prior to Placement in Well: ☒ Yes ☐ No One Casing Volume (gal):

Depth of water (from TOC): 3.36 Time: 13:53

Total Depth (from log or field measurement):

After 5 minutes of purging (from top of casing): 3.60

Begin purge (time): 15:55 End purge (time): 16:10

Volume purged: 12.75L Purge water disposal method drum

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water (ft)	Vol. Purged (L)	pH (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
15:25	4.01	7	6.48	4.90	409.8	15.0	9.2	-68.9	
15:30	4.01	7.9	6.48	3.25	412.7	17.4	9.1	-69.6	Pump slowed
15:35	4.01	8.5	6.49	2.47	416.4	13.4	9.1	-72.4	
1540	4.01	9.5	6.50	2.10	420.0	11.9	9.1	-75.4	
1545	4.01	10.5	6.51	1.91	423.6	11.0	9.1	-77.1	
15:50	4.01	11.5	6.51	1.75	427.1	9.38	9.1	-79.1	

Sampling Data

Sample No: MW-CP5-031621 Location and Depth:

Date Collected (mo/dy/yr): 03/16/21 Time Collected: 15:55 Weather: Sunny/clear ~50°F

Type: ☐ Ground Water ☐ Surface Water Other: — Sample: ☐ Filtered ☒ Unfiltered Filter Type: —

Sample Collected with: ☐ Bailer ☒ Pump Other: — Type: ☒ Peristatic ☒ Bladder ☐ Submersible Other: —

Water Quality Instrument Data Collected with: Type: ☒ YSI ProDSS ☒ Tudbidity Meter ☐ Other:

Sample Decon Procedure: Sample collected with: ☐ decontaminated all tubing; ☐ disposable tubing ☒ dedicated silicon and poly tubing; ☐ dedicated tubing replaced

Sample Description (Color, Turbidity, Odor, Other): cloudy; (slightly); no identifiable odor - clear

Sample Analyses

Analyte	Analysis Method	Sample Container	Quantity	Preservative	Notes
As. Diss.		500mL Poly	1	—	
Dioxin		1L Amber	2	—	

QC samples

Duplicate Sample No: — Duplicate Time: — MS/MSD: ☐ Yes ☒ No

Signature: Date: 3/16/21

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project: ASLLA Date of Collection: 3/16/2021

Task: 8140 Quarterly GW Field Personnel: TS

Purge Data

Well ID: MW-CP6 Secure: ☒ Yes ☐ No Ecology Tag #: BLK314 Casing Type/Diameter/Screened Interval: 2"

Replacement Required: ☐ Monument ☐ Lid ☐ Lock ☐ Bolts: Missing (#) — Stripped (#) — Other Damage: —

Depth Sounder decontaminated Prior to Placement in Well: ☐ Yes ☐ No One Casing Volume (gal):

Depth of water (from TOC): 3.09' Time: 13:48

Total Depth (from log or field measurement):

After 5 minutes of purging (from top of casing): 3.17'

Begin purge (time): 13:48 End purge (time): 14:38

Volume purged: 6.25L Purge water disposal method: drum

Volume of Schedule 40 PVC Pipe

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water (ft)	Vol. Purged (L)	pH (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
14:05	3.19	2.75	6.52	2.28	197.0	11.9	10.7	-32.0	
14:10	3.19	3.5	6.52	1.96	197.2	4.57	10.9	-33.3	
14:15	3.19	4.5	6.52	1.72	196.4	3.99	11.0	-33.7	
14:20	3.19	5.25	6.52	1.61	197.0	3.73	10.9	-35.0	Pump slowing, batt dying.
~~14:25~~	3.19	6	6.52	1.53	197.0		10.9	-35.5	

Sampling Data

Sample No: MW-CP6-031621 Location and Depth:

Date Collected (mo/dy/yr): 03/16/21 Time Collected: 14:26 Weather: Sunny ~ 55°F

Type: ☒ Ground Water ☐ Surface Water Other: — Sample: ☐ Filtered ☒ Unfiltered Filter Type: —

Sample Collected with: ☐ Bailer ☒ Pump Other: — Type: ☒ Peristaltic ☐ Bladder ☐ Submersible Other: —

Water Quality Instrument Data Collected with: Type: ☒ YSI ProDSS ☒ Tudbidity Meter ☐ Other:

Sample Decon Procedure: Sample collected with: ☐ decontaminated all tubing; ☐ disposable tubing; ☒ dedicated silicon and poly tubing; ☐ dedicated tubing replaced

Sample Description (Color, Turbidity, Odor, Other): ~~Slight yellow~~; some orange flocks in flow cell; ~~no odor~~ TS ~~also mostly clear~~ + sample

Slight sulfuric odor

Sample Analyses

Analyte	Analysis Method	Sample Container	Quantity	Preservative	Notes
As. - Diss.		500mL Poly	1	—	
Dioxin		1L Amber	2	—	

QC samples

Duplicate Sample No: — Duplicate Time: — MS/MSD: ☐ Yes ☒ No

Signature: TS Date: 3/16/21

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project: POS-LL Date of Collection: 3/16/21

Task: 1840 Field Personnel: N. Schachtman

Purge Data

Well ID: MW-CP7 Secure: ☑ Yes ☐ No Ecology Tag #: BLK 316 Casing Type/Diameter/Screened Interval _____

Replacement Required: ☐ Monument ☐ Lid ☐ Lock ☐ Bolts: Missing (#) ____ Stripped (#) ____ Other Damage: _____

Depth Sounder decontaminated Prior to Placement in Well: ☐ Yes ☐ No One Casing Volume (gal): _____

Depth of water (from TOC): 4.43 Time: 1347

Total Depth (from log or field measurement): 23.05

After 5 minutes of purging (from top of casing): 4.47

Begin purge (time): 1348 End purge (time): 1423

Volume purged: 8.5L Purge water disposal method: IDW Drum

Volume of Schedule 40 PVC Pipe

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water (ft)	Vol. Purged (L)	pH (s.u.)	DO (mg/L)	Specific Conductivity (µs/cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
1358	4.47	2.75	5.46	1.09	259	2.88	11.5	83.6	
1403	4.47	4.0L	5.59	0.80	258.4	1.83	11.3	58.8	
1408	4.47	5.25	5.67	0.69	258.2	1.95	11.4	43.1	
1413	4.47	6.50	5.74	0.65	258.0	1.02	11.6	32.7	
1418	4.47	7.25	5.78	0.63	258.1	1.15	11.6	27.2	
1423	4.47	8.5	5.80	0.63	258.0	1.05	11.5	24.0	

Sampling Data

Sample No: MW-CP7-03/621 Location and Depth: MW-CP7

Date Collected (mo/dy/yr): 3/16/21 Time Collected: 1425 Weather: Sunny, 51°F

Type: ☑ Ground Water ☐ Surface Water Other: _____ Sample: ☐ Filtered ☑ Unfiltered Filter Type: _____

Sample Collected with: ☐ Bailer ☑ Pump Other: _____ Type: ☑ Peristaltic ☐ Bladder ☐ Submersible Other: _____

Water Quality Instrument Data Collected with: Type: ☑ YSI ProDSS ☑ Tudbidity Meter ☐ Other: _____

Sample Decon Procedure: Sample collected with: ☐ decontaminated all tubing; ☐ disposable tubing ☑ dedicated silicon and poly tubing; ☐ dedicated tubing replaced

Sample Description (Color, Turbidity, Odor, Other): Clear, no odor

Sample Analyses

Analyte	Analysis Method	Sample Container	Quantity	Preservative	Notes
As (diss)		500mL poly	1	–	Lab filter/preserve
D/F		1L Amber	2	–	

QC samples

Duplicate Sample No: _____ Duplicate Time: _____ MS/MSD: ☐ Yes ☑ No

Signature: _____ Date: 3/16/21

Lora Lake Apartments Site

2021 Annual Compliance Monitoring Report

Appendix B
Laboratory Reports and Data Validation Summaries

Analytical Resources, Incorporated
Analytical Chemists and Consultants

21 April 2021

Megan King
Floyd - Snider
601 Union Street Two Union Square, Suite 600
Seattle, WA 98101-2341

RE: Lora Lake

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
21C0250	N/A

Shelly Fishel
Digitally signed by Shelly Fishel
Date: 2021.04.21 17:10:33 -07'00'

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Shelly Fishel, Project Manager

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 21C0250	Turn-around Requested: Standard	Page: 1 of 2	
ARI Client Company: Floyd | Snider	Phone: 206-292-2078	Date: 3/17/21	Ice Present? Yes
Client Contact: Megan King	megan.king@floydsnider.com	No. of Coolers: 3	Cooler Temps: See CRF
Client Project Name: POS-LLA			
Client Project #:	Samplers: N. Schachtman + T. Scott		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: Dissolved As	Analysis Requested: Dioxin/Furans	Notes/Comments
MW-C3-031621	3/16/21	10:10	GW	1	X		As Samples to be lab filtered and lab preserved
MW-C3-031621-D	3/16/21	10:15		1	X		
MW-C2-031621	3/16/21	10:35		1	X		
MW-VB3-031621	3/16/21	12:00		3	X	X	
HC00-B312-031621	3/16/21	12:55		3	X	X	
MW-CP7-031621	3/16/21	14:25		3	X	X	
MW-CP6-031621	3/16/21	14:26		3	X	X	
MW-CP4-031621	3/16/21	15:30		3	X	X	
MW-CP5-031621	3/16/21	15:55		3	X	X	
MW-CP2-031721	3/17/21	09:30		3	X	X	

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Tyler Scott	Printed Name: Kenny Dang	Printed Name:	Printed Name:
	Company: FS	Company: ARI	Company:	Company:
	Date & Time: 3/17/21 14:37	Date & Time: 3/17/21 1437	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 21C0250	Turn-around Requested: Standard	Page: 2 of 2	
ARI Client Company: Floyd | Snider	Phone: 206-292-2078	Date: 3/17/21	Ice Present? Yes
Client Contact: Megan King	Megan.king@floydSnider.com	No. of Coolers: 3	Cooler Temps: See CRF
Client Project Name: POS-LLA			
Client Project #:	Samplers: N. Scharchtman + T. Scott		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: Dissolved As	Analysis Requested: Diarsi/Furans	Notes/Comments
MW-CP2-031721-D	3/17/21	09:40	GW	3	X	X	As Samples to be lab filtered and lab preserved
MW-CP3-031721	3/17/21	09:40		3	X	X	
MW-CP1-031721	3/17/21	10:50		3	X	X	
MW-C1/VB1-031721	3/17/21	13:00		3	X	X	
MW-VB2-031721	3/17/21	13:25		3	X	X	

NS 3/17/21 NS 3/17/21 NS 3/17/21 NS 3/17/21

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Tyler Scott	Printed Name: Kenny Dang	Printed Name:	Printed Name:
	Company: F/S	Company: ARI	Company:	Company:
	Date & Time: 3/17/21 14:37	Date & Time: 3/17/21 1437	Date & Time:	Date & Time:

WORK ORDER

21C0250

Client: Floyd - Snider	**Project Manager:** Amanda Volgardsen Johnson
Project: Lora Lake	**Project Number:** Lora Lake

Preservation Confirmation

Container ID	Container Type	pH	
21C0250-01 A	HDPE NM, 500 mL	>2	Fail
21C0250-02 A	HDPE NM, 500 mL	>2	Fail
21C0250-03 A	HDPE NM, 500 mL	>2	Fail
21C0250-04 A	Glass NM, Amber, 1000 mL		
21C0250-04 B	Glass NM, Amber, 1000 mL		
21C0250-04 C	HDPE NM, 500 mL	>2	Fail
21C0250-05 A	Glass NM, Amber, 1000 mL		
21C0250-05 B	Glass NM, Amber, 1000 mL		
21C0250-05 C	HDPE NM, 500 mL	>2	Fail
21C0250-06 A	Glass NM, Amber, 1000 mL		
21C0250-06 B	Glass NM, Amber, 1000 mL		
21C0250-06 C	HDPE NM, 500 mL	>2	Fail
21C0250-07 A	Glass NM, Amber, 1000 mL		
21C0250-07 B	Glass NM, Amber, 1000 mL		
21C0250-07 C	HDPE NM, 500 mL	>2	Fail
21C0250-08 A	Glass NM, Amber, 1000 mL		
21C0250-08 B	Glass NM, Amber, 1000 mL		
21C0250-08 C	HDPE NM, 500 mL	>2	Fail
21C0250-09 A	Glass NM, Amber, 1000 mL		
21C0250-09 B	Glass NM, Amber, 1000 mL		
21C0250-09 C	HDPE NM, 500 mL	>2	Fail
21C0250-10 A	Glass NM, Amber, 1000 mL		
21C0250-10 B	Glass NM, Amber, 1000 mL		
21C0250-10 C	HDPE NM, 500 mL	>2	Fail
21C0250-11 A	Glass NM, Amber, 1000 mL		
21C0250-11 B	Glass NM, Amber, 1000 mL		
21C0250-11 C	HDPE NM, 500 mL	>2	Fail
21C0250-12 A	Glass NM, Amber, 1000 mL		
21C0250-12 B	Glass NM, Amber, 1000 mL		
21C0250-12 C	HDPE NM, 500 mL	>2	Fail
21C0250-13 A	Glass NM, Amber, 1000 mL		
21C0250-13 B	Glass NM, Amber, 1000 mL		
21C0250-13 C	HDPE NM, 500 mL	>2	Fail
21C0250-14 A	Glass NM, Amber, 1000 mL		
21C0250-14 B	Glass NM, Amber, 1000 mL		

Reviewed By

Date

WORK ORDER

21C0250

Client: Floyd - Snider		**Project Manager: Amanda Volgardsen Johnson**	
Project: Lora Lake		**Project Number: Lora Lake**	
21C0250-14 C	HDPE NM, 500 mL	7.2	Fail
21C0250-15 A	Glass NM, Amber, 1000 mL		
21C0250-15 B	Glass NM, Amber, 1000 mL		
21C0250-15 C	HDPE NM, 500 mL	7.2	Fail

IDw
Preservation Confirmed By

03/17/2021
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Floyd-Snider
Project Name: POS-LLA
COC No(s): (NA)
Delivered by: Fed-Ex UPS Courier Hand Delivered Other:
Assigned ARI Job No: 21C0250
Tracking No: (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1437 — 4.4 — 4.0 — 3.8 — ___ — ___ — ___

If cooler temperature is out of compliance fill out form 00070F — Temp Gun ID#: D00 5206

Cooler Accepted by: KO Date: 3/17/21 Time: 1437

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ...	Bubble Wrap (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other: Garbage bag		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
How were bottles sealed in plastic bags?	Individually	Grouped	(Not)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ...	NA	(YES)	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Were the sample(s) split by ARI? (NA) YES Date/Time: ___ Equipment: ___ Split by: ___

Samples Logged by: JS Date: 03/17/2021 Time: 1603 Labels checked by: JS

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:

WORK ORDER

21C0250

Client: Floyd - Snider

Project Manager: Amanda Volgardsen Johnson

Project: Lora Lake

Project Number: Lora Lake

Preservation Confirmation

Container ID	Container Type	pH	
21C0250-01 A	HDPE NM, 500 mL	>2	Fail (1)
21C0250-02 A	HDPE NM, 500 mL	>2	Fail (1)
21C0250-03 A	HDPE NM, 500 mL	>2	Fail (1)
21C0250-04 A	Glass NM, Amber, 1000 mL		
21C0250-04 B	Glass NM, Amber, 1000 mL		
21C0250-04 C	HDPE NM, 500 mL	>2	Fail (1)
21C0250-05 A	Glass NM, Amber, 1000 mL		
21C0250-05 B	Glass NM, Amber, 1000 mL		
21C0250-05 C	HDPE NM, 500 mL	>2	Fail (1)
21C0250-06 A	Glass NM, Amber, 1000 mL		
21C0250-06 B	Glass NM, Amber, 1000 mL		
21C0250-06 C	HDPE NM, 500 mL	>2	Fail (1)
21C0250-07 A	Glass NM, Amber, 1000 mL		
21C0250-07 B	Glass NM, Amber, 1000 mL		
21C0250-07 C	HDPE NM, 500 mL	>2	Fail (1)
21C0250-08 A	Glass NM, Amber, 1000 mL		
21C0250-08 B	Glass NM, Amber, 1000 mL		
21C0250-08 C	HDPE NM, 500 mL	>2	Fail (1)
21C0250-09 A	Glass NM, Amber, 1000 mL		
21C0250-09 B	Glass NM, Amber, 1000 mL		
21C0250-09 C	HDPE NM, 500 mL	>2	Fail (1)
21C0250-10 A	Glass NM, Amber, 1000 mL		
21C0250-10 B	Glass NM, Amber, 1000 mL		
21C0250-10 C	HDPE NM, 500 mL	>2	Fail (1)
21C0250-11 A	Glass NM, Amber, 1000 mL		
21C0250-11 B	Glass NM, Amber, 1000 mL		
21C0250-11 C	HDPE NM, 500 mL	>2	Fail (1)
21C0250-12 A	Glass NM, Amber, 1000 mL		
21C0250-12 B	Glass NM, Amber, 1000 mL		
21C0250-12 C	HDPE NM, 500 mL	>2	Fail (1)
21C0250-13 A	Glass NM, Amber, 1000 mL		
21C0250-13 B	Glass NM, Amber, 1000 mL		
21C0250-13 C	HDPE NM, 500 mL	>2	Fail (1)
21C0250-14 A	Glass NM, Amber, 1000 mL		
21C0250-14 B	Glass NM, Amber, 1000 mL		

Reviewed By

Date

WORK ORDER

21C0250

Client: Floyd - Snider		**Project Manager: Amanda Volgardsen Johnson**	
Project: Lora Lake		**Project Number: Lora Lake**	
21C0250-14 C	HDPE NM, 500 mL	7.2	Fail (1)
21C0250-15 A	Glass NM, Amber, 1000 mL		
21C0250-15 B	Glass NM, Amber, 1000 mL		
21C0250-15 C	HDPE NM, 500 mL	7.2	Fail (1)

JDw
Preservation Confirmed By

03/17/2021
Date

(1) Filtered at 0.45 µm and preserved to pH < 2.0 with 0.75 ml Conc. HNO_3 (J554). mc 3/18/21

Reviewed By

Date

Floyd - Snider	Project: Lora Lake	
601 Union Street Two Union Square, Suite 600	Project Number: Lora Lake	**Reported:**
Seattle, WA 98101-2341	Project Manager: Megan King	04/21/2021 15:48

ANALYTICAL REPORT FOR SAMPLES

Laboratory ID	Sample ID	Matrix	Date Sampled	Date Received
21C0250-01	MW-C3-031621	Water	03/16/21 10:10	03/17/21 14:37
21C0250-02	MW-C3-031621-D	Water	03/16/21 10:15	03/17/21 14:37
21C0250-03	MW-C2-031621	Water	03/16/21 10:35	03/17/21 14:37
21C0250-04	MW-VB3-031621	Water	03/16/21 12:00	03/17/21 14:37
21C0250-05	HCOO-B312-031621	Water	03/16/21 12:55	03/17/21 14:37
21C0250-06	MW-CP7-031621	Water	03/16/21 14:25	03/17/21 14:37
21C0250-07	MW-CP6-031621	Water	03/16/21 14:26	03/17/21 14:37
21C0250-08	MW-CP4-031621	Water	03/16/21 15:30	03/17/21 14:37
21C0250-09	MW-CP5-031621	Water	03/16/21 15:55	03/17/21 14:37
21C0250-10	MW-CP2-031721	Water	03/17/21 09:30	03/17/21 14:37
21C0250-11	MW-CP2-031721-D	Water	03/17/21 09:40	03/17/21 14:37
21C0250-12	MW-CP3-031721	Water	03/17/21 09:40	03/17/21 14:37
21C0250-13	MW-CP1-031721	Water	03/17/21 10:50	03/17/21 14:37
21C0250-14	MW-C1/VB1-031721	Water	03/17/21 13:00	03/17/21 14:37
21C0250-15	MW-VB2-031721	Water	03/17/21 13:25	03/17/21 14:37

Analytical Report

Floyd - Snider	Project: Lora Lake	
601 Union Street Two Union Square, Suite 600	Project Number: Lora Lake	**Reported:**
Seattle WA, 98101-2341	Project Manager: Megan King	21-Apr-2021 15:48

Case Narrative

Client: Floyd - Snider
Project: Lora Lake
Work Order: 21C0250

Sample receipt

Samples as listed on the preceding page were received 17-Mar-2021 14:37 under ARI work order 21C0250. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Dioxin/Furans - EPA Method 1613

The sample(s) were extracted and analyzed within the recommended holding times. Analysis was performed using an application specific column developed by Restek. The RTX-DIoxin2 column has unique isomer separation for the 2378-TCDF, eliminating the need for confirmation analysis.

Initial and continuing calibrations were within method requirements.

Labeled internal standard areas were within limits.

The cleanup surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits except 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,6,7,8-HpCDD, 1,2,3,4,7,8,9-HpCDF, OCDD and OCDF. All samples which contain analyte have been flagged with a "B" qualifier.

The OPR (Ongoing Precision and Recovery) standard percent recoveries were within control limits.

Dissolved Arsenic - EPA Method 200.8

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

Sample specific QC was performed in association with sample 21C0250-15 in batch BJC0762. The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.

Analytical Report

Floyd - Snider	Project: Lora Lake	
601 Union Street Two Union Square, Suite 600	Project Number: Lora Lake	**Reported:**
Seattle WA, 98101-2341	Project Manager: Megan King	21-Apr-2021 15:48

Case Narrative

QUALIFIERS AND NOTES

Qualifier	Definition
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
J	Estimated concentration value detected below the reporting limit.
EMPC	Estimated Maximum Possible Concentration qualifier for HRGCMS Dioxin
D	The reported value is from a dilution
B	This analyte was detected in the method blank.
*	Flagged value is not within established control limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

MW-VB3-031621

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider				
Project:	Lora Lake				
Matrix:	Ground Water	Laboratory ID:	21C0250-04 A	File ID:	21040610
Sampled:	03/16/21 12:00	Prepared:	03/25/21 08:20	Analyzed:	04/06/21 19:00
% Solids:	N/A	Preparation:	EPA 1613	Initial/Final:	1053 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1		0.655-0.886	0.66	9.50	ND	pg/L	U
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	0.55	9.50	ND	pg/L	U
57117-41-6	1,2,3,7,8-PeCDF	1		1.318-1.783	0.68	9.50	ND	pg/L	U
57117-31-4	2,3,4,7,8-PeCDF	1		1.318-1.783	0.62	9.50	ND	pg/L	U
40321-76-4	1,2,3,7,8-PeCDD	1	1.169	1.318-1.783	0.60	9.50	0.51	pg/L	EMPC, J
70648-26-9	1,2,3,4,7,8-HxCDF	1		1.054-1.426	0.46	9.50	ND	pg/L	U
57117-44-9	1,2,3,6,7,8-HxCDF	1		1.054-1.426	0.45	9.50	ND	pg/L	U
60851-34-5	2,3,4,6,7,8-HxCDF	1		1.054-1.426	0.45	9.50	ND	pg/L	U
72918-21-9	1,2,3,7,8,9-HxCDF	1		1.054-1.426	0.57	9.50	ND	pg/L	U
39227-28-6	1,2,3,4,7,8-HxCDD	1		1.054-1.426	0.59	9.50	ND	pg/L	U
57653-85-7	1,2,3,6,7,8-HxCDD	1		1.054-1.426	0.58	9.50	ND	pg/L	U
19408-74-3	1,2,3,7,8,9-HxCDD	1		1.054-1.426	0.60	9.50	ND	pg/L	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	1.252	0.893-1.208	0.47	19.0	1.24	pg/L	EMPC, J, B
55673-89-7	1,2,3,4,7,8,9-HpCDF	1	0.280	0.893-1.208	0.64	9.50	0.68	pg/L	EMPC, J
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.585	0.893-1.208	0.81	9.50	1.25	pg/L	EMPC, J, B
39001-02-0	OCDF	1	0.858	0.757-1.024	0.94	19.0	23.3	pg/L	B
3268-87-9	OCDD	1	0.866	0.757-1.024	1.07	47.5	9.72	pg/L	J, B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			9.50	ND	pg/L	
41903-57-5	Total TCDD	1	0.000			9.50	ND	pg/L	
30402-15-4	Total PeCDF	1	0.000			9.50	ND	pg/L	
36088-22-9	Total PeCDD	1	0.000			9.50	ND	pg/L	
55684-94-1	Total HxCDF	1	0.000			9.50	ND	pg/L	
34465-46-8	Total HxCDD	1	0.000			9.50	0.75	pg/L	
38998-75-3	Total HpCDF	1	0.000			9.50	ND	pg/L	
37871-00-4	Total HpCDD	1	0.000			9.50	ND	pg/L	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.552

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.15

MW-VB3-031621

Form 2

ORGANIC ANALYSIS DATA SHEET

EPA 1613B

Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider			Project:	Lora Lake
Matrix:	Ground Water	Laboratory ID:	21C0250-04	File ID:	21040610
Sampled:	03/16/21 12:00	Prepared:	03/25/21 08:20	Analyzed:	04/06/21 19:00
Solids Wt%:	N/A	Preparation:	EPA 1613	Initial/Final:	1053 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.783	0.655-0.886	1.30	110	24 - 169 %	
13C12-2,3,7,8-TCDD		0.823	0.655-0.886	1.17	104	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.529	1.318-1.783	1.92	109	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.507	1.318-1.783	2.00	109	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.618	1.318-1.783	1.18	99.5	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.506	0.434-0.587	2.28	96.4	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.508	0.434-0.587	2.12	99.1	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.501	0.434-0.587	2.39	98.3	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.505	0.434-0.587	2.64	97.3	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.260	1.054-1.426	2.12	98.6	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.257	1.054-1.426	1.91	98.3	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.451	0.374-0.506	3.17	100	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.449	0.374-0.506	3.84	97.2	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.016	0.893-1.208	2.82	96.2	23 - 140 %	
13C12-OCDD		0.934	0.757-1.024	2.47	84.0	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.88	112	35 - 197 %	

* Values outside of QC limits

HCOO-B312-031621

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider				
Project:	Lora Lake				
Matrix:	Ground Water	Laboratory ID:	21C0250-05 A	File ID:	21040810
Sampled:	03/16/21 12:55	Prepared:	03/25/21 08:20	Analyzed:	04/08/21 17:47
% Solids:	N/A	Preparation:	EPA 1613	Initial/Final:	1060 mL / 20 uL
Result Basis:	Wet	Sequence:	SJD0113	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1		0.655-0.886	4.22	9.43	ND	pg/L	U
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	2.89	9.43	ND	pg/L	U
57117-41-6	1,2,3,7,8-PeCDF	1		1.318-1.783	4.27	9.43	ND	pg/L	U
57117-31-4	2,3,4,7,8-PeCDF	1		1.318-1.783	4.39	9.43	ND	pg/L	U
40321-76-4	1,2,3,7,8-PeCDD	1		1.318-1.783	3.16	9.43	ND	pg/L	U
70648-26-9	1,2,3,4,7,8-HxCDF	1		1.054-1.426	2.67	9.43	ND	pg/L	U
57117-44-9	1,2,3,6,7,8-HxCDF	1		1.054-1.426	2.67	9.43	ND	pg/L	U
60851-34-5	2,3,4,6,7,8-HxCDF	1		1.054-1.426	5.20	9.43	ND	pg/L	U
72918-21-9	1,2,3,7,8,9-HxCDF	1		1.054-1.426	6.79	9.43	ND	pg/L	U
39227-28-6	1,2,3,4,7,8-HxCDD	1		1.054-1.426	3.33	9.43	ND	pg/L	U
57653-85-7	1,2,3,6,7,8-HxCDD	1		1.054-1.426	3.21	9.43	ND	pg/L	U
19408-74-3	1,2,3,7,8,9-HxCDD	1		1.054-1.426	3.36	9.43	ND	pg/L	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	1.157	0.893-1.208	3.15	18.9	4.44	pg/L	J, B
55673-89-7	1,2,3,4,7,8,9-HpCDF	1		0.893-1.208	6.37	9.43	ND	pg/L	U
35822-46-9	1,2,3,4,6,7,8-HpCDD	1		0.893-1.208	6.85	9.43	ND	pg/L	U
39001-02-0	OCDF	1	1.105	0.757-1.024	18.0	18.9	117	pg/L	EMPC, B
3268-87-9	OCDD	1		0.757-1.024	16.4	47.2	ND	pg/L	U

Homologue Groups

55722-27-5	Total TCDF	1	0.000			9.43	1.16	pg/L
41903-57-5	Total TCDD	1	0.000			9.43	1.07	pg/L
30402-15-4	Total PeCDF	1	0.000			9.43	ND	pg/L
36088-22-9	Total PeCDD	1	0.000			9.43	ND	pg/L
55684-94-1	Total HxCDF	1	0.000			9.43	ND	pg/L
34465-46-8	Total HxCDD	1	0.000			9.43	ND	pg/L
38998-75-3	Total HpCDF	1	0.000			9.43	7.29	pg/L
37871-00-4	Total HpCDD	1	0.000			9.43	ND	pg/L

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.080

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 5.47

HCOO-B312-031621

Form 2

ORGANIC ANALYSIS DATA SHEET

EPA 1613B

Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider			Project:	Lora Lake
Matrix:	Ground Water	Laboratory ID:	21C0250-05	File ID:	21040810
Sampled:	03/16/21 12:55	Prepared:	03/25/21 08:20	Analyzed:	04/08/21 17:47
Solids Wt%:	N/A	Preparation:	EPA 1613	Initial/Final:	1060 mL / 20 uL
Result Basis:	Wet	Sequence:	SJD0113	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.800	0.655-0.886	3.82	55.8	24 - 169 %	
13C12-2,3,7,8-TCDD		0.813	0.655-0.886	2.78	56.3	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.507	1.318-1.783	2.72	53.2	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.516	1.318-1.783	2.83	43.5	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.597	1.318-1.783	2.73	47.0	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.494	0.434-0.587	5.92	94.8	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.552	0.434-0.587	5.49	102	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.489	0.434-0.587	6.21	46.9	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.490	0.434-0.587	6.86	44.5	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.245	1.054-1.426	6.10	91.7	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.183	1.054-1.426	5.50	96.1	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.408	0.374-0.506	7.73	75.8	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.440	0.374-0.506	9.34	49.4	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.054	0.893-1.208	6.67	49.6	23 - 140 %	
13C12-OCDD		0.818	0.757-1.024	7.90	25.3	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		2.76	61.2	35 - 197 %	

* Values outside of QC limits

MW-CP7-031621

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider				
Project:	Lora Lake				
Matrix:	Ground Water	Laboratory ID:	21C0250-06 A	File ID:	21040612
Sampled:	03/16/21 14:25	Prepared:	03/25/21 08:20	Analyzed:	04/06/21 20:38
% Solids:	N/A	Preparation:	EPA 1613	Initial/Final:	1053 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1		0.655-0.886	1.20	9.50	ND	pg/L	U
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	1.15	9.50	ND	pg/L	U
57117-41-6	1,2,3,7,8-PeCDF	1		1.318-1.783	1.04	9.50	ND	pg/L	U
57117-31-4	2,3,4,7,8-PeCDF	1		1.318-1.783	0.95	9.50	ND	pg/L	U
40321-76-4	1,2,3,7,8-PeCDD	1		1.318-1.783	1.08	9.50	ND	pg/L	U
70648-26-9	1,2,3,4,7,8-HxCDF	1		1.054-1.426	1.25	9.50	ND	pg/L	U
57117-44-9	1,2,3,6,7,8-HxCDF	1		1.054-1.426	1.25	9.50	ND	pg/L	U
60851-34-5	2,3,4,6,7,8-HxCDF	1		1.054-1.426	1.25	9.50	ND	pg/L	U
72918-21-9	1,2,3,7,8,9-HxCDF	1		1.054-1.426	1.55	9.50	ND	pg/L	U
39227-28-6	1,2,3,4,7,8-HxCDD	1		1.054-1.426	1.36	9.50	ND	pg/L	U
57653-85-7	1,2,3,6,7,8-HxCDD	1		1.054-1.426	1.29	9.50	ND	pg/L	U
19408-74-3	1,2,3,7,8,9-HxCDD	1		1.054-1.426	1.36	9.50	ND	pg/L	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1		0.893-1.208	1.43	19.0	ND	pg/L	U
55673-89-7	1,2,3,4,7,8,9-HpCDF	1		0.893-1.208	1.96	9.50	ND	pg/L	U
35822-46-9	1,2,3,4,6,7,8-HpCDD	1		0.893-1.208	1.85	9.50	ND	pg/L	U
39001-02-0	OCDF	1	0.908	0.757-1.024	2.40	19.0	25.4	pg/L	B
3268-87-9	OCDD	1	0.805	0.757-1.024	2.97	47.5	10.5	pg/L	J, B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			9.50	ND	pg/L	
41903-57-5	Total TCDD	1	0.000			9.50	ND	pg/L	
30402-15-4	Total PeCDF	1	0.000			9.50	ND	pg/L	
36088-22-9	Total PeCDD	1	0.000			9.50	ND	pg/L	
55684-94-1	Total HxCDF	1	0.000			9.50	ND	pg/L	
34465-46-8	Total HxCDD	1	0.000			9.50	1.31	pg/L	
38998-75-3	Total HpCDF	1	0.000			9.50	ND	pg/L	
37871-00-4	Total HpCDD	1	0.000			9.50	ND	pg/L	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.011
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.84

MW-CP7-031621

Form 2

ORGANIC ANALYSIS DATA SHEET

EPA 1613B

Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider			Project:	Lora Lake
Matrix:	Ground Water	Laboratory ID:	21C0250-06	File ID:	21040612
Sampled:	03/16/21 14:25	Prepared:	03/25/21 08:20	Analyzed:	04/06/21 20:38
Solids Wt%:	N/A	Preparation:	EPA 1613	Initial/Final:	1053 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.787	0.655-0.886	1.82	95.4	24 - 169 %	
13C12-2,3,7,8-TCDD		0.849	0.655-0.886	1.50	86.1	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.474	1.318-1.783	2.05	93.2	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.528	1.318-1.783	2.13	89.6	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.643	1.318-1.783	1.54	84.8	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.509	0.434-0.587	2.66	87.3	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.523	0.434-0.587	2.47	88.4	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.513	0.434-0.587	2.79	85.4	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.529	0.434-0.587	3.09	88.0	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.328	1.054-1.426	3.16	87.6	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.238	1.054-1.426	2.84	85.9	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.436	0.374-0.506	3.05	90.0	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.449	0.374-0.506	3.69	95.0	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.062	0.893-1.208	3.28	84.9	23 - 140 %	
13C12-OCDD		0.911	0.757-1.024	3.83	79.4	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		1.17	95.0	35 - 197 %	

* Values outside of QC limits

MW-CP4-031621

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider				
Project:	Lora Lake				
Matrix:	Ground Water	Laboratory ID:	21C0250-08 A	File ID:	21040614
Sampled:	03/16/21 15:30	Prepared:	03/25/21 08:20	Analyzed:	04/06/21 22:16
% Solids:	N/A	Preparation:	EPA 1613	Initial/Final:	1060 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1		0.655-0.886	0.55	9.43	ND	pg/L	U
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	0.63	9.43	ND	pg/L	U
57117-41-6	1,2,3,7,8-PeCDF	1		1.318-1.783	0.85	9.43	ND	pg/L	U
57117-31-4	2,3,4,7,8-PeCDF	1		1.318-1.783	0.77	9.43	ND	pg/L	U
40321-76-4	1,2,3,7,8-PeCDD	1		1.318-1.783	0.95	9.43	ND	pg/L	U
70648-26-9	1,2,3,4,7,8-HxCDF	1	0.508	1.054-1.426	0.67	9.43	0.66	pg/L	EMPC, J
57117-44-9	1,2,3,6,7,8-HxCDF	1		1.054-1.426	0.63	9.43	ND	pg/L	U
60851-34-5	2,3,4,6,7,8-HxCDF	1		1.054-1.426	0.66	9.43	ND	pg/L	U
72918-21-9	1,2,3,7,8,9-HxCDF	1		1.054-1.426	0.81	9.43	ND	pg/L	U
39227-28-6	1,2,3,4,7,8-HxCDD	1		1.054-1.426	0.96	9.43	ND	pg/L	U
57653-85-7	1,2,3,6,7,8-HxCDD	1		1.054-1.426	0.93	9.43	ND	pg/L	U
19408-74-3	1,2,3,7,8,9-HxCDD	1		1.054-1.426	0.97	9.43	ND	pg/L	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1		0.893-1.208	1.07	18.9	ND	pg/L	U
55673-89-7	1,2,3,4,7,8,9-HpCDF	1		0.893-1.208	1.49	9.43	ND	pg/L	U
35822-46-9	1,2,3,4,6,7,8-HpCDD	1		0.893-1.208	1.74	9.43	ND	pg/L	U
39001-02-0	OCDF	1	0.856	0.757-1.024	2.83	18.9	18.2	pg/L	J, B
3268-87-9	OCDD	1	1.023	0.757-1.024	3.03	47.2	5.92	pg/L	J, B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			9.43	ND	pg/L	
41903-57-5	Total TCDD	1	0.000			9.43	ND	pg/L	
30402-15-4	Total PeCDF	1	0.000			9.43	ND	pg/L	
36088-22-9	Total PeCDD	1	0.000			9.43	0.85	pg/L	
55684-94-1	Total HxCDF	1	0.000			9.43	0.46	pg/L	
34465-46-8	Total HxCDD	1	0.000			9.43	ND	pg/L	
38998-75-3	Total HpCDF	1	0.000			9.43	ND	pg/L	
37871-00-4	Total HpCDD	1	0.000			9.43	ND	pg/L	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.073
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.29

MW-CP4-031621

Form 2

ORGANIC ANALYSIS DATA SHEET

EPA 1613B

Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider			Project:	Lora Lake
Matrix:	Ground Water	Laboratory ID:	21C0250-08	File ID:	21040614
Sampled:	03/16/21 15:30	Prepared:	03/25/21 08:20	Analyzed:	04/06/21 22:16
Solids Wt%:	N/A	Preparation:	EPA 1613	Initial/Final:	1060 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.782	0.655-0.886	1.24	98.9	24 - 169 %	
13C12-2,3,7,8-TCDD		0.831	0.655-0.886	1.13	90.0	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.493	1.318-1.783	1.81	98.6	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.505	1.318-1.783	1.89	97.6	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.602	1.318-1.783	1.33	88.6	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.506	0.434-0.587	2.26	88.8	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.465	0.434-0.587	2.09	95.9	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.515	0.434-0.587	2.37	89.8	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.532	0.434-0.587	2.61	91.6	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.276	1.054-1.426	1.96	90.0	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.242	1.054-1.426	1.77	88.1	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.410	0.374-0.506	3.28	96.2	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.438	0.374-0.506	3.96	95.2	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.021	0.893-1.208	2.19	91.6	23 - 140 %	
13C12-OCDD		0.966	0.757-1.024	2.64	78.5	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.82	95.9	35 - 197 %	

* Values outside of QC limits

MW-CP5-031621

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider				
Project:	Lora Lake				
Matrix:	Ground Water	Laboratory ID:	21C0250-09 A	File ID:	21040636
Sampled:	03/16/21 15:55	Prepared:	03/29/21 12:30	Analyzed:	04/07/21 16:26
% Solids:	N/A	Preparation:	EPA 1613	Initial/Final:	1012 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0519	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1		0.655-0.886	0.68	9.88	ND	pg/L	U
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	0.69	9.88	ND	pg/L	U
57117-41-6	1,2,3,7,8-PeCDF	1	1.216	1.318-1.783	0.82	9.88	1.07	pg/L	EMPC, J
57117-31-4	2,3,4,7,8-PeCDF	1		1.318-1.783	0.78	9.88	ND	pg/L	U
40321-76-4	1,2,3,7,8-PeCDD	1		1.318-1.783	0.93	9.88	ND	pg/L	U
70648-26-9	1,2,3,4,7,8-HxCDF	1		1.054-1.426	0.64	9.88	ND	pg/L	U
57117-44-9	1,2,3,6,7,8-HxCDF	1		1.054-1.426	0.67	9.88	ND	pg/L	U
60851-34-5	2,3,4,6,7,8-HxCDF	1		1.054-1.426	0.63	9.88	ND	pg/L	U
72918-21-9	1,2,3,7,8,9-HxCDF	1		1.054-1.426	0.75	9.88	ND	pg/L	U
39227-28-6	1,2,3,4,7,8-HxCDD	1		1.054-1.426	0.72	9.88	ND	pg/L	U
57653-85-7	1,2,3,6,7,8-HxCDD	1		1.054-1.426	0.72	9.88	ND	pg/L	U
19408-74-3	1,2,3,7,8,9-HxCDD	1		1.054-1.426	0.74	9.88	ND	pg/L	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	1.606	0.893-1.208	0.54	19.8	1.26	pg/L	EMPC, J, B
55673-89-7	1,2,3,4,7,8,9-HpCDF	1		0.893-1.208	0.71	9.88	ND	pg/L	U
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.295	0.893-1.208	0.78	9.88	2.12	pg/L	EMPC, J, B
39001-02-0	OCDF	1	0.885	0.757-1.024	1.31	19.8	24.8	pg/L	B
3268-87-9	OCDD	1	1.070	0.757-1.024	1.23	49.4	10.6	pg/L	EMPC, J, B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			9.88	ND	pg/L	
41903-57-5	Total TCDD	1	0.000			9.88	ND	pg/L	
30402-15-4	Total PeCDF	1	0.000			9.88	ND	pg/L	
36088-22-9	Total PeCDD	1	0.000			9.88	ND	pg/L	
55684-94-1	Total HxCDF	1	0.000			9.88	ND	pg/L	
34465-46-8	Total HxCDD	1	0.000			9.88	ND	pg/L	
38998-75-3	Total HpCDF	1	0.000			9.88	ND	pg/L	
37871-00-4	Total HpCDD	1	0.000			9.88	1.92	pg/L	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.077

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.28

MW-CP5-031621

Form 2

ORGANIC ANALYSIS DATA SHEET

EPA 1613B

Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider			Project:	Lora Lake
Matrix:	Ground Water	Laboratory ID:	21C0250-09	File ID:	21040636
Sampled:	03/16/21 15:55	Prepared:	03/29/21 12:30	Analyzed:	04/07/21 16:26
Solids Wt%:	N/A	Preparation:	EPA 1613	Initial/Final:	1012 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0519	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.778	0.655-0.886	1.51	94.2	24 - 169 %	
13C12-2,3,7,8-TCDD		0.830	0.655-0.886	1.24	89.4	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.508	1.318-1.783	1.12	94.3	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.511	1.318-1.783	1.16	90.0	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.583	1.318-1.783	1.04	86.7	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.503	0.434-0.587	1.42	81.9	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.512	0.434-0.587	1.32	80.1	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.507	0.434-0.587	1.49	81.4	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.501	0.434-0.587	1.64	82.3	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.266	1.054-1.426	1.86	84.8	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.324	1.054-1.426	1.68	83.8	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.438	0.374-0.506	1.85	83.4	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.437	0.374-0.506	2.24	83.8	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.062	0.893-1.208	1.88	80.8	23 - 140 %	
13C12-OCDD		0.911	0.757-1.024	2.26	71.0	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.55	96.4	35 - 197 %	

* Values outside of QC limits

MW-CP2-031721

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider				
Project:	Lora Lake				
Matrix:	Ground Water	Laboratory ID:	21C0250-10 A	File ID:	21040617
Sampled:	03/17/21 09:30	Prepared:	03/25/21 08:20	Analyzed:	04/07/21 00:49
% Solids:	N/A	Preparation:	EPA 1613	Initial/Final:	1055 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1		0.655-0.886	0.62	9.48	ND	pg/L	U
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	0.63	9.48	ND	pg/L	U
57117-41-6	1,2,3,7,8-PeCDF	1		1.318-1.783	0.82	9.48	ND	pg/L	U
57117-31-4	2,3,4,7,8-PeCDF	1		1.318-1.783	0.75	9.48	ND	pg/L	U
40321-76-4	1,2,3,7,8-PeCDD	1		1.318-1.783	0.76	9.48	ND	pg/L	U
70648-26-9	1,2,3,4,7,8-HxCDF	1		1.054-1.426	0.66	9.48	ND	pg/L	U
57117-44-9	1,2,3,6,7,8-HxCDF	1		1.054-1.426	0.67	9.48	ND	pg/L	U
60851-34-5	2,3,4,6,7,8-HxCDF	1		1.054-1.426	0.64	9.48	ND	pg/L	U
72918-21-9	1,2,3,7,8,9-HxCDF	1		1.054-1.426	0.77	9.48	ND	pg/L	U
39227-28-6	1,2,3,4,7,8-HxCDD	1		1.054-1.426	0.70	9.48	ND	pg/L	U
57653-85-7	1,2,3,6,7,8-HxCDD	1		1.054-1.426	0.65	9.48	ND	pg/L	U
19408-74-3	1,2,3,7,8,9-HxCDD	1		1.054-1.426	0.69	9.48	ND	pg/L	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1		0.893-1.208	0.55	19.0	ND	pg/L	U
55673-89-7	1,2,3,4,7,8,9-HpCDF	1		0.893-1.208	0.72	9.48	ND	pg/L	U
35822-46-9	1,2,3,4,6,7,8-HpCDD	1		0.893-1.208	0.82	9.48	ND	pg/L	U
39001-02-0	OCDF	1	1.137	0.757-1.024	1.18	19.0	12.0	pg/L	EMPC, J, B
3268-87-9	OCDD	1	0.927	0.757-1.024	1.32	47.4	6.64	pg/L	J, B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			9.48	ND	pg/L	
41903-57-5	Total TCDD	1	0.000			9.48	ND	pg/L	
30402-15-4	Total PeCDF	1	0.000			9.48	ND	pg/L	
36088-22-9	Total PeCDD	1	0.000			9.48	ND	pg/L	
55684-94-1	Total HxCDF	1	0.000			9.48	ND	pg/L	
34465-46-8	Total HxCDD	1	0.000			9.48	ND	pg/L	
38998-75-3	Total HpCDF	1	0.000			9.48	ND	pg/L	
37871-00-4	Total HpCDD	1	0.000			9.48	ND	pg/L	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.006
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.11

MW-CP2-031721

Form 2

ORGANIC ANALYSIS DATA SHEET

EPA 1613B

Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider			Project:	Lora Lake
Matrix:	Ground Water	Laboratory ID:	21C0250-10	File ID:	21040617
Sampled:	03/17/21 09:30	Prepared:	03/25/21 08:20	Analyzed:	04/07/21 00:49
Solids Wt%:	N/A	Preparation:	EPA 1613	Initial/Final:	1055 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.776	0.655-0.886	1.45	96.1	24 - 169 %	
13C12-2,3,7,8-TCDD		0.824	0.655-0.886	1.16	86.7	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.518	1.318-1.783	1.92	94.4	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.513	1.318-1.783	1.99	91.1	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.575	1.318-1.783	1.42	82.6	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.505	0.434-0.587	4.81	89.4	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.558	0.434-0.587	4.46	94.8	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.506	0.434-0.587	5.04	91.4	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.503	0.434-0.587	5.57	97.4	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.270	1.054-1.426	2.25	90.7	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.189	1.054-1.426	2.03	92.9	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.445	0.374-0.506	3.41	96.0	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.436	0.374-0.506	4.13	93.8	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.067	0.893-1.208	3.07	89.3	23 - 140 %	
13C12-OCDD		0.941	0.757-1.024	4.63	75.2	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.87	90.7	35 - 197 %	

* Values outside of QC limits

MW-CP2-031721-D

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider				
Project:	Lora Lake				
Matrix:	Ground Water	Laboratory ID:	21C0250-11 A	File ID:	21040618
Sampled:	03/17/21 09:40	Prepared:	03/25/21 08:20	Analyzed:	04/07/21 01:38
% Solids:	N/A	Preparation:	EPA 1613	Initial/Final:	1053 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1		0.655-0.886	0.53	9.50	ND	pg/L	U
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	0.45	9.50	ND	pg/L	U
57117-41-6	1,2,3,7,8-PeCDF	1	0.543	1.318-1.783	0.77	9.50	0.94	pg/L	EMPC, J
57117-31-4	2,3,4,7,8-PeCDF	1	1.839	1.318-1.783	0.70	9.50	0.69	pg/L	EMPC, J
40321-76-4	1,2,3,7,8-PeCDD	1	0.964	1.318-1.783	0.66	9.50	0.50	pg/L	EMPC, J
70648-26-9	1,2,3,4,7,8-HxCDF	1		1.054-1.426	0.62	9.50	ND	pg/L	U
57117-44-9	1,2,3,6,7,8-HxCDF	1		1.054-1.426	0.63	9.50	ND	pg/L	U
60851-34-5	2,3,4,6,7,8-HxCDF	1		1.054-1.426	0.61	9.50	ND	pg/L	U
72918-21-9	1,2,3,7,8,9-HxCDF	1		1.054-1.426	0.71	9.50	ND	pg/L	U
39227-28-6	1,2,3,4,7,8-HxCDD	1	2.055	1.054-1.426	0.71	9.50	0.66	pg/L	EMPC, J
57653-85-7	1,2,3,6,7,8-HxCDD	1		1.054-1.426	0.67	9.50	ND	pg/L	U
19408-74-3	1,2,3,7,8,9-HxCDD	1		1.054-1.426	0.71	9.50	ND	pg/L	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	0.830	0.893-1.208	0.58	19.0	0.94	pg/L	EMPC, J, B
55673-89-7	1,2,3,4,7,8,9-HpCDF	1		0.893-1.208	0.69	9.50	ND	pg/L	U
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.388	0.893-1.208	0.62	9.50	0.62	pg/L	EMPC, J, B
39001-02-0	OCDF	1	0.887	0.757-1.024	1.55	19.0	6.36	pg/L	J, B
3268-87-9	OCDD	1	0.821	0.757-1.024	1.62	47.5	3.10	pg/L	J, B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			9.50	ND	pg/L
41903-57-5	Total TCDD	1	0.000			9.50	ND	pg/L
30402-15-4	Total PeCDF	1	0.000			9.50	ND	pg/L
36088-22-9	Total PeCDD	1	0.000			9.50	ND	pg/L
55684-94-1	Total HxCDF	1	0.000			9.50	ND	pg/L
34465-46-8	Total HxCDD	1	0.000			9.50	ND	pg/L
38998-75-3	Total HpCDF	1	0.000			9.50	ND	pg/L
37871-00-4	Total HpCDD	1	0.000			9.50	ND	pg/L

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.820
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.27

MW-CP2-031721-D

Form 2

ORGANIC ANALYSIS DATA SHEET

EPA 1613B

Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider			Project:	Lora Lake
Matrix:	Ground Water	Laboratory ID:	21C0250-11	File ID:	21040618
Sampled:	03/17/21 09:40	Prepared:	03/25/21 08:20	Analyzed:	04/07/21 01:38
Solids Wt%:	N/A	Preparation:	EPA 1613	Initial/Final:	1053 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.782	0.655-0.886	1.30	102	24 - 169 %	
13C12-2,3,7,8-TCDD		0.814	0.655-0.886	1.28	94.0	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.513	1.318-1.783	2.52	102	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.535	1.318-1.783	2.62	99.0	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.588	1.318-1.783	1.18	89.3	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.508	0.434-0.587	2.82	87.1	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.554	0.434-0.587	2.62	89.9	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.504	0.434-0.587	2.96	88.1	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.508	0.434-0.587	3.27	88.1	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.265	1.054-1.426	2.61	91.0	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.243	1.054-1.426	2.35	89.4	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.460	0.374-0.506	2.86	92.2	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.403	0.374-0.506	3.46	100	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.026	0.893-1.208	2.60	88.5	23 - 140 %	
13C12-OCDD		0.916	0.757-1.024	2.16	71.9	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.66	99.1	35 - 197 %	

* Values outside of QC limits

MW-CP3-031721

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider				
Project:	Lora Lake				
Matrix:	Ground Water	Laboratory ID:	21C0250-12 A	File ID:	21040619
Sampled:	03/17/21 09:40	Prepared:	03/25/21 08:20	Analyzed:	04/07/21 02:27
% Solids:	N/A	Preparation:	EPA 1613	Initial/Final:	1060 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1		0.655-0.886	0.71	9.43	ND	pg/L	U
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	0.80	9.43	ND	pg/L	U
57117-41-6	1,2,3,7,8-PeCDF	1		1.318-1.783	0.90	9.43	ND	pg/L	U
57117-31-4	2,3,4,7,8-PeCDF	1		1.318-1.783	0.86	9.43	ND	pg/L	U
40321-76-4	1,2,3,7,8-PeCDD	1		1.318-1.783	0.73	9.43	ND	pg/L	U
70648-26-9	1,2,3,4,7,8-HxCDF	1		1.054-1.426	0.59	9.43	ND	pg/L	U
57117-44-9	1,2,3,6,7,8-HxCDF	1		1.054-1.426	0.59	9.43	ND	pg/L	U
60851-34-5	2,3,4,6,7,8-HxCDF	1		1.054-1.426	0.59	9.43	ND	pg/L	U
72918-21-9	1,2,3,7,8,9-HxCDF	1		1.054-1.426	0.70	9.43	ND	pg/L	U
39227-28-6	1,2,3,4,7,8-HxCDD	1		1.054-1.426	0.65	9.43	ND	pg/L	U
57653-85-7	1,2,3,6,7,8-HxCDD	1		1.054-1.426	0.62	9.43	ND	pg/L	U
19408-74-3	1,2,3,7,8,9-HxCDD	1		1.054-1.426	0.65	9.43	ND	pg/L	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	0.755	0.893-1.208	0.50	18.9	1.13	pg/L	EMPC, J, B
55673-89-7	1,2,3,4,7,8,9-HpCDF	1		0.893-1.208	0.69	9.43	ND	pg/L	U
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.077	0.893-1.208	0.82	9.43	0.70	pg/L	J, B
39001-02-0	OCDF	1	1.210	0.757-1.024	1.80	18.9	24.3	pg/L	EMPC, B
3268-87-9	OCDD	1	0.807	0.757-1.024	1.08	47.2	9.26	pg/L	J, B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			9.43	ND	pg/L	
41903-57-5	Total TCDD	1	0.000			9.43	ND	pg/L	
30402-15-4	Total PeCDF	1	0.000			9.43	ND	pg/L	
36088-22-9	Total PeCDD	1	0.000			9.43	ND	pg/L	
55684-94-1	Total HxCDF	1	0.000			9.43	ND	pg/L	
34465-46-8	Total HxCDD	1	0.000			9.43	ND	pg/L	
38998-75-3	Total HpCDF	1	0.000			9.43	ND	pg/L	
37871-00-4	Total HpCDD	1	0.000			9.43	0.70	pg/L	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.028
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.19

MW-CP3-031721

Form 2

ORGANIC ANALYSIS DATA SHEET

EPA 1613B

Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider			Project:	Lora Lake
Matrix:	Ground Water	Laboratory ID:	21C0250-12	File ID:	21040619
Sampled:	03/17/21 09:40	Prepared:	03/25/21 08:20	Analyzed:	04/07/21 02:27
Solids Wt%:	N/A	Preparation:	EPA 1613	Initial/Final:	1060 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.791	0.655-0.886	1.50	107	24 - 169 %	
13C12-2,3,7,8-TCDD		0.812	0.655-0.886	1.43	95.7	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.513	1.318-1.783	2.62	103	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.508	1.318-1.783	2.72	97.9	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.613	1.318-1.783	1.38	89.7	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.502	0.434-0.587	2.76	89.0	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.546	0.434-0.587	2.57	94.3	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.547	0.434-0.587	2.90	93.6	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.508	0.434-0.587	3.20	90.3	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.247	1.054-1.426	2.91	93.0	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.265	1.054-1.426	2.62	95.0	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.421	0.374-0.506	3.92	95.8	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.432	0.374-0.506	4.73	97.1	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.003	0.893-1.208	3.82	90.8	23 - 140 %	
13C12-OCDD		0.902	0.757-1.024	6.43	79.0	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.94	99.4	35 - 197 %	

* Values outside of QC limits

MW-CP1-031721

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider				
Project:	Lora Lake				
Matrix:	Ground Water	Laboratory ID:	21C0250-13 A	File ID:	21040620
Sampled:	03/17/21 10:50	Prepared:	03/25/21 08:20	Analyzed:	04/07/21 03:16
% Solids:	N/A	Preparation:	EPA 1613	Initial/Final:	1060 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1		0.655-0.886	0.64	9.43	ND	pg/L	U
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	0.58	9.43	ND	pg/L	U
57117-41-6	1,2,3,7,8-PeCDF	1		1.318-1.783	0.70	9.43	ND	pg/L	U
57117-31-4	2,3,4,7,8-PeCDF	1		1.318-1.783	0.63	9.43	ND	pg/L	U
40321-76-4	1,2,3,7,8-PeCDD	1		1.318-1.783	0.72	9.43	ND	pg/L	U
70648-26-9	1,2,3,4,7,8-HxCDF	1		1.054-1.426	0.64	9.43	ND	pg/L	U
57117-44-9	1,2,3,6,7,8-HxCDF	1		1.054-1.426	0.66	9.43	ND	pg/L	U
60851-34-5	2,3,4,6,7,8-HxCDF	1		1.054-1.426	0.62	9.43	ND	pg/L	U
72918-21-9	1,2,3,7,8,9-HxCDF	1		1.054-1.426	0.74	9.43	ND	pg/L	U
39227-28-6	1,2,3,4,7,8-HxCDD	1		1.054-1.426	0.78	9.43	ND	pg/L	U
57653-85-7	1,2,3,6,7,8-HxCDD	1		1.054-1.426	0.71	9.43	ND	pg/L	U
19408-74-3	1,2,3,7,8,9-HxCDD	1		1.054-1.426	0.77	9.43	ND	pg/L	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	0.868	0.893-1.208	0.63	18.9	0.62	pg/L	EMPC, J, B
55673-89-7	1,2,3,4,7,8,9-HpCDF	1		0.893-1.208	0.79	9.43	ND	pg/L	U
35822-46-9	1,2,3,4,6,7,8-HpCDD	1		0.893-1.208	0.99	9.43	ND	pg/L	U
39001-02-0	OCDF	1	0.915	0.757-1.024	1.40	18.9	18.8	pg/L	J, B
3268-87-9	OCDD	1	0.625	0.757-1.024	1.74	47.2	6.64	pg/L	EMPC, J, B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			9.43	ND	pg/L	
41903-57-5	Total TCDD	1	0.000			9.43	ND	pg/L	
30402-15-4	Total PeCDF	1	0.000			9.43	ND	pg/L	
36088-22-9	Total PeCDD	1	0.000			9.43	ND	pg/L	
55684-94-1	Total HxCDF	1	0.000			9.43	ND	pg/L	
34465-46-8	Total HxCDD	1	0.000			9.43	ND	pg/L	
38998-75-3	Total HpCDF	1	0.000			9.43	ND	pg/L	
37871-00-4	Total HpCDD	1	0.000			9.43	ND	pg/L	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.014
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.06

MW-CP1-031721

Form 2

ORGANIC ANALYSIS DATA SHEET

EPA 1613B

Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider			Project:	Lora Lake
Matrix:	Ground Water	Laboratory ID:	21C0250-13	File ID:	21040620
Sampled:	03/17/21 10:50	Prepared:	03/25/21 08:20	Analyzed:	04/07/21 03:16
Solids Wt%:	N/A	Preparation:	EPA 1613	Initial/Final:	1060 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.775	0.655-0.886	1.42	99.0	24 - 169 %	
13C12-2,3,7,8-TCDD		0.837	0.655-0.886	1.38	86.7	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.510	1.318-1.783	3.24	96.4	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.496	1.318-1.783	3.37	94.6	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.581	1.318-1.783	2.24	85.8	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.513	0.434-0.587	3.01	86.5	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.541	0.434-0.587	2.79	91.3	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.496	0.434-0.587	3.16	89.5	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.497	0.434-0.587	3.49	90.2	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.312	1.054-1.426	1.89	87.6	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.140	1.054-1.426	1.70	90.0	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.431	0.374-0.506	3.47	95.3	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.437	0.374-0.506	4.20	105	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.110	0.893-1.208	3.04	94.2	23 - 140 %	
13C12-OCDD		0.896	0.757-1.024	3.39	80.1	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.91	93.8	35 - 197 %	

* Values outside of QC limits

MW-C1/VB1-031721

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider				
Project:	Lora Lake				
Matrix:	Ground Water	Laboratory ID:	21C0250-14 A	File ID:	21040621
Sampled:	03/17/21 13:00	Prepared:	03/25/21 08:20	Analyzed:	04/07/21 04:05
% Solids:	N/A	Preparation:	EPA 1613	Initial/Final:	1060 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1		0.655-0.886	0.47	9.43	ND	pg/L	U
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	0.46	9.43	ND	pg/L	U
57117-41-6	1,2,3,7,8-PeCDF	1		1.318-1.783	0.66	9.43	ND	pg/L	U
57117-31-4	2,3,4,7,8-PeCDF	1	0.830	1.318-1.783	0.60	9.43	0.49	pg/L	EMPC, J
40321-76-4	1,2,3,7,8-PeCDD	1		1.318-1.783	0.56	9.43	ND	pg/L	U
70648-26-9	1,2,3,4,7,8-HxCDF	1		1.054-1.426	0.62	9.43	ND	pg/L	U
57117-44-9	1,2,3,6,7,8-HxCDF	1		1.054-1.426	0.59	9.43	ND	pg/L	U
60851-34-5	2,3,4,6,7,8-HxCDF	1		1.054-1.426	0.60	9.43	ND	pg/L	U
72918-21-9	1,2,3,7,8,9-HxCDF	1		1.054-1.426	0.71	9.43	ND	pg/L	U
39227-28-6	1,2,3,4,7,8-HxCDD	1		1.054-1.426	1.08	9.43	ND	pg/L	U
57653-85-7	1,2,3,6,7,8-HxCDD	1		1.054-1.426	1.03	9.43	ND	pg/L	U
19408-74-3	1,2,3,7,8,9-HxCDD	1		1.054-1.426	1.08	9.43	ND	pg/L	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1		0.893-1.208	0.55	18.9	ND	pg/L	U
55673-89-7	1,2,3,4,7,8,9-HpCDF	1		0.893-1.208	0.70	9.43	ND	pg/L	U
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.184	0.893-1.208	0.65	9.43	2.16	pg/L	J, B
39001-02-0	OCDF	1	1.046	0.757-1.024	1.68	18.9	28.9	pg/L	EMPC, B
3268-87-9	OCDD	1	0.800	0.757-1.024	1.62	47.2	10.8	pg/L	J, B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			9.43	ND	pg/L	
41903-57-5	Total TCDD	1	0.000			9.43	ND	pg/L	
30402-15-4	Total PeCDF	1	0.000			9.43	ND	pg/L	
36088-22-9	Total PeCDD	1	0.000			9.43	ND	pg/L	
55684-94-1	Total HxCDF	1	0.000			9.43	ND	pg/L	
34465-46-8	Total HxCDD	1	0.000			9.43	ND	pg/L	
38998-75-3	Total HpCDF	1	0.000			9.43	ND	pg/L	
37871-00-4	Total HpCDD	1	0.000			9.43	3.35	pg/L	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.181
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.02

MW-C1/VB1-031721

Form 2

ORGANIC ANALYSIS DATA SHEET

EPA 1613B

Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider			Project:	Lora Lake
Matrix:	Ground Water	Laboratory ID:	21C0250-14	File ID:	21040621
Sampled:	03/17/21 13:00	Prepared:	03/25/21 08:20	Analyzed:	04/07/21 04:05
Solids Wt%:	N/A	Preparation:	EPA 1613	Initial/Final:	1060 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.787	0.655-0.886	1.34	110	24 - 169 %	
13C12-2,3,7,8-TCDD		0.824	0.655-0.886	1.47	98.0	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.521	1.318-1.783	2.21	110	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.521	1.318-1.783	2.30	107	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.538	1.318-1.783	1.38	98.8	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.506	0.434-0.587	2.27	95.2	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.496	0.434-0.587	2.11	106	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.501	0.434-0.587	2.38	97.5	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.497	0.434-0.587	2.63	104	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.255	1.054-1.426	2.57	96.1	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.233	1.054-1.426	2.31	94.7	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.469	0.374-0.506	3.53	109	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.435	0.374-0.506	4.27	109	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.061	0.893-1.208	2.74	100	23 - 140 %	
13C12-OCDD		0.860	0.757-1.024	5.24	91.1	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.78	103	35 - 197 %	

* Values outside of QC limits

MW-VB2-031721

Form 1
ORGANIC ANALYSIS DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider				
Project:	Lora Lake				
Matrix:	Ground Water	Laboratory ID:	21C0250-15 A	File ID:	21040622
Sampled:	03/17/21 13:25	Prepared:	03/25/21 08:20	Analyzed:	04/07/21 04:54
% Solids:	N/A	Preparation:	EPA 1613	Initial/Final:	1055 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1		0.655-0.886	0.68	9.48	ND	pg/L	U
1746-01-6	2,3,7,8-TCDD	1		0.655-0.886	0.75	9.48	ND	pg/L	U
57117-41-6	1,2,3,7,8-PeCDF	1		1.318-1.783	0.80	9.48	ND	pg/L	U
57117-31-4	2,3,4,7,8-PeCDF	1		1.318-1.783	0.73	9.48	ND	pg/L	U
40321-76-4	1,2,3,7,8-PeCDD	1		1.318-1.783	1.00	9.48	ND	pg/L	U
70648-26-9	1,2,3,4,7,8-HxCDF	1		1.054-1.426	0.94	9.48	ND	pg/L	U
57117-44-9	1,2,3,6,7,8-HxCDF	1		1.054-1.426	0.89	9.48	ND	pg/L	U
60851-34-5	2,3,4,6,7,8-HxCDF	1	1.293	1.054-1.426	0.92	9.48	1.30	pg/L	J
72918-21-9	1,2,3,7,8,9-HxCDF	1		1.054-1.426	1.13	9.48	ND	pg/L	U
39227-28-6	1,2,3,4,7,8-HxCDD	1		1.054-1.426	0.90	9.48	ND	pg/L	U
57653-85-7	1,2,3,6,7,8-HxCDD	1		1.054-1.426	0.86	9.48	ND	pg/L	U
19408-74-3	1,2,3,7,8,9-HxCDD	1		1.054-1.426	0.91	9.48	ND	pg/L	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1		0.893-1.208	0.82	19.0	ND	pg/L	U
55673-89-7	1,2,3,4,7,8,9-HpCDF	1		0.893-1.208	1.16	9.48	ND	pg/L	U
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	1.674	0.893-1.208	1.11	9.48	1.32	pg/L	EMPC, J, B
39001-02-0	OCDF	1	0.914	0.757-1.024	2.42	19.0	9.61	pg/L	J, B
3268-87-9	OCDD	1	0.802	0.757-1.024	2.08	47.4	7.27	pg/L	J, B

Homologue Groups

55722-27-5	Total TCDF	1	0.000			9.48	ND	pg/L	
41903-57-5	Total TCDD	1	0.000			9.48	ND	pg/L	
30402-15-4	Total PeCDF	1	0.000			9.48	ND	pg/L	
36088-22-9	Total PeCDD	1	0.000			9.48	ND	pg/L	
55684-94-1	Total HxCDF	1	0.000			9.48	1.30	pg/L	
34465-46-8	Total HxCDD	1	0.000			9.48	ND	pg/L	
38998-75-3	Total HpCDF	1	0.000			9.48	ND	pg/L	
37871-00-4	Total HpCDD	1	0.000			9.48	ND	pg/L	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.148

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.47

MW-VB2-031721

Form 2

ORGANIC ANALYSIS DATA SHEET

EPA 1613B

Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider			Project:	Lora Lake
Matrix:	Ground Water	Laboratory ID:	21C0250-15	File ID:	21040622
Sampled:	03/17/21 13:25	Prepared:	03/25/21 08:20	Analyzed:	04/07/21 04:54
Solids Wt%:	N/A	Preparation:	EPA 1613	Initial/Final:	1055 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF		0.776	0.655-0.886	1.31	93.7	24 - 169 %	
13C12-2,3,7,8-TCDD		0.816	0.655-0.886	1.37	83.5	25 - 164 %	
13C12-1,2,3,7,8-PeCDF		1.527	1.318-1.783	2.92	92.8	24 - 185 %	
13C12-2,3,4,7,8-PeCDF		1.536	1.318-1.783	3.04	90.9	21 - 178 %	
13C12-1,2,3,7,8-PeCDD		1.578	1.318-1.783	1.79	80.9	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF		0.507	0.434-0.587	2.34	85.2	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF		0.477	0.434-0.587	2.17	90.7	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF		0.500	0.434-0.587	2.46	85.4	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF		0.509	0.434-0.587	2.71	85.5	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD		1.261	1.054-1.426	3.78	88.4	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD		1.266	1.054-1.426	3.40	87.9	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF		0.435	0.374-0.506	3.60	97.2	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF		0.447	0.374-0.506	4.35	91.9	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD		1.006	0.893-1.208	3.15	87.1	23 - 140 %	
13C12-OCDD		0.889	0.757-1.024	4.89	73.3	17 - 157 %	
37Cl4-2,3,7,8-TCDD		328.000		0.83	88.3	35 - 197 %	

* Values outside of QC limits

PREPARATION BATCH SUMMARY

EPA 1613B

Laboratory: Analytical Resources, Inc. SDG: 21C0250

Client: Floyd - Snider Project: Lora Lake

Batch: BJC0518 Batch Matrix: Water Preparation: EPA 1613

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
MW-VB3-031621	21C0250-04	21040610	03/25/21 08:20	
HCOO-B312-031621	21C0250-05	21040810	03/25/21 08:20	
MW-CP7-031621	21C0250-06	21040612	03/25/21 08:20	
MW-CP6-031621	21C0250-07	21040613	03/25/21 08:20	
MW-CP4-031621	21C0250-08	21040614	03/25/21 08:20	
MW-CP2-031721	21C0250-10	21040617	03/25/21 08:20	
MW-CP2-031721-D	21C0250-11	21040618	03/25/21 08:20	
MW-CP3-031721	21C0250-12	21040619	03/25/21 08:20	
MW-CP1-031721	21C0250-13	21040620	03/25/21 08:20	
MW-C1/VB1-031721	21C0250-14	21040621	03/25/21 08:20	
MW-VB2-031721	21C0250-15	21040622	03/25/21 08:20	
Blank	BJC0518-BLK2	21040604	03/25/21 08:20	
LCS	BJC0518-BS2	21040605	03/25/21 08:20	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

HRGCMS Dioxin/Furan Preparation Bench Sheet EPA Methods 8290A & 1613B

Batch: BJC0518

Aqueous Samples

ARI Work Orders:	21C0187,21C0250,21C0289	
Method (circle one)	Solid Phase Extraction	Separatory Funnel
Extraction Method	Start Date/Time:	End Date/Time:
Soxhlet / SepF Shake out	3/25/21 0820	3/25/21 1635
Tumble		

Reagents/Equipment Used	NA	ID / Lot Number	Initials	Date
~~Balance~~				
CH2Cl2		J♦♦2138	M	3/25/21 / 3/26/21
~~MeOH~~				
Hexane		J♦♦2562	M	3/25/21 / 3/26/21
~~XAD-2~~				
~~H2SO4~~				
Na2SO4		J♦♦2351 / J♦♦3127	M	3/25/21 / 3/26/21
Glasswool		I♦♦6679	M	3/25/21 / 3/26/21
Basic Silica		I♦♦8750	M	3/26/21
Acid Silica		I♦11314	M	3/26/21
0% Silica		I♦♦8937	M	3/26/21
Activated Florisil	M 3/26/21	~~I♦♦~~ J♦♦2451	M	3/26/21
~~(98:2) Hex/DCM~~				
Nonane		H♦♦6038	M	3/29/21
KI Strips		E♦♦1858	M	3/25/21
pH Paper		H♦♦7439	M	3/25/21
~~Other( )~~				

Lab Number & Container	Sample Name	Sample Vol (mL) (Target)/Actual	pH >9 Adjust 7-9	Res Cl Check	RotoVap 45 °C	Final Vol (uL)
21C0187-01 A	X3222	(1,000.00) ____	7	(P) / F	1 (2)	20 ____
21C0250-04 A	MW-VB3-031621	(1,000.00) 1053	7	(P) / F	1 (2)	20 ____
21C0250-05 A	HCOO-B312-031621	(1,000.00) 1060	7	(P) / F	1 (2)	20 ____
21C0250-06 A	MW-CP7-031621	(1,000.00) 1053	7	(P) / F	1 (2)	20 ____
21C0250-07 A	MW-CP6-031621	(1,000.00) 1053	7	(P) / F	1 (2)	20 ____
21C0250-08 A	MW-CP4-031621	(1,000.00) 1060	7	(P) / F	1 (2)	20 ____
21C0250-10 A	MW-CP2-031721	(1,000.00) 1055	7	(P) / F	1 (2)	20 ____
21C0250-11 A	MW-CP2403721-D	(1,000.00) 1053	7	(P) / F	1 (2)	20 ____
21C0250-12 A	MW-CP3-031721	(1,000.00) 1060	7	(P) / F	1 (2)	20 ____
21C0250-13 A	MW-CP1-031721	(1,000.00) 1060	7	(P) / F	1 (2)	20 ____
21C0250-14 A	MW-C1/VB1403721	(1,000.00) 1060	7	(P) / F	1 (2)	20 ____
21C0250-15 A	MW-VB2-031721	(1,000.00) 1055	7	(P) / F	1 (2)	20 ____
21C0289-11 A	T117-RB-20210318	(1,000.00) 1053	7	(P) / F	1 (2)	20 ____
21C0289-12 A	T117-FB-20210318	(1,000.00) 1060	7	(P) / F	1 (2)	20 ____
BJC0518-BLK1	DBLK25	(1,000.00) ____	7	(P) / F	1 (2)	20 ____
BJC0518-BS1	DLCS25	(1,000.00) ____	7	(P) / F	1 (2)	20 ____
BJC0518-BSD1	DLCSD25	(1,000.00) ____	7	(P) / F	1 (2)	20 ____
Prep Analyst / Date:	M 3/25/21		M 3/25/21	M 3/25/21	M 3/26/21	

Standards Used	Vol	ID / Lot Number	Concentration	Expiration Date	Analyst	Witness	Date
Recovery Standard	1.0 mL	J♦♦1772	2/4 ng/mL	8/17/21	M	BH	3/25/21
OPR	1.0 mL	J♦♦1260	0.2/1.0/2.0 ng/mL	2/3/22	M	BH	3/25/21
~~QLS Standard~~	~~1.0 mL~~		~~0.1/0.5/0.~~ ng/mL ng/mL				
Clean-up Standard	1.0 mL	J♦♦1773	0.8 ng/mL	8/17/21 → 3/26/21	M	BH	3/26/21

Verify Client ID
Analyst / Date: M 3/25/21

Acid Clean Y / (N)
Analyst / Date:

Silica-Florisil Clean (Y) / N
Analyst / Date: M 3/26/21

Printed: 3/25/2021 6:11:17AM

HRGCMS Dioxin/Furan Preparation Bench Sheet EPA Methods 8290A & 1613B

Batch: BJC0518

Aqueous Samples

Supervisor Review By 3/29/21
Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Organic Extractions Laboratory Analyst Notes

Extraction Parameter: Dioxin Extraction Batch BJC0518

Total Solids Batch: N/A Work Order(s): 21C0187, 21C0250, 21C0289

Screens: Soil/Sediment/Solid/Other:	Analyst/Date
☐ No Anomalies (standard soil/wet sediment/sand/gravel)=	
☐ Standing Water Decanted (Not shared)=	
☐ Standing Water Homogenized (Shared samples)=	
☐ Clay/Clumps (Difficult to homogenize)=	
☐ Rocks (%+size)?	
☐ Organics (Leaves/sticks/grass)=	
☐ Oily, obvious fuel/sulfur odors=	
☐ Received in 32oz jar(s)=Homogenized in Pyrex dish=	
☐ Previously Frozen =	
☐ Other (Details)=	
Aqueous:	
☒ No Anomalies 21C0187-01A, 21C0250-05A, 06A, 08A, 10A-11A, 13A-14A,	M 3/25/21
☒ Turbid/Color= 21C0250-04A, 12A, 15A = slightly tan. | 21C0250-07A = Light tan, turbid	M 3/25/21
☐ Particulates(%)=(Note: >5%=Notify Supervisor/Lead)	
☐ Emulsions (%)=	
☐ Oily, obvious fuel/sulfur odors=	
☐ Other (Details)=	
☐ Received in 1.0L Bottle(s)=No Bottle Rinse=	
☒ Other Notes/Comments= (Note problems, concerns, corrective actions).	
21C0289-11A, 12A = No Anomalies	M 3/25/21
☐ Share Samples Y / N	
☐ Multiple Jars Y / N	
☐ Sample Pre-Screens indicate analyte activity=	
☐ Sample weights/volumes reduced based on Pre-Screen=	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Dioxin Extraction Laboratory – Glassware

Batch ID: BJCΦ518 Work Order: 21CΦ187, 21CΦ25Φ Extraction Parameter: Dioxin ARI Analyst NL

ARI Sample ID	300 mL Flat Bottom	Small Soxhlet	Large Soxhlet	250 mL Beaker	Funnel	Column	Florisil Column	Turbo Tube	Sep Funnel	Erlenmeyer Flask	Centrifuge Bottle	Turbo-Vap	Vortex Mixer	Heating Mantle
BJCΦ518 - BLK1	22				7	37	14	16	38	16		4	4	
BS1	18				24	11	25	18	37	6	~~18~~ M 3/24/21	4	4	
BSD1	14				6	21	36	25	35	48		4	4	
21CΦ187 - ΦIA	17				3	12	16	~~28~~ 29 M 3/26/21	55	19		4	4	
21CΦ25Φ - Φ4A	13				1	19	17	23	46	9		4	4	
Φ5A	27				23	1	9	28	17	18		4	4	
Φ6A	36				22	8	4	9	26	27		4	4	
Φ7A	14				11	27	28	38	28	55		4	4	
Φ8A	24				19	16	1	11	83	34		4	4	
10A	4				20	35	2	12	6	14		4	4	
11A	45				9	9	27	39	8	13		4	4	
12A	26				21	14	16	45	33	15		4	4	
13A	19				5	13	8	22	48	20		4	4	
14A	28				2	22	32	26	7	21		4	4	
15A	1				17	23	18	36	18	33		4	4	
21CΦ259 - 11A	2				14	36	13	47	39	50		4	4	
12A	23				16	~~31~~ 31 M 3/26/21	11	35	41	23		4	4	
												4	4	
												4	4	
												4	4	
												4	4	
												4	4	
												4	4	

PREPARATION BATCH SUMMARY

EPA 1613B

Laboratory: Analytical Resources, Inc. SDG: 21C0250

Client: Floyd - Snider Project: Lora Lake

Batch: BJC0519 Batch Matrix: Water Preparation: EPA 1613

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
MW-CP5-031621	21C0250-09	21040636	03/29/21 12:30	
Blank	BJC0519-BLK1	21040633	03/29/21 12:30	
LCS	BJC0519-BS1	21040634	03/29/21 12:30	
LCS Dup	BJC0519-BSD1	21040635	03/29/21 12:30	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

HRGCMS Dioxin/Furan Preparation Bench Sheet EPA Methods 8290A & 1613B

Batch: BJC0519

Aqueous Samples

ARI Work Orders:	21C0250	
Method (circle one)	Solid Phase Extraction	Separatory Funnel
Extraction Method	Start Date/Time:	End Date/Time:
Soxhlet SepF Shake out	3/29/21 1220	3/30/21 0522
Tumble	3/29/21 0615	2/29/21 1015

Lab Number & Container	Sample Name	Sample Vol (mL) (Target)/Actual	pH >9 Adjust 7-9	Res Cl Check	RotoVap 45 °C	Final Vol (uL)
21C0250-09 A	MW-CP5-031621	(1,000.00) 1017	~~10~~7	(P)/F	1 (2)	20
BJC0519-BLK1	Blank	(1,000.00)	M3/29/21 7	(P) F	(1) 2	20
BJC0519-BS1	LCS	(1,000.00)	7	(P)/F	1 (2)	20
BJC0519-BSD1	LCS Dup	(1,000.00)	7	(P)/F	(1) 2	20
Prep Analyst / Date:		M 3/29/21	M3/29/21	M3/29/21	M3/30/21	M 3/30/21

Reagents/Equipment Used	NA	ID / Lot Number	Initials	Date
~~Balance~~				
CH2Cl2		JOO2138	M 3/30/21 3/30/21 M	3/30/21
MeOH		H000611	M	3/29/21
Hexane		JOOO231	M	3/30/21
XAD-2		I010704	M	3/29/21
H2SO4		J000490	M	3/30/21
Na2SO4		JOO3127	M	3/30/21
Glasswool		I000679	M	3/30/21
Basic Silica		I008750	M	3/30/21
Acid Silica		I011314	M	3/29/21
0% Silica		I008937	M	3/30/21
Activated Florisil		JOO2451	M	3/30/21
~~(90:2) Hex/DCM~~				
Nonane		H000038	M	3/30/21
KI Strips		E001858	M	3/29/21
pH Paper		H007139	M	3/29/21
Other (Toluene)		I010706	M	3/29/21

Standards Used	Vol	ID / Lot Number	Concentration	Expiration Date	Analyst	Witness	Date
Recovery Standard	1.0 mL	JOO1772	2/4 ng/mL	8/17/21	M	BH	3/29/21
OPR	1.0 mL	JOO1260	0.2/1.0/2.0 ng/mL	2/3/22	M	BH	3/29/21
~~QC3 Standard~~	~~1.0 mL~~		~~0.2/1.0/2.0 ng/mL~~				
Clean-up Standard	1.0 mL	JOO1773	0.8 ng/mL	8/17/21	M	M 12	3/30/21

Verify Client ID	
Analyst / Date:	M 3/29/21
Acid Clean	Y N
Analyst / Date:	M 3/30/21
Silica-Florisil Clean	Y N
Analyst / Date:	M 3/30/21

Supervisor Review By 3/30/21 Date

Printed: 3/19/2021 9:21:36AM

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Analytical Resources, Incorporated
Analytical Chemists and Consultants

Dioxin Extraction Laboratory – Glassware

Batch ID: BJC0519 Work Order: 21C0250 Extraction Parameter: Dioxin ARI Analyst NL

ARI Sample ID	300 mL Flat Bottom	Small Soxhlet	Large Soxhlet	250 mL Beaker	Funnel	Column	Florisil Column	Turbo Tube	Sep Funnel	Erlenmeyer Flask	Centrifuge Bottle	Turbo-Vap	Vortex Mixer	Heating Mantle
BJC0519- B1I1	38		66		22	207	115	83				4	4	A1
BS1	83		61		62	96	166	13				4	4	A2
BSD1	40		58		18	199	138	38				4	4	A3
21C0250 - 09A	13		73		57	191	4	52				4	4	A4
												4	4	
												4	4	
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												4	4	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Organic Extractions Laboratory Analyst Notes

Extraction Parameter: Dioxin Extraction Batch: BJC0519

Total Solids Batch: N/A Work Order(s): 21C0250.

Screens: Soil/Sediment/Solid/Other:	Analyst/Date
☐ No Anomalies (standard soil/wet sediment/sand/gravel)=	
☐ Standing Water Decanted (Not shared)=	
☐ Standing Water Homogenized (Shared samples)=	
☐ Clay/Clumps (Difficult to homogenize)=	
☐ Rocks (%+size)?	
☐ Organics (Leaves/sticks/grass)=	
☐ Oily, obvious fuel/sulfur odors=	
☐ Received in 32oz jar(s)=Homogenized in Pyrex dish=	
☐ Previously Frozen =	
☐ Other (Details)=	
Aqueous:	
☐ No Anomalies	
☒ Turbid/Color= GA = Tan, turbid	KA 3/29/21
☐ Particulates(%)=(Note: >5%=Notify Supervisor/Lead)	
☐ Emulsions (%)=	
☐ Oily, obvious fuel/sulfur odors=	
☐ Other (Details)=	
☐ Received in 1.0L Bottle(s)=No Bottle Rinse=	
☒ Other Notes/Comments= (Note problems, concerns, corrective actions). Water trap vol for Batch # BJC0519 - BIK1 = 14ml, BSI = 14.9ml, BSD1 = 16 ml 21C0250 - GA = 6.4ml	KA 3/30/21
☐ Share Samples Y / N	
☐ Multiple Jars Y / N	
☐ Sample Pre-Screens indicate analyte activity=	
☐ Sample weights/volumes reduced based on Pre-Screen=	

3056F

Revision 15
07/01/19

CLEANUP BATCH SUMMARY

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Cleanup Batch:	CJC0277	Cleanup Type:	Silica Gel
Cleanup Method:	EPA 3630C Silica Gel Cleanup	Analysis:	EPA 1613B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
MW-VB2-031721	21C0250-15	21040622	03/26/2021	
MW-C1/VB1-031721	21C0250-14	21040621	03/26/2021	
MW-CP1-031721	21C0250-13	21040620	03/26/2021	
MW-CP2-031721	21C0250-10	21040617	03/26/2021	
MW-CP2-031721-D	21C0250-11	21040618	03/26/2021	
MW-CP3-031721	21C0250-12	21040619	03/26/2021	
MW-CP4-031621	21C0250-08	21040614	03/26/2021	
MW-CP7-031621	21C0250-06	21040612	03/26/2021	
MW-VB3-031621	21C0250-04	21040610	03/26/2021	
HCOO-B312-031621	21C0250-05	21040810	03/26/2021	
MW-CP6-031621	21C0250-07	21040613	03/26/2021	

Analytical Resources, Incorporated
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CLEANUP BENCH SHEET

CJC0277

Matrix: Water **Cleanup using: HRGCMS - EPA 3630C Silica Gel Cleanup** **Printed: 3/29/2021 8:44:54AM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (mL)	Final (mL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments
21C0289-12	A	T117-FB-20210318	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0289-11	A	T117-RB-20210318	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-12	A	MW-CP3-031721	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-13	A	MW-CP1-031721	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-14	A	MW-C1/VB1-031721	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-15	A	MW-VB2-031721	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0187-01	A	X3222	A 01	20	20	HRSM02.x	3/26/2021	NPL	
21C0250-04	A	MW-VB3-031621	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-05	A	HCOO-B312-031621	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-06	A	MW-CP7-031621	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-07	A	MW-CP6-031621	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-08	A	MW-CP4-031621	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-10	A	MW-CP2-031721	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-11	A	MW-CP2-031721-D	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
BJC0518-BSD1	-	DLCSD25	-	20	20	-	3/26/2021	NPL	
BJC0518-BS1	-	DLCS25	-	20	20	-	3/26/2021	NPL	
BJC0518-BLK1	-	DBLK25	-	20	20	-	3/26/2021	NPL	

CLEANUP BATCH SUMMARY

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Cleanup Batch:	CJC0278	Cleanup Type:	Florisil
Cleanup Method:	EPA 3620B Florisil Cleanup (uL)	Analysis:	EPA 1613B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
MW-CP2-031721-D	21C0250-11	21040618	03/26/2021	
MW-VB3-031621	21C0250-04	21040610	03/26/2021	
MW-VB2-031721	21C0250-15	21040622	03/26/2021	
MW-CP7-031621	21C0250-06	21040612	03/26/2021	
MW-CP6-031621	21C0250-07	21040613	03/26/2021	
MW-CP2-031721	21C0250-10	21040617	03/26/2021	
MW-CP1-031721	21C0250-13	21040620	03/26/2021	
MW-C1/VB1-031721	21C0250-14	21040621	03/26/2021	
HCOO-B312-031621	21C0250-05	21040810	03/26/2021	
MW-CP3-031721	21C0250-12	21040619	03/26/2021	
MW-CP4-031621	21C0250-08	21040614	03/26/2021	

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CLEANUP BENCH SHEET

CJC0278

Matrix: Water **Cleanup using: HRGCMS - EPA 3620B Florisil Cleanup (uL)** **Printed: 3/29/2021 8:45:18AM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (uL)	Final (uL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments
21C0289-12	A	T117-FB-20210318	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0289-11	A	T117-RB-20210318	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-12	A	MW-CP3-031721	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-13	A	MW-CP1-031721	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-14	A	MW-C1/VB1-031721	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-15	A	MW-VB2-031721	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0187-01	A	X3222	A 01	20	20	HRSM02.x	3/26/2021	NPL	
21C0250-04	A	MW-VB3-031621	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-05	A	HCOO-B312-031621	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-06	A	MW-CP7-031621	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-07	A	MW-CP6-031621	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-08	A	MW-CP4-031621	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-10	A	MW-CP2-031721	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
21C0250-11	A	MW-CP2-031721-D	A 01	20	20	1613B Dioxin	3/26/2021	NPL	
BJC0518-BSD1	-	DLCSD25	-	20	20	-	3/26/2021	NPL	
BJC0518-BS1	-	DLCS25	-	20	20	-	3/26/2021	NPL	
BJC0518-BLK1	-	DBLK25	-	20	20	-	3/26/2021	NPL	

CLEANUP BATCH SUMMARY

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Cleanup Batch:	CJC0287	Cleanup Type:	Sulfuric Acid
Cleanup Method:	EPA 3665A Sulfuric Acid Cleanup	Analysis:	EPA 1613B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
MW-CP5-031621	21C0250-09	21040636	03/30/2021	
LCS	BJC0519-BS1	21040634	03/30/2021	
LCS Dup	BJC0519-BSD1	21040635	03/30/2021	
Blank	BJC0519-BLK1	21040633	03/30/2021	

Analytical Resources, Incorporated
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CLEANUP BENCH SHEET

CJC0287

Matrix: Water **Cleanup using: HRGCMS - EPA 3665A Sulfuric Acid Cleanup** **Printed: 3/30/2021 1:56:28PM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (mL)	Final (mL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments
21C0250-09	A	MW-CP5-031621	A 01	20	20	1613B Dioxin	3/30/2021	NPL	
BJC0519-BLK1	-	Blank	-	20	20	-	3/30/2021	NPL	
BJC0519-BS1	-	LCS	-	20	20	-	3/30/2021	NPL	
BJC0519-BSD1	-	LCS Dup	-	20	20	-	3/30/2021	NPL	

CLEANUP BATCH SUMMARY

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Cleanup Batch:	CJC0288	Cleanup Type:	Silica Gel
Cleanup Method:	EPA 3630C Silica Gel Cleanup	Analysis:	EPA 1613B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
LCS Dup	BJC0519-BSD1	21040635	03/30/2021	
LCS	BJC0519-BS1	21040634	03/30/2021	
Blank	BJC0519-BLK1	21040633	03/30/2021	
MW-CP5-031621	21C0250-09	21040636	03/30/2021	

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CLEANUP BENCH SHEET

CJC0288

Matrix: Water **Cleanup using: HRGCMS - EPA 3630C Silica Gel Cleanup** **Printed: 3/30/2021 1:55:27PM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (mL)	Final (mL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments
21C0250-09	A	MW-CP5-031621	A 01	20	20	1613B Dioxin	3/30/2021	NPL	
BJC0519-BLK1	-	Blank	-	20	20	-	3/30/2021	NPL	
BJC0519-BS1	-	LCS	-	20	20	-	3/30/2021	NPL	
BJC0519-BSD1	-	LCS Dup	-	20	20	-	3/30/2021	NPL	

CLEANUP BATCH SUMMARY

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Cleanup Batch:	CJC0289	Cleanup Type:	Florisil
Cleanup Method:	EPA 3620B Florisil Cleanup (uL)	Analysis:	EPA 1613B

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
MW-CP5-031621	21C0250-09	21040636	03/30/2021	
LCS	BJC0519-BS1	21040634	03/30/2021	
Blank	BJC0519-BLK1	21040633	03/30/2021	
LCS Dup	BJC0519-BSD1	21040635	03/30/2021	

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CLEANUP BENCH SHEET

CJC0289

Matrix: Water **Cleanup using: HRGCMS - EPA 3620B Florisil Cleanup (uL)** **Printed: 3/30/2021 1:56:51PM**

Lab Number	Sample Container	Sample Name	Extract Container	Initial (uL)	Final (uL)	Analysis	Clean Up Date	Cleaned By	Cleanup Comments
21C0250-09	A	MW-CP5-031621	A 01	20	20	1613B Dioxin	3/30/2021	NPL	
BJC0519-BLK1	-	Blank	-	20	20	-	3/30/2021	NPL	
BJC0519-BS1	-	LCS	-	20	20	-	3/30/2021	NPL	
BJC0519-BSD1	-	LCS Dup	-	20	20	-	3/30/2021	NPL	

Blank

Form 1
METHOD BLANK DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider			Project:	Lora Lake
Matrix:	Water	Laboratory ID:	BJC0518-BLK2	File ID:	21040604
Sampled:	N/A	Prepared:	03/25/21 08:20	Analyzed:	04/06/21 14:00
Solids Wt%:		Preparation:	EPA 1613	Initial/Final:	1000 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1	0.000	0.655-0.886	1.12	10.0	ND	pg/L	U
1746-01-6	2,3,7,8-TCDD	1	0.000	0.655-0.886	0.85	10.0	ND	pg/L	U
57117-41-6	1,2,3,7,8-PeCDF	1	0.000	1.318-1.783	1.02	10.0	ND	pg/L	U
57117-31-4	2,3,4,7,8-PeCDF	1	0.000	1.318-1.783	0.91	10.0	ND	pg/L	U
40321-76-4	1,2,3,7,8-PeCDD	1	0.000	1.318-1.783	0.87	10.0	ND	pg/L	U
70648-26-9	1,2,3,4,7,8-HxCDF	1	0.000	1.054-1.426	0.84	10.0	ND	pg/L	U
57117-44-9	1,2,3,6,7,8-HxCDF	1	0.000	1.054-1.426	0.83	10.0	ND	pg/L	U
60851-34-5	2,3,4,6,7,8-HxCDF	1	0.000	1.054-1.426	0.82	10.0	ND	pg/L	U
72918-21-9	1,2,3,7,8,9-HxCDF	1	0.000	1.054-1.426	1.01	10.0	ND	pg/L	U
39227-28-6	1,2,3,4,7,8-HxCDD	1	0.000	1.054-1.426	0.97	10.0	ND	pg/L	U
57653-85-7	1,2,3,6,7,8-HxCDD	1	0.000	1.054-1.426	0.93	10.0	ND	pg/L	U
19408-74-3	1,2,3,7,8,9-HxCDD	1	0.000	1.054-1.426	0.98	10.0	ND	pg/L	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	1.707	0.893-1.208	0.54	20.0	1.59	pg/L	EMPC, J
55673-89-7	1,2,3,4,7,8,9-HpCDF	1	0.000	0.893-1.208	0.72	10.0	ND	pg/L	U
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	0.944	0.893-1.208	0.82	10.0	1.86	pg/L	J
39001-02-0	OCDF	1	0.864	0.757-1.024	1.46	20.0	40.0	pg/L	
3268-87-9	OCDD	1	0.800	0.757-1.024	1.08	50.0	13.6	pg/L	J

Homologue Groups

55722-27-5	Total TCDF	1	0.000			10.0	ND	pg/L
41903-57-5	Total TCDD	1	0.000			10.0	ND	pg/L
30402-15-4	Total PeCDF	1	0.000			10.0	ND	pg/L
36088-22-9	Total PeCDD	1	0.000			10.0	ND	pg/L
55684-94-1	Total HxCDF	1	0.000			10.0	ND	pg/L
34465-46-8	Total HxCDD	1	0.000			10.0	ND	pg/L
38998-75-3	Total HpCDF	1	0.000			10.0	ND	pg/L
37871-00-4	Total HpCDD	1	0.000			10.0	1.86	pg/L

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.051
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.44

Blank

Form 2

METHOD BLANK DATA SHEET

EPA 1613B

Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider			Project:	Lora Lake
Matrix:	Water	Laboratory ID:	BJC0518-BLK2	File ID:	21040604
Sampled:	N/A	Prepared:	03/25/21 08:20	Analyzed:	04/06/21 14:00
Solids Wt%:	N/A	Preparation:	EPA 1613	Initial/Final:	1000 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0518	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF	1	0.786	0.655-0.886	0.00	92.0	24 - 169 %	
13C12-2,3,7,8-TCDD	1	0.826	0.655-0.886	0.00	87.0	25 - 164 %	
13C12-1,2,3,7,8-PeCDF	1	1.500	1.318-1.783	0.00	94.0	24 - 185 %	
13C12-2,3,4,7,8-PeCDF	1	1.494	1.318-1.783	0.00	92.5	21 - 178 %	
13C12-1,2,3,7,8-PeCDD	1	1.585	1.318-1.783	0.00	89.1	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF	1	0.512	0.434-0.587	0.00	86.0	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF	1	0.510	0.434-0.587	0.00	87.3	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF	1	0.508	0.434-0.587	0.00	85.0	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF	1	0.533	0.434-0.587	0.00	86.5	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD	1	1.314	1.054-1.426	0.00	89.2	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD	1	1.205	1.054-1.426	0.00	83.6	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF	1	0.423	0.374-0.506	0.00	90.4	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF	1	0.439	0.374-0.506	0.00	88.4	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD	1	1.020	0.893-1.208	0.00	87.7	23 - 140 %	
13C12-OCDD	1	0.889	0.757-1.024	0.00	73.9	17 - 157 %	
37Cl4-2,3,7,8-TCDD	1	328.000		0.00	92.5	35 - 197 %	

* Values outside of QC limits

Blank

Form 1
METHOD BLANK DATA SHEET
EPA 1613B
Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider			Project:	Lora Lake
Matrix:	Water	Laboratory ID:	BJC0519-BLK1	File ID:	21040633
Sampled:	N/A	Prepared:	03/29/21 12:30	Analyzed:	04/07/21 13:59
Solids Wt%:		Preparation:	EPA 1613	Initial/Final:	1000 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0519	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

CAS NO.	COMPOUND	DF/Split	Ion Ratio	Ratio Limits	EDL	RL	Result	Units	Q
51207-31-9	2,3,7,8-TCDF	1	0.000	0.655-0.886	0.84	10.0	ND	pg/L	U
1746-01-6	2,3,7,8-TCDD	1	0.000	0.655-0.886	1.10	10.0	ND	pg/L	U
57117-41-6	1,2,3,7,8-PeCDF	1	0.000	1.318-1.783	1.08	10.0	ND	pg/L	U
57117-31-4	2,3,4,7,8-PeCDF	1	0.000	1.318-1.783	1.06	10.0	ND	pg/L	U
40321-76-4	1,2,3,7,8-PeCDD	1	0.000	1.318-1.783	1.16	10.0	ND	pg/L	U
70648-26-9	1,2,3,4,7,8-HxCDF	1	0.000	1.054-1.426	1.00	10.0	ND	pg/L	U
57117-44-9	1,2,3,6,7,8-HxCDF	1	0.000	1.054-1.426	1.01	10.0	ND	pg/L	U
60851-34-5	2,3,4,6,7,8-HxCDF	1	0.000	1.054-1.426	0.98	10.0	ND	pg/L	U
72918-21-9	1,2,3,7,8,9-HxCDF	1	0.000	1.054-1.426	1.17	10.0	ND	pg/L	U
39227-28-6	1,2,3,4,7,8-HxCDD	1	0.000	1.054-1.426	1.22	10.0	ND	pg/L	U
57653-85-7	1,2,3,6,7,8-HxCDD	1	0.000	1.054-1.426	1.23	10.0	ND	pg/L	U
19408-74-3	1,2,3,7,8,9-HxCDD	1	0.000	1.054-1.426	1.26	10.0	ND	pg/L	U
67562-39-4	1,2,3,4,6,7,8-HpCDF	1	0.966	0.893-1.208	0.81	20.0	2.54	pg/L	J
55673-89-7	1,2,3,4,7,8,9-HpCDF	1	0.606	0.893-1.208	1.08	10.0	0.929	pg/L	EMPC, J
35822-46-9	1,2,3,4,6,7,8-HpCDD	1	0.874	0.893-1.208	1.21	10.0	3.10	pg/L	EMPC, J
39001-02-0	OCDF	1	0.877	0.757-1.024	2.39	20.0	23.3	pg/L	
3268-87-9	OCDD	1	1.013	0.757-1.024	1.74	50.0	20.1	pg/L	J

Homologue Groups

55722-27-5	Total TCDF	1	0.000			10.0	ND	pg/L	
41903-57-5	Total TCDD	1	0.000			10.0	ND	pg/L	
30402-15-4	Total PeCDF	1	0.000			10.0	ND	pg/L	
36088-22-9	Total PeCDD	1	0.000			10.0	ND	pg/L	
55684-94-1	Total HxCDF	1	0.000			10.0	ND	pg/L	
34465-46-8	Total HxCDD	1	0.000			10.0	ND	pg/L	
38998-75-3	Total HpCDF	1	0.000			10.0	2.54	pg/L	
37871-00-4	Total HpCDD	1	0.000			10.0	ND	pg/L	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.079
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.82

Blank

Form 2

METHOD BLANK DATA SHEET

EPA 1613B

Dioxins/Furans by HRGC/HRMS

Laboratory:	Analytical Resources, Inc.			SDG:	21C0250
Client:	Floyd - Snider			Project:	Lora Lake
Matrix:	Water	Laboratory ID:	BJC0519-BLK1	File ID:	21040633
Sampled:	N/A	Prepared:	03/29/21 12:30	Analyzed:	04/07/21 13:59
Solids Wt%:	N/A	Preparation:	EPA 1613	Initial/Final:	1000 mL / 20 uL
Result Basis:	Wet	Sequence:	SJC0474	Calibration:	EC00006
Batch:	BJC0519	Instrument:	AUTOSPEC01	Column:	RTX-Dioxin2

Labels	DF/Split	Ion Ratio	Ratio Limits	EDL	% REC	QC LIMITS	Q
13C12-2,3,7,8-TCDF	1	0.781	0.655-0.886	0.00	84.5	24 - 169 %	
13C12-2,3,7,8-TCDD	1	0.822	0.655-0.886	0.00	83.0	25 - 164 %	
13C12-1,2,3,7,8-PeCDF	1	1.498	1.318-1.783	0.00	84.1	24 - 185 %	
13C12-2,3,4,7,8-PeCDF	1	1.509	1.318-1.783	0.00	79.7	21 - 178 %	
13C12-1,2,3,7,8-PeCDD	1	1.571	1.318-1.783	0.00	77.4	25 - 181 %	
13C12-1,2,3,4,7,8-HxCDF	1	0.501	0.434-0.587	0.00	77.8	26 - 152 %	
13C12-1,2,3,6,7,8-HxCDF	1	0.509	0.434-0.587	0.00	76.1	26 - 123 %	
13C12-2,3,4,6,7,8-HxCDF	1	0.508	0.434-0.587	0.00	76.7	28 - 136 %	
13C12-1,2,3,7,8,9-HxCDF	1	0.500	0.434-0.587	0.00	77.8	29 - 147 %	
13C12-1,2,3,4,7,8-HxCDD	1	1.250	1.054-1.426	0.00	83.2	32 - 141 %	
13C12-1,2,3,6,7,8-HxCDD	1	1.245	1.054-1.426	0.00	76.3	28 - 130 %	
13C12-1,2,3,4,6,7,8-HpCDF	1	0.437	0.374-0.506	0.00	73.3	28 - 143 %	
13C12-1,2,3,4,7,8,9-HpCDF	1	0.437	0.374-0.506	0.00	74.9	26 - 138 %	
13C12-1,2,3,4,6,7,8-HpCDD	1	1.028	0.893-1.208	0.00	75.4	23 - 140 %	
13C12-OCDD	1	0.894	0.757-1.024	0.00	59.4	17 - 157 %	
37Cl4-2,3,7,8-TCDD	1	328.000		0.00	91.5	35 - 197 %	

* Values outside of QC limits

LCS RECOVERY
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Matrix:	Water	Analyzed:	04/06/21 14:48
Batch:	BJC0518	Laboratory ID:	BJC0518-BS2
Preparation:	EPA 1613	Sequence Name:	LCS
Initial/Final:	1000 mL / 20 uL		

COMPOUND	SPIKE ADDED (pg/L)	LCS CONCENTRATION (pg/L)	Q	LCS % REC. #	QC LIMITS REC.
2,3,7,8-TCDF	200	221		111	75 - 158
2,3,7,8-TCDD	200	192		95.9	67 - 158
1,2,3,7,8-PeCDF	1000	1180		118	80 - 134
2,3,4,7,8-PeCDF	1000	1160		116	68 - 160
1,2,3,7,8-PeCDD	1000	1050		105	70 - 142
1,2,3,4,7,8-HxCDF	1000	1150		115	72 - 134
1,2,3,6,7,8-HxCDF	1000	1140		114	84 - 130
2,3,4,6,7,8-HxCDF	1000	1100		110	70 - 156
1,2,3,7,8,9-HxCDF	1000	1060		106	78 - 130
1,2,3,4,7,8-HxCDD	1000	993		99.3	70 - 164
1,2,3,6,7,8-HxCDD	1000	945		94.5	76 - 134
1,2,3,7,8,9-HxCDD	1000	965		96.5	64 - 162
1,2,3,4,6,7,8-HpCDF	1000	1100	B	110	82 - 122
1,2,3,4,7,8,9-HpCDF	1000	1080		108	78 - 138
1,2,3,4,6,7,8-HpCDD	1000	1060	B	106	70 - 140
OCDF	2000	2050	B	103	63 - 170
OCDD	2000	1670	B	83.3	78 - 144

* Indicates values outside of QC limits

LCS RECOVERY
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Matrix:	Water	Analyzed:	04/07/21 14:48
Batch:	BJC0519	Laboratory ID:	BJC0519-BS1
Preparation:	EPA 1613	Sequence Name:	LCS
Initial/Final:	1000 mL / 20 uL		

COMPOUND	SPIKE ADDED (pg/L)	LCS CONCENTRATION (pg/L)	Q	LCS % REC. #	QC LIMITS REC.
2,3,7,8-TCDF	200	227		113	75 - 158
2,3,7,8-TCDD	200	199		99.6	67 - 158
1,2,3,7,8-PeCDF	1000	1130		113	80 - 134
2,3,4,7,8-PeCDF	1000	1140		114	68 - 160
1,2,3,7,8-PeCDD	1000	1060		106	70 - 142
1,2,3,4,7,8-HxCDF	1000	1050		105	72 - 134
1,2,3,6,7,8-HxCDF	1000	1090		109	84 - 130
2,3,4,6,7,8-HxCDF	1000	1050		105	70 - 156
1,2,3,7,8,9-HxCDF	1000	1010		101	78 - 130
1,2,3,4,7,8-HxCDD	1000	952		95.2	70 - 164
1,2,3,6,7,8-HxCDD	1000	926		92.6	76 - 134
1,2,3,7,8,9-HxCDD	1000	921		92.1	64 - 162
1,2,3,4,6,7,8-HpCDF	1000	1090	B	109	82 - 122
1,2,3,4,7,8,9-HpCDF	1000	1040	B	104	78 - 138
1,2,3,4,6,7,8-HpCDD	1000	992	B	99.2	70 - 140
OCDF	2000	2080	B	104	63 - 170
OCDD	2000	1660	B	82.9	78 - 144

* Indicates values outside of QC limits

LCS DUPLICATE RECOVERY/RPD
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Matrix:	Water	Analyzed:	04/07/21 15:37
Batch:	BJC0519	Laboratory ID:	BJC0519-BSD1
Preparation:	EPA 1613	Sequence Name:	LCS Dup
Initial/Final:	1000 mL / 20 uL		

COMPOUND	SPIKE ADDED (pg/L)	LCSD CONCENTRATION (pg/L)	Q	LCSD % REC. #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
2,3,7,8-TCDF	200	231		115	1.69	25	75 - 158
2,3,7,8-TCDD	200	199		99.3	0.294	25	67 - 158
1,2,3,7,8-PeCDF	1000	1170		117	3.69	25	80 - 134
2,3,4,7,8-PeCDF	1000	1190		119	3.63	25	68 - 160
1,2,3,7,8-PeCDD	1000	1070		107	0.983	25	70 - 142
1,2,3,4,7,8-HxCDF	1000	1070		107	1.53	25	72 - 134
1,2,3,6,7,8-HxCDF	1000	1090		109	0.205	25	84 - 130
2,3,4,6,7,8-HxCDF	1000	1060		106	0.869	25	70 - 156
1,2,3,7,8,9-HxCDF	1000	1030		103	1.13	25	78 - 130
1,2,3,4,7,8-HxCDD	1000	946		94.6	0.640	25	70 - 164
1,2,3,6,7,8-HxCDD	1000	967		96.7	4.32	25	76 - 134
1,2,3,7,8,9-HxCDD	1000	970		97.0	5.11	25	64 - 162
1,2,3,4,6,7,8-HpCDF	1000	1160	B	116	6.98	25	82 - 122
1,2,3,4,7,8,9-HpCDF	1000	1090	B	109	5.19	25	78 - 138
1,2,3,4,6,7,8-HpCDD	1000	1000	B	100	0.856	25	70 - 140
OCDF	2000	2130	B	107	2.54	25	63 - 170
OCDD	2000	1820	B	91.1	9.38	25	78 - 144

* Indicates values outside of QC limits

INITIAL CALIBRATION DATA
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Calibration:	EC00006	Instrument:	AUTOSPEC01
Calibration Date:	03/01/2021	Column (1):	RTX-Dioxin2

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
		RRF		**RRF**		**RRF**		**RRF**		**RRF**		**RRF**
2,3,7,8-TCDF			0.5	0.7748708	2	0.7831653	10	0.7882736	40	0.7830694	200	0.7781552
2,3,7,8-TCDD			0.5	1.3651	2	1.30578	10	1.259849	40	1.295571	200	1.311057
1,2,3,7,8-PeCDF	0.5	0.8603599	2.5	0.8764169	10	0.8773571	50	0.8645142	200	0.8486305	1000	0.8694004
2,3,4,7,8-PeCDF	0.5	1.118256	2.5	0.9431073	10	0.9399037	50	0.9424602	200	0.9699737	1000	0.9652965
1,2,3,7,8-PeCDD	0.5	0.9273666	2.5	0.9878148	10	0.9895966	50	0.985943	200	0.9828972	1000	0.9981499
1,2,3,4,7,8-HxCDF	0.5	1.073535	2.5	0.9798465	10	1.001271	50	1.001942	200	1.008375	1000	0.9483315
1,2,3,6,7,8-HxCDF	0.5	0.9661642	2.5	0.9966357	10	0.9910789	50	0.95346	200	0.9568166	1000	0.9022143
2,3,4,6,7,8-HxCDF	0.5	1.026166	2.5	1.031376	10	1.059935	50	1.04558	200	1.041998	1000	1.053189
1,2,3,7,8,9-HxCDF	0.5	1.112488	2.5	1.000298	10	1.011938	50	0.9553546	200	0.9315848	1000	0.9541313
1,2,3,4,7,8-HxCDD	0.5	0.9829104	2.5	0.9648049	10	0.9676242	50	0.938107	200	0.9301411	1000	0.9533622
1,2,3,6,7,8-HxCDD	0.5	0.9186338	2.5	0.8913861	10	1.025243	50	0.9824801	200	0.9280584	1000	0.9696846
1,2,3,7,8,9-HxCDD	0.5	0.9505991	2.5	0.8870905	10	0.9803382	50	0.905352	200	0.8952699	1000	0.9427238
1,2,3,4,6,7,8-HpCDF	0.5	1.053876	2.5	1.056606	10	1.07478	50	1.053077	200	1.060433	1000	1.04906
1,2,3,4,7,8,9-HpCDF	0.5	1.073635	2.5	1.083627	10	1.072943	50	1.084052	200	1.038558	1000	1.065618
1,2,3,4,6,7,8-HpCDD	0.5	1.109029	2.5	1.036977	10	1.028518	50	1.027155	200	1.063078	1000	1.065492
OCDF	1	1.512287	5	1.323104	20	1.117361	100	1.207266	400	1.183779	2000	1.196379
OCDD			5	1.023832	20	1.012505	100	1.070652	400	1.062926	2000	1.059094
13C12-2,3,7,8-TCDF	100	1.94158	100	1.889834	100	1.938641	100	1.869787	100	1.889303	100	2.020351
13C12-2,3,7,8-TCDD	100	1.124146	100	1.11008	100	1.132297	100	1.111067	100	1.116708	100	1.20223
13C12-1,2,3,7,8-PeCDF	100	1.324785	100	1.417396	100	1.392298	100	1.381366	100	1.458154	100	1.679439
13C12-2,3,4,7,8-PeCDF	100	1.300251	100	1.314229	100	1.378532	100	1.331685	100	1.354824	100	1.640351
13C12-1,2,3,7,8-PeCDD	100	0.8992179	100	0.8838896	100	0.9490973	100	0.9065271	100	0.9357045	100	1.106752
13C12-1,2,3,4,7,8-HxCDF	100	1.06252	100	1.058799	100	1.05246	100	1.083351	100	1.040067	100	1.021232
13C12-1,2,3,6,7,8-HxCDF	100	1.123687	100	1.125304	100	1.122636	100	1.184706	100	1.142138	100	1.11161
13C12-2,3,4,6,7,8-HxCDF	100	0.9997932	100	1.066197	100	0.9852867	100	1.015132	100	0.9785955	100	0.9794138
13C12-1,2,3,7,8,9-HxCDF	100	0.8921499	100	0.9008288	100	0.8934276	100	0.9148209	100	0.9264368	100	0.9259996
13C12-1,2,3,4,7,8-HxCDD	100	0.943128	100	0.9275041	100	0.9053886	100	0.962453	100	0.9555316	100	0.9374149
13C12-1,2,3,6,7,8-HxCDD	100	1.054097	100	1.09629	100	1.008303	100	1.043494	100	1.056087	100	0.9940022

INITIAL CALIBRATION DATA

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Calibration:	EC00006	Instrument:	AUTOSPEC01
Calibration Date:	03/01/2021	Column (1):	RTX-Dioxin2

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
		RRF		RRF		RRF		RRF		RRF		RRF
13C12-1,2,3,4,6,7,8-HpCDF	100	0.9553546	100	0.9539128	100	0.9553307	100	0.9799731	100	0.9526028	100	0.9616751
13C12-1,2,3,4,7,8,9-HpCDF	100	0.7762386	100	0.7926088	100	0.7799964	100	0.8079006	100	0.8037442	100	0.8017816
13C12-1,2,3,4,6,7,8-HpCDD	100	0.8141068	100	0.8083974	100	0.7639869	100	0.8053523	100	0.7610735	100	0.7771319
13C12-OCDD	200	0.6978513	200	0.6931955	200	0.7077803	200	0.6941003	200	0.690797	200	0.7360243
37Cl4-2,3,7,8-TCDD	0.1	2.014412	0.5	1.266981	2	1.261909	10	1.236396	40	1.305496	200	1.416885
13C12-1,2,3,4-TCDD	100	1	100	1	100	1	100	1	100	1	100	1
13C12-1,2,3,7,8,9-HxCDD	100	1	100	1	100	1	100	1	100	1	100	1

INITIAL CALIBRATION DATA

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Calibration:	EC00006	Instrument:	AUTOSPEC01
Calibration Date:	03/01/2021	Column (1):	RTX-Dioxin2

COMPOUND	Mean RRF	RRF RSD	Linear COD	Quad COD	Limit Type & Limit	Q
2,3,7,8-TCDF	0.7815068	0.7			RSD ()	
2,3,7,8-TCDD	1.307471	2.9			RSD ()	
1,2,3,7,8-PeCDF	0.8661132	1.2			RSD ()	
2,3,4,7,8-PeCDF	0.9798329	7.0			RSD ()	
1,2,3,7,8-PeCDD	0.978628	2.6			RSD ()	
1,2,3,4,7,8-HxCDF	1.002217	4.1			RSD ()	
1,2,3,6,7,8-HxCDF	0.9610616	3.5			RSD ()	
2,3,4,6,7,8-HxCDF	1.043041	1.2			RSD ()	
1,2,3,7,8,9-HxCDF	0.9942991	6.6			RSD ()	
1,2,3,4,7,8-HxCDD	0.9561583	2.1			RSD ()	
1,2,3,6,7,8-HxCDD	0.952581	5.1			RSD ()	
1,2,3,7,8,9-HxCDD	0.9268956	4.0			RSD ()	
1,2,3,4,6,7,8-HpCDF	1.057972	0.9			RSD ()	
1,2,3,4,7,8,9-HpCDF	1.069739	1.6			RSD ()	
1,2,3,4,6,7,8-HpCDD	1.055042	3.0			RSD ()	
OCDF	1.256696	11.3			RSD ()	
OCDD	1.045802	2.5			RSD ()	
13C12-2,3,7,8-TCDF	1.924916	2.9			RSD ()	
13C12-2,3,7,8-TCDD	1.132755	3.1			RSD ()	
13C12-1,2,3,7,8-PeCDF	1.44224	8.6			RSD ()	
13C12-2,3,4,7,8-PeCDF	1.386645	9.2			RSD ()	
13C12-1,2,3,7,8-PeCDD	0.9468647	8.7			RSD ()	
13C12-1,2,3,4,7,8-HxCDF	1.053071	2.0			RSD ()	
13C12-1,2,3,6,7,8-HxCDF	1.135014	2.3			RSD ()	
13C12-2,3,4,6,7,8-HxCDF	1.00407	3.3			RSD ()	
13C12-1,2,3,7,8,9-HxCDF	0.9089439	1.7			RSD ()	
13C12-1,2,3,4,7,8-HxCDD	0.93857	2.2			RSD ()	
13C12-1,2,3,6,7,8-HxCDD	1.042046	3.5			RSD ()	
13C12-1,2,3,4,6,7,8-HpCDF	0.9598082	1.1			RSD ()	
13C12-1,2,3,4,7,8,9-HpCDF	0.7937117	1.7			RSD ()	
13C12-1,2,3,4,6,7,8-HpCDD	0.7883415	3.0			RSD ()	

INITIAL CALIBRATION DATA

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Calibration:	EC00006	Instrument:	AUTOSPEC01
Calibration Date:	03/01/2021	Column (1):	RTX-Dioxin2

COMPOUND	Mean RRF	RRF RSD	Linear COD	Quad COD	Limit Type & Limit	Q
13C12-OCDD	0.7032915	2.4			RSD ()	
37Cl4-2,3,7,8-TCDD	1.417013	21.1			RSD ()	
13C12-1,2,3,4-TCDD	1	0.0			RSD ()	
13C12-1,2,3,7,8,9-HxCDD	1	0.0			RSD ()	

Printed: 3/2/2021 3:09:05PM

ANALYSIS SEQUENCE

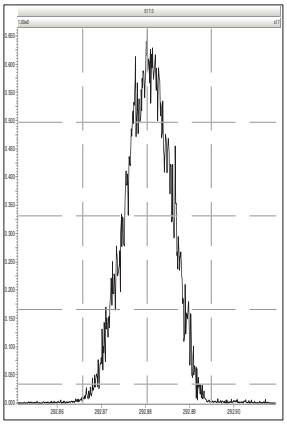
SJC0004

Instrument: AUTOSPEC01 Element Column ID: I10581
Calibration ID: EC00006 Tune File: JAN2621_1-5
EM Voltage: 370 Resolution check times : 11:12, 20:07

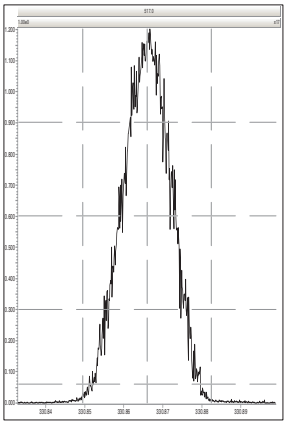
Lab Number	Sample Name	Analysis	Container	Order	STD ID	ISTD ID	Comments
SJC0004-ICV1	CS3V2	QC		1	I005452		
SJC0004-RES1	ISCV2	QC		2	I008888		
SJC0004-CAL1	CSLCV	QC		3	I005460		
SJC0004-CAL2	CS1CV	QC		4	I005456		
SJC0004-CAL3	CS2CV	QC		5	I005457		
SJC0004-CAL4	CS3CV	QC		6	I005452		
SJC0004-CAL5	CS4CV	QC		7	I005458		
SJC0004-CAL6	CS5CV	QC		8	I005459		
SJC0004-SCV1	ICVCV	QC		9	G001361		
SJC0004-CCV1	CS3V2	QC		10	I005452		
SJC0004-RES2	ISCV2	QC		11	I008888		

Printed: Monday, March 01, 2021 11:12:38 Pacific Standard Time

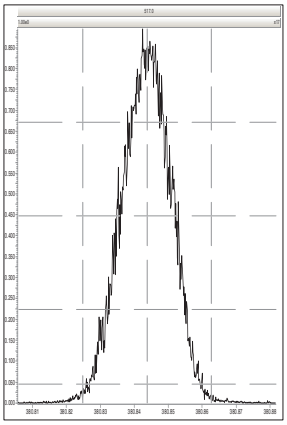
M 292.9824 R 13127



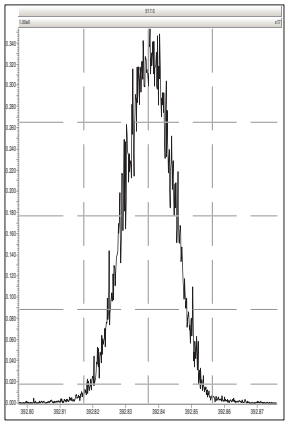
M 330.9792 R 12019



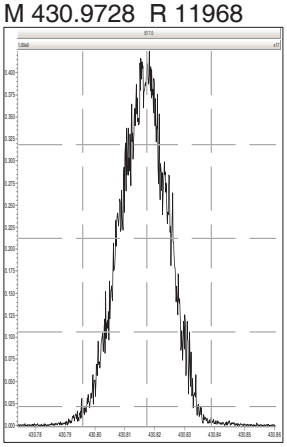
M 380.9760 R 11823



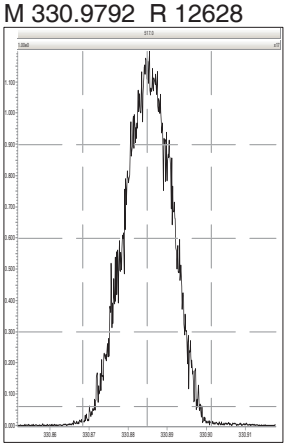
M 392.9760 R 12109



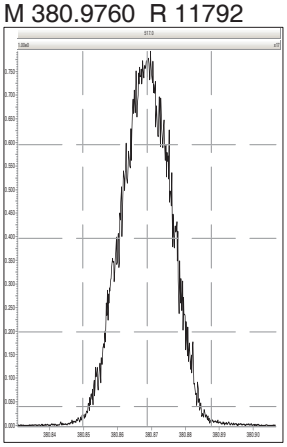
M 430.9728 R 11968



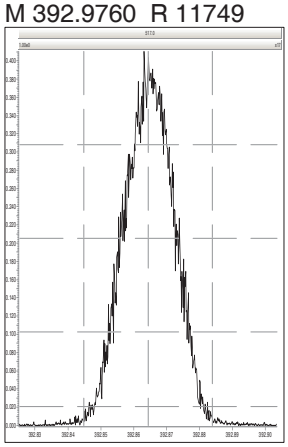
M 330.9792 R 12628



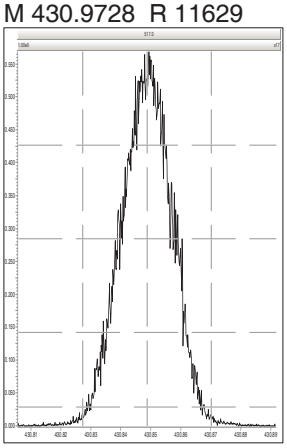
M 380.9760 R 11792



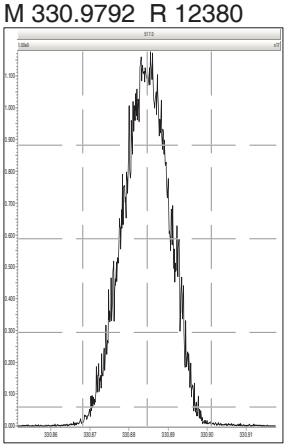
M 392.9760 R 11749



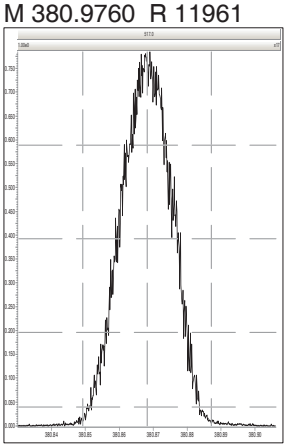
M 430.9728 R 11629



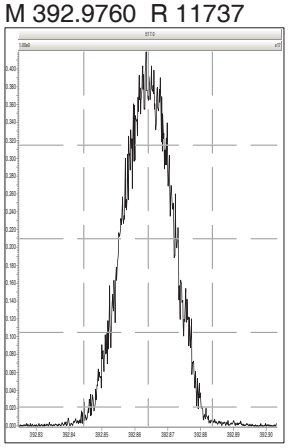
M 330.9792 R 12380



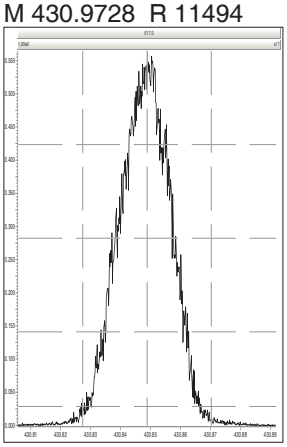
M 380.9760 R 11961



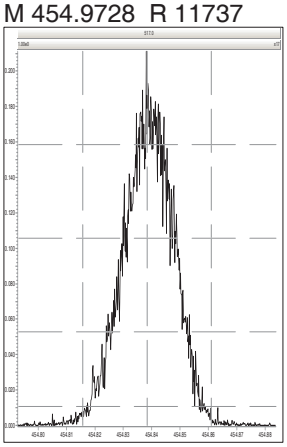
M 392.9760 R 11737



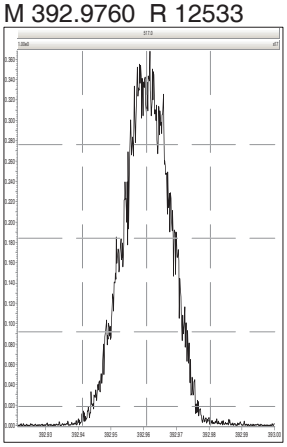
M 430.9728 R 11494



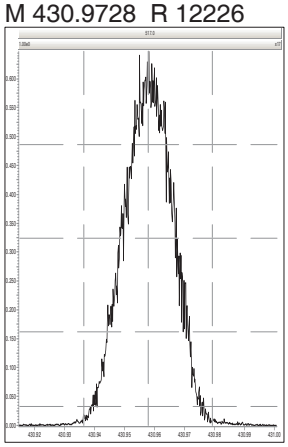
M 454.9728 R 11737



M 392.9760 R 12533



M 430.9728 R 12226



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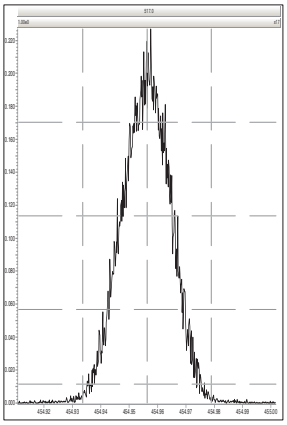
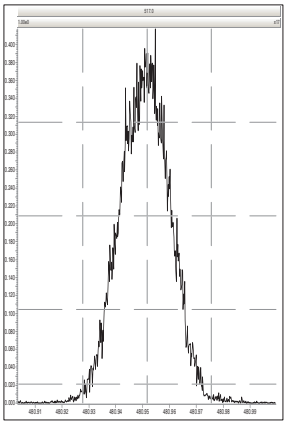
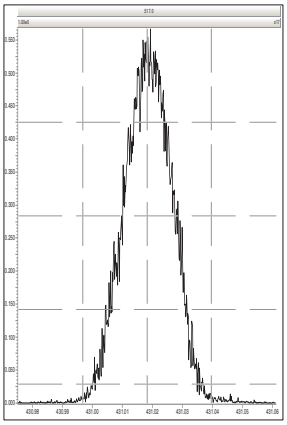
M 454.9728 R 12406



M 480.9696 R 12059



M 430.9728 R 12502



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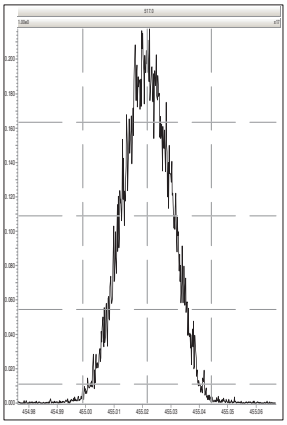
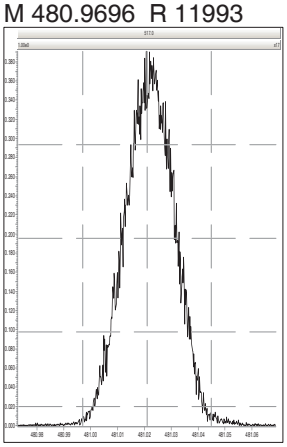
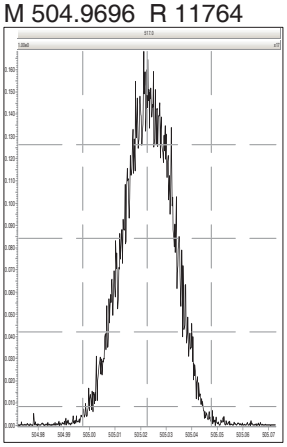


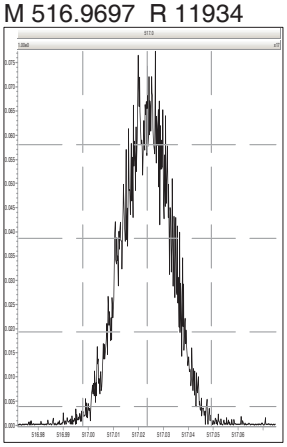
M 480.9696 R 11993

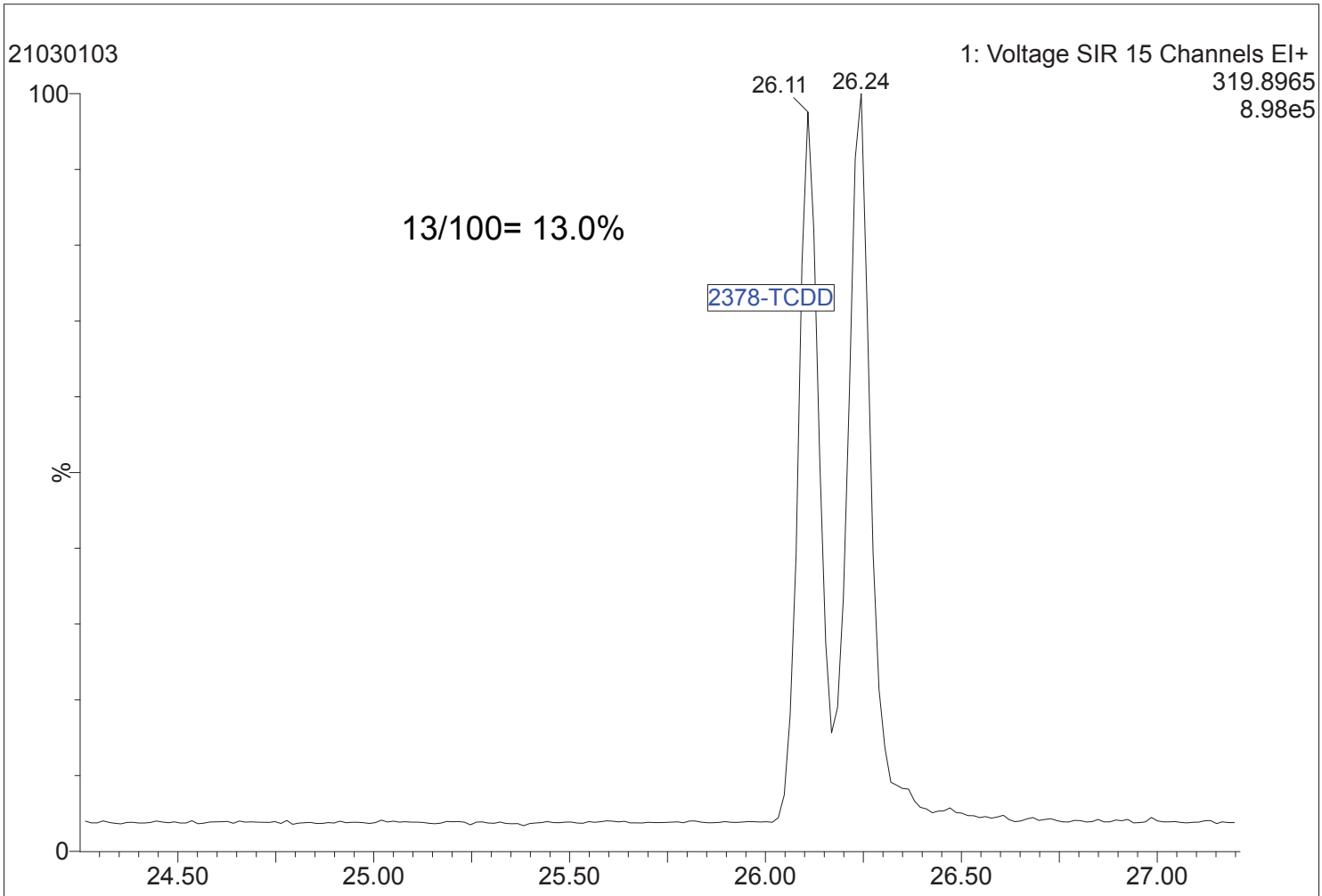


M 504.9696 R 11764



M 516.9697 R 11934

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26.11
26.24
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2378-TCDD
%
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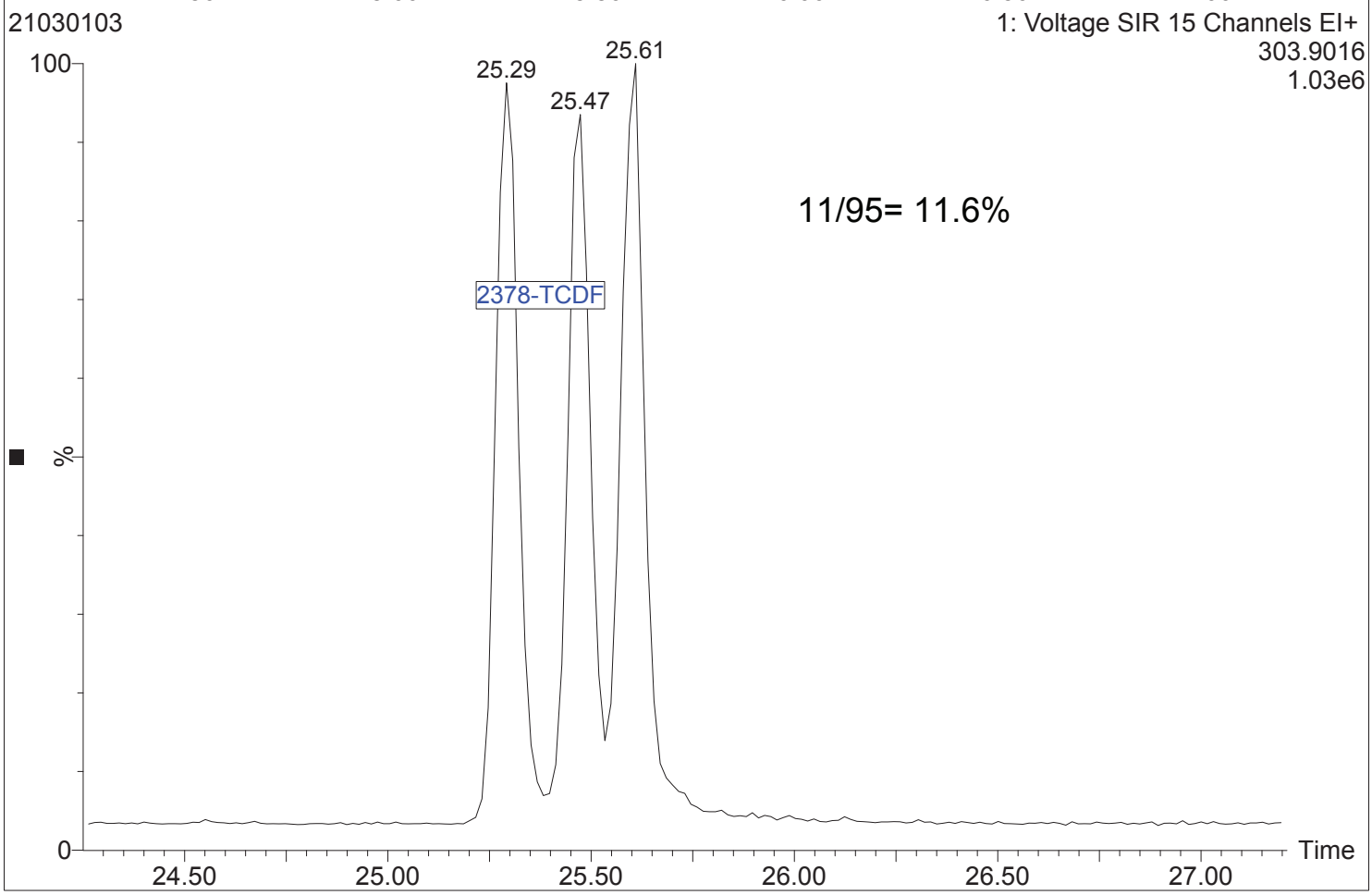
21030103
1: Voltage SIR 15 Channels EI+
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25.29
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%
0
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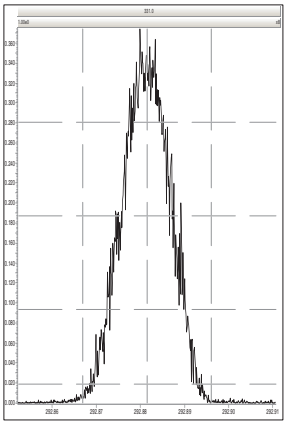
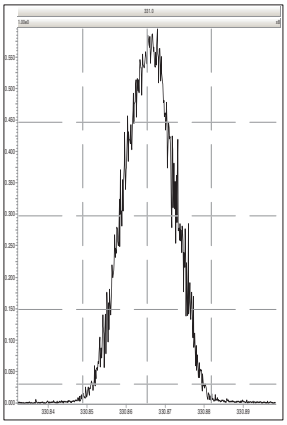
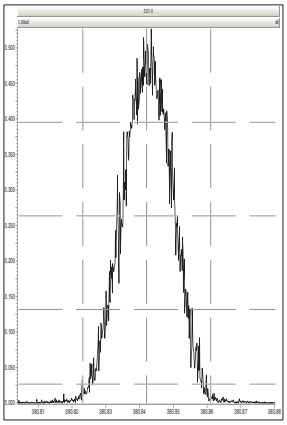
M 292.9824 R 12594



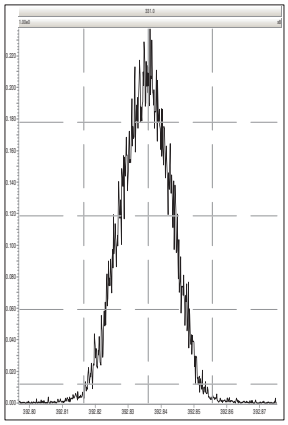
M 330.9792 R 12106



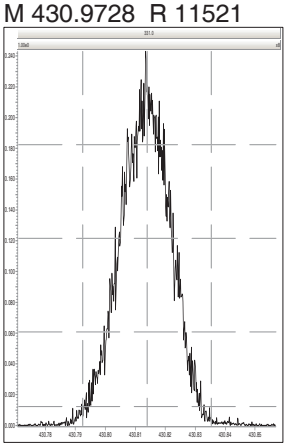
M 380.9760 R 11948



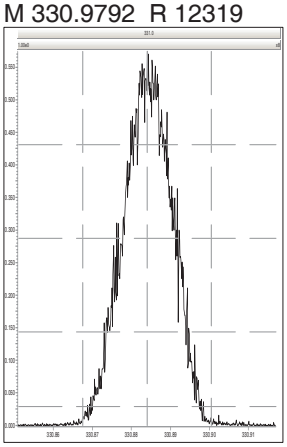
M 392.9760 R 12106



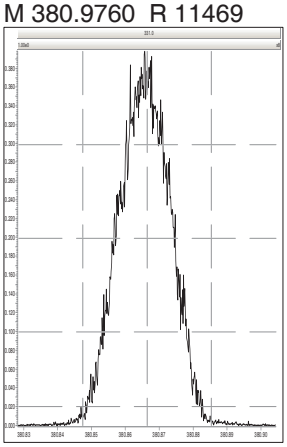
M 430.9728 R 11521



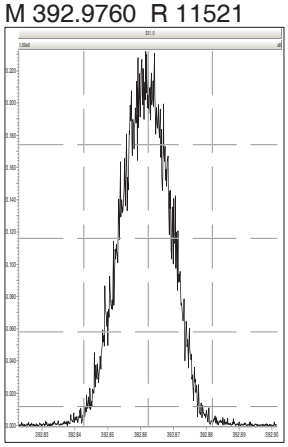
M 330.9792 R 12319



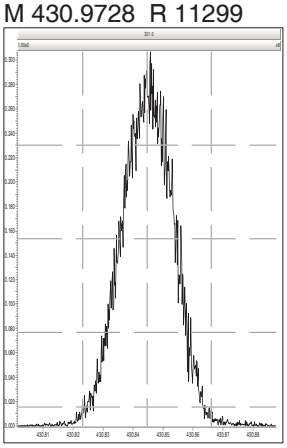
M 380.9760 R 11469



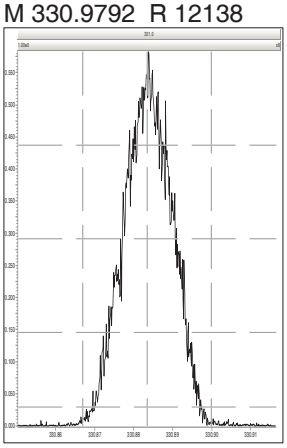
M 392.9760 R 11521



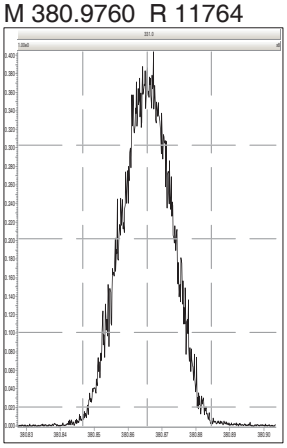
M 430.9728 R 11299



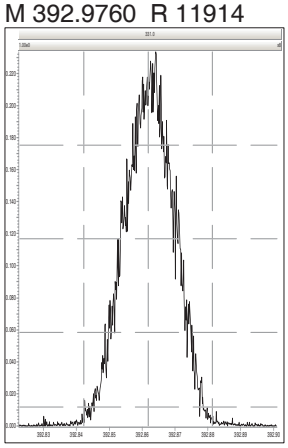
M 330.9792 R 12138



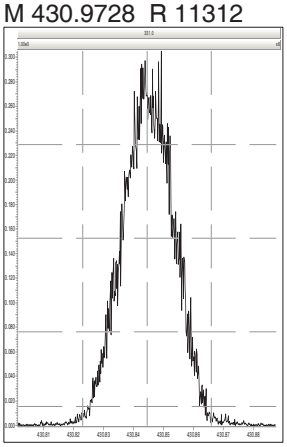
M 380.9760 R 11764



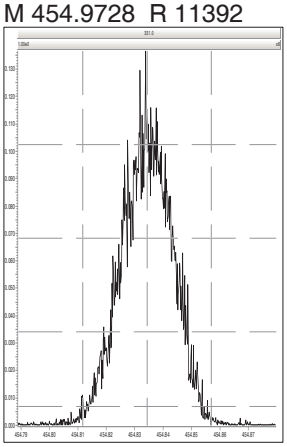
M 392.9760 R 11914



M 430.9728 R 11312



M 454.9728 R 11392



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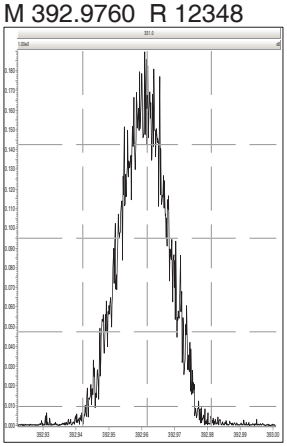
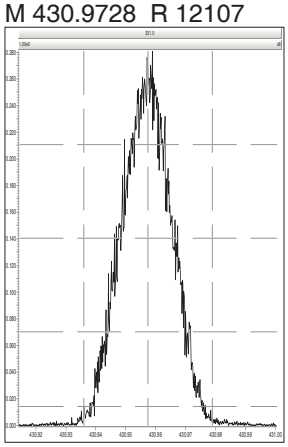


M 430.9728 R 12107



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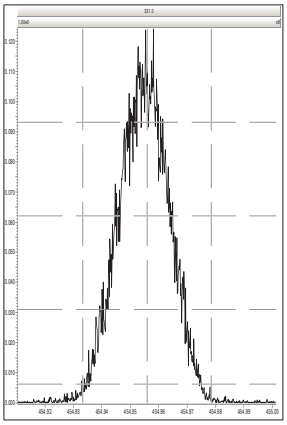
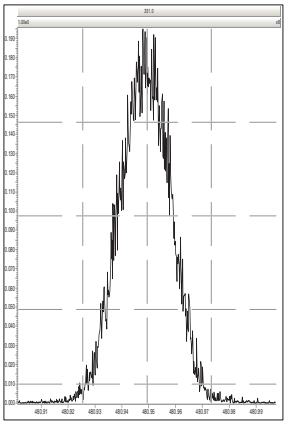
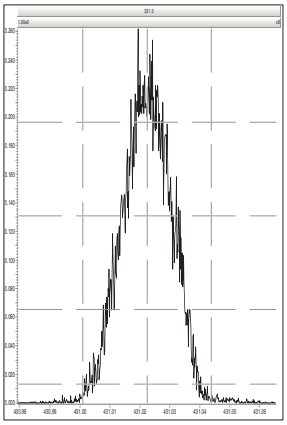
M 454.9728 R 11762



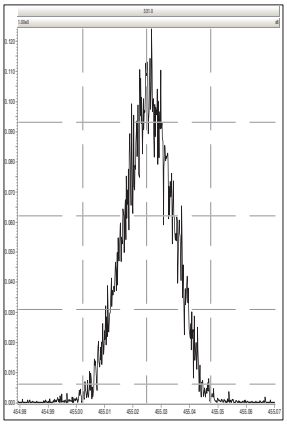
M 480.9696 R 11723



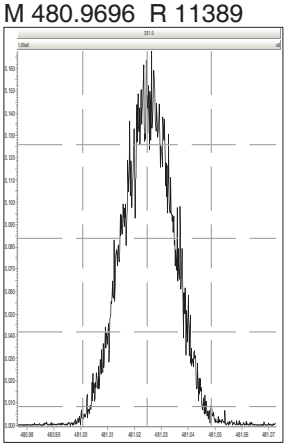
M 430.9728 R 12142



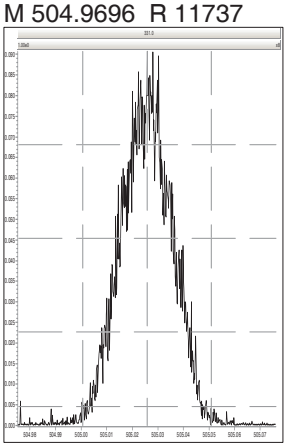
M 454.9728 R 11605



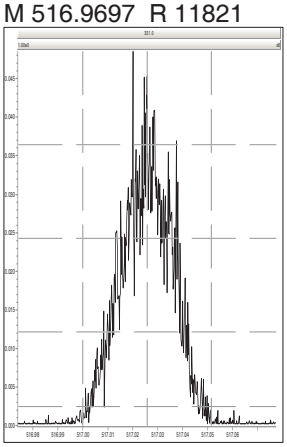
M 480.9696 R 11389

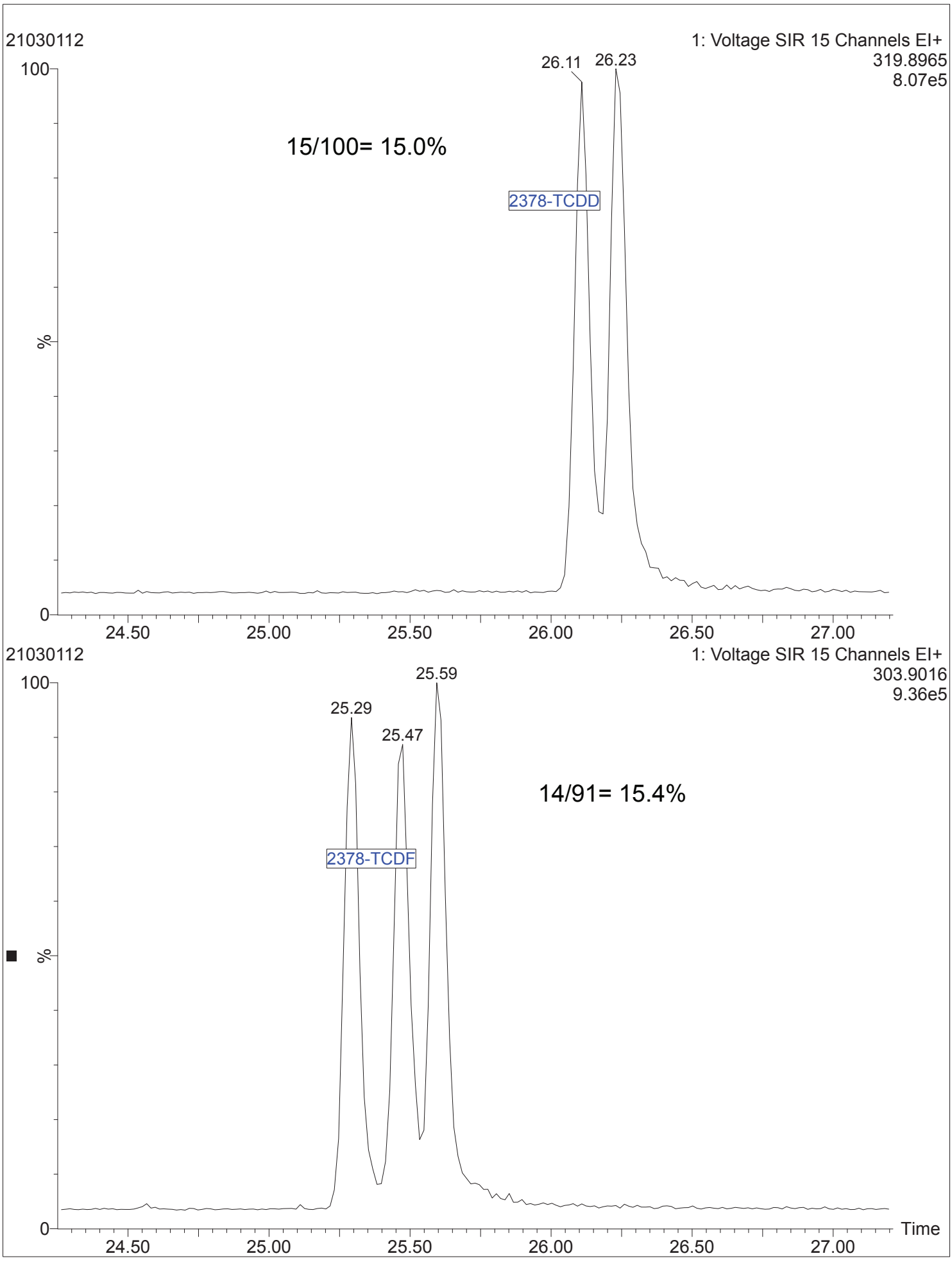


M 504.9696 R 11737



M 516.9697 R 11821

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%
0
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26.00
26.50
27.00
21030112
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25.47
14/91= 15.4%
2378-TCDF
%
0
Time
24.50
25.00
25.50
26.00
26.50
27.00

SECOND-SOURCE CALIBRATION VERIFICATION

EPA 1613B

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Calibration: EC00006
Laboratory ID: SJC0004-SCV1
Sequence: SJC0004
Sequence Name: ICVCV
Standard ID: G001361

ANALYTE	EXPECTED (ng/mL)	FOUND (ng/mL)	% DRIFT	QC LIMIT
2,3,7,8-TCDF	10.000	10.5	5.1	20.00
2,3,7,8-TCDD	10.000	11.1	11.4	20.00
1,2,3,7,8-PeCDF	50.000	55.1	10.2	20.00
2,3,4,7,8-PeCDF	50.000	47.8	-4.4	20.00
1,2,3,7,8-PeCDD	50.000	52.6	5.1	20.00
1,2,3,4,7,8-HxCDF	50.000	53.2	6.4	20.00
1,2,3,6,7,8-HxCDF	50.000	52.8	5.7	20.00
2,3,4,6,7,8-HxCDF	50.000	53.6	7.2	20.00
1,2,3,7,8,9-HxCDF	50.000	50.3	0.5	20.00
1,2,3,4,7,8-HxCDD	50.000	52.1	4.2	20.00
1,2,3,6,7,8-HxCDD	50.000	51.9	3.7	20.00
1,2,3,7,8,9-HxCDD	50.000	50.9	1.9	20.00
1,2,3,4,6,7,8-HpCDF	50.000	57.0	13.9	20.00
1,2,3,4,7,8,9-HpCDF	50.000	57.0	14.0	20.00
1,2,3,4,6,7,8-HpCDD	50.000	51.6	3.2	20.00
OCDF	100.00	100	0.4	20.00
OCDD	100.00	106	6.5	20.00
13C12-2,3,7,8-TCDF	100.00	97.8	-2.2	20.00
13C12-2,3,7,8-TCDD	100.00	80.8	-19.2	20.00
13C12-1,2,3,7,8-PeCDF	100.00	98.4	-1.6	20.00
13C12-2,3,4,7,8-PeCDF	100.00	102	1.6	20.00
13C12-1,2,3,7,8-PeCDD	100.00	95.4	-4.6	20.00
13C12-1,2,3,4,7,8-HxCDF	100.00	112	12.3	20.00
13C12-1,2,3,6,7,8-HxCDF	100.00	115	15.5	20.00
13C12-2,3,4,6,7,8-HxCDF	100.00	110	9.9	20.00
13C12-1,2,3,7,8,9-HxCDF	100.00	114	13.9	20.00
13C12-1,2,3,4,7,8-HxCDD	100.00	115	15.1	20.00
13C12-1,2,3,6,7,8-HxCDD	100.00	114	14.1	20.00
13C12-1,2,3,4,6,7,8-HpCDF	100.00	111	10.8	20.00
13C12-1,2,3,4,7,8,9-HpCDF	100.00	103	3.0	20.00
13C12-1,2,3,4,6,7,8-HpCDD	100.00	106	5.9	20.00
13C12-OCDD	200.00	204	1.9	20.00
37Cl4-2,3,7,8-TCDD	10.000	10.5	4.6	20.00

* Indicates values outside of QC limits

SECOND-SOURCE CALIBRATION VERIFICATION

EPA 1613B

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Calibration: EC00006
Laboratory ID: SJC0004-SCV1
Sequence: SJC0004
Standard ID: G001361

ANALYTE	EXPECTED (ng/mL)	FOUND (ng/mL)	% DRIFT	QC LIMIT
OCDF	100.00	100	0.4	20.00
OCDD	100.00	106	6.5	20.00
13C12-2,3,7,8-TCDF	100.00	97.8	-2.2	20.00
13C12-2,3,7,8-TCDD	100.00	80.8	-19.2	20.00
13C12-1,2,3,7,8-PeCDF	100.00	98.4	-1.6	20.00
13C12-2,3,4,7,8-PeCDF	100.00	102	1.6	20.00
13C12-1,2,3,7,8-PeCDD	100.00	95.4	-4.6	20.00
13C12-1,2,3,4,7,8-HxCDF	100.00	112	12.3	20.00
13C12-1,2,3,6,7,8-HxCDF	100.00	115	15.5	20.00
13C12-2,3,4,6,7,8-HxCDF	100.00	110	9.9	20.00
13C12-1,2,3,7,8,9-HxCDF	100.00	114	13.9	20.00
13C12-1,2,3,4,7,8-HxCDD	100.00	115	15.1	20.00
13C12-1,2,3,6,7,8-HxCDD	100.00	114	14.1	20.00
13C12-1,2,3,4,6,7,8-HpCDF	100.00	111	10.8	20.00
13C12-1,2,3,4,7,8,9-HpCDF	100.00	103	3.0	20.00
13C12-1,2,3,4,6,7,8-HpCDD	100.00	106	5.9	20.00
13C12-OCDD	200.00	204	1.9	20.00
37Cl4-2,3,7,8-TCDD	10.000	10.5	4.6	20.00

* Values outside of QC limits

INITIAL CALIBRATION CHECK

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Instrument ID:	AUTOSPEC01	Calibration:	EC00006
Lab File ID:	21030102A	Calibration Date:	03/01/2021
Sequence:	SJC0004	Injection Date:	03/01/21
Lab Sample ID:	SJC0004-ICV1	Injection Time:	11:16
Sequence Name:	CS3V2		

		CONC. (ng/mL)		RESPONSE FACTOR			% DRIFT/DIFF	
COMPOUND	TYPE	STD	ICV	ICAL	ICV	MIN	ICV	LIMIT
2,3,7,8-TCDF	A	10.000	10.1	0.7815068	0.7865334		0.6	+/-16
2,3,7,8-TCDD	A	10.000	9.92	1.3074710	1.2969940		-0.8	+/-22
1,2,3,7,8-PeCDF	A	50.000	52.5	0.8661132	0.9094034		5.0	+/-18
2,3,4,7,8-PeCDF	A	50.000	50.4	0.9798329	0.9882243		0.9	+/-18
1,2,3,7,8-PeCDD	A	50.000	50.6	0.9786280	0.9897509		1.1	+/-22
1,2,3,4,7,8-HxCDF	A	50.000	53.1	1.0022170	1.0640100		6.2	+/-10
1,2,3,6,7,8-HxCDF	A	50.000	53.8	0.9610616	1.0333350		7.5	+/-12
2,3,4,6,7,8-HxCDF	A	50.000	52.5	1.0430410	1.0946080		4.9	+/-12
1,2,3,7,8,9-HxCDF	A	50.000	50.8	0.9942991	1.0096260		1.5	+/-10
1,2,3,4,7,8-HxCDD	A	50.000	48.8	0.9561583	0.9335381		-2.4	+/-22
1,2,3,6,7,8-HxCDD	A	50.000	50.2	0.9525810	0.9564714		0.4	+/-22
1,2,3,7,8,9-HxCDD	A	50.000	50.4	0.9268956	0.9338913		0.8	+/-18
1,2,3,4,6,7,8-HpCDF	A	50.000	53.3	1.0579720	1.1275140		6.6	+/-10
1,2,3,4,7,8,9-HpCDF	A	50.000	52.8	1.0697390	1.1287730		5.5	+/-14
1,2,3,4,6,7,8-HpCDD	A	50.000	51.0	1.0550420	1.0751000		1.9	+/-14
OCDF	A	100.00	96.5	1.2566960	1.2131530		-3.5	+/-37
OCDD	A	100.00	94.6	1.0458020	1.0163850		-5.4	+/-21
13C12-2,3,7,8-TCDF	A	100.00	99.0	1.9249160	1.9059078		-1.0	+/-29
13C12-2,3,7,8-TCDD	A	100.00	99.3	1.1327550	1.1245539		-0.7	+/-18
13C12-1,2,3,7,8-PeCDF	A	100.00	97.2	1.4422400	1.4024201		-2.8	+/-24
13C12-2,3,4,7,8-PeCDF	A	100.00	98.2	1.3866450	1.3615629		-1.8	+/-23
13C12-1,2,3,7,8-PeCDD	A	100.00	101	0.9468647	0.9550022		0.9	+/-38
13C12-1,2,3,4,7,8-HxCDF	A	100.00	99.8	1.0530710	1.0512952		-0.2	+/-24
13C12-1,2,3,6,7,8-HxCDF	A	100.00	98.0	1.1350140	1.1119343		-2.0	+/-30
13C12-2,3,4,6,7,8-HxCDF	A	100.00	99.6	1.0040700	1.0002259		-0.4	+/-27
13C12-1,2,3,7,8,9-HxCDF	A	100.00	100	0.9089439	0.9125472		0.4	+/-26
13C12-1,2,3,4,7,8-HxCDD	A	100.00	101	0.9385700	0.9471725		0.9	+/-15
13C12-1,2,3,6,7,8-HxCDD	A	100.00	94.2	1.0420460	0.9819427		-5.8	+/-15
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	103	0.9598082	0.9857659		2.7	+/-22
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	104	0.7937117	0.8293911		4.5	+/-23
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	104	0.7883415	0.8210922		4.2	+/-18

* Values outside of QC limits

INITIAL CALIBRATION CHECK

EPA 1613B

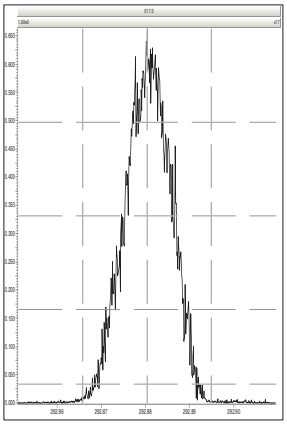
Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Instrument ID:	AUTOSPEC01	Calibration:	EC00006
Lab File ID:	21030102A	Calibration Date:	03/01/2021
Sequence:	SJC0004	Injection Date:	03/01/21
Lab Sample ID:	SJC0004-ICV1	Injection Time:	11:16
Sequence Name:	CS3V2		

		CONC. (ng/mL)		RESPONSE FACTOR			% DRIFT/DIFF	
COMPOUND	TYPE	STD	ICV	ICAL	ICV	MIN	ICV	LIMIT
13C12-OCDD	A	200.00	213	0.7032915	0.7503881		6.7	+/-52
37Cl4-2,3,7,8-TCDD	A	10.000	9.87	1.4170130	1.2810427		-1.3	+/-21

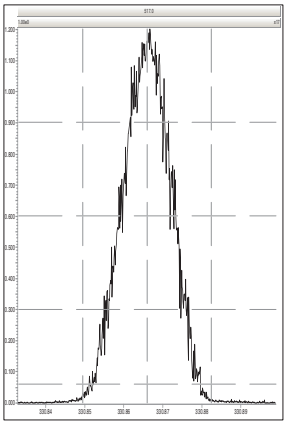
* Values outside of QC limits

Printed: Monday, March 01, 2021 11:12:38 Pacific Standard Time

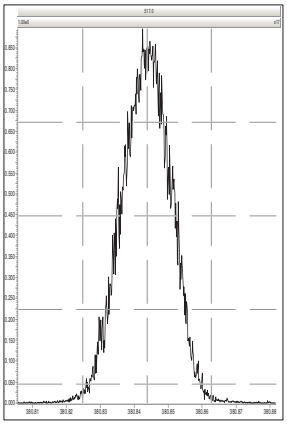
M 292.9824 R 13127



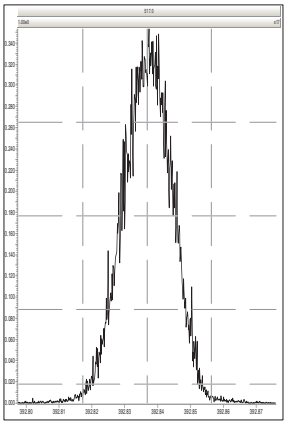
M 330.9792 R 12019



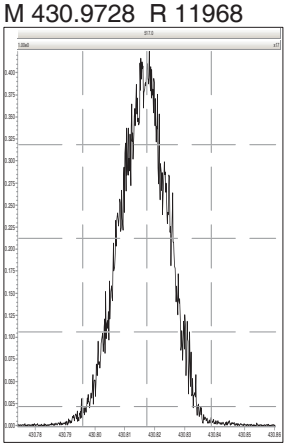
M 380.9760 R 11823



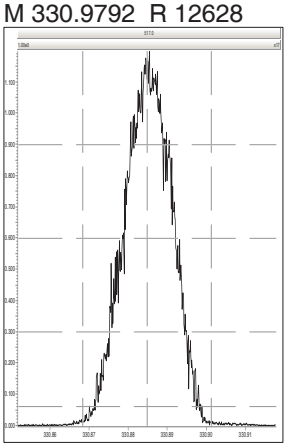
M 392.9760 R 12109



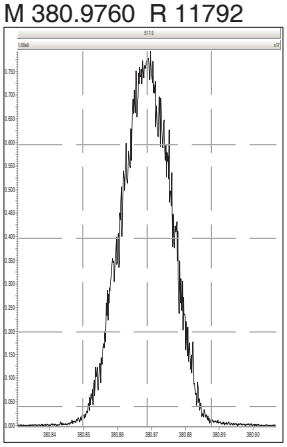
M 430.9728 R 11968



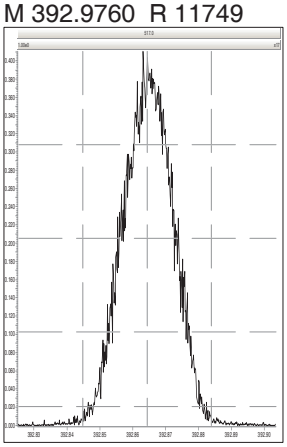
M 330.9792 R 12628



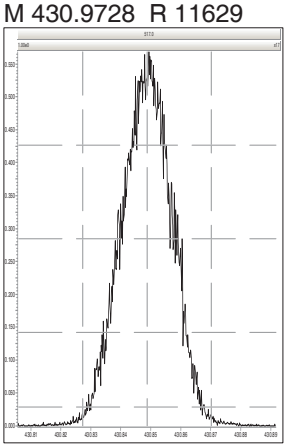
M 380.9760 R 11792



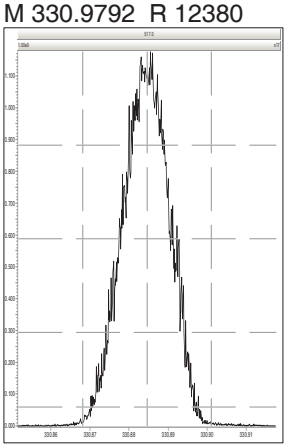
M 392.9760 R 11749



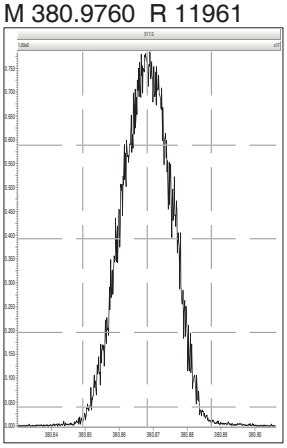
M 430.9728 R 11629



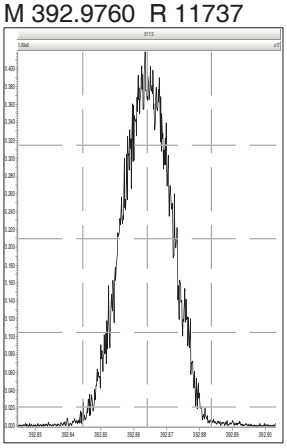
M 330.9792 R 12380



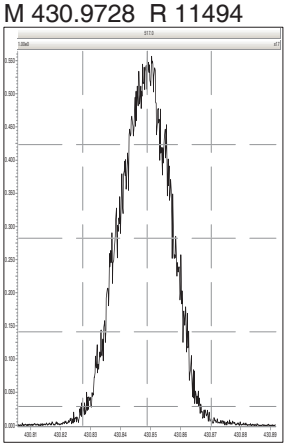
M 380.9760 R 11961



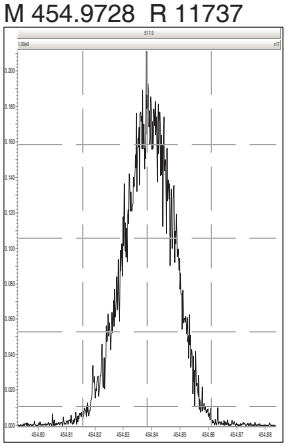
M 392.9760 R 11737



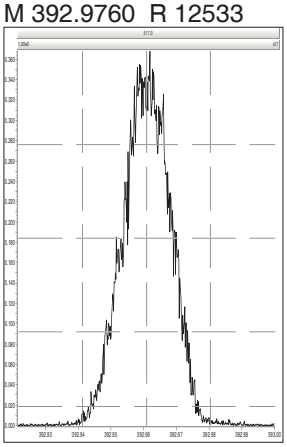
M 430.9728 R 11494



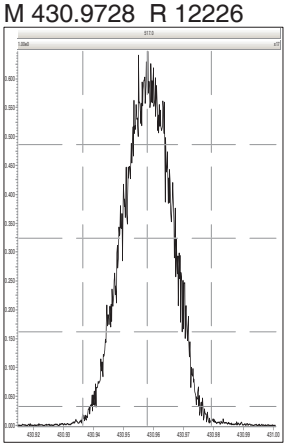
M 454.9728 R 11737



M 392.9760 R 12533



M 430.9728 R 12226



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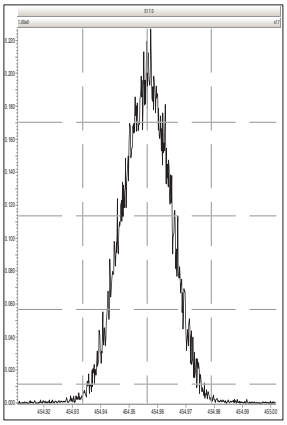
M 454.9728 R 12406



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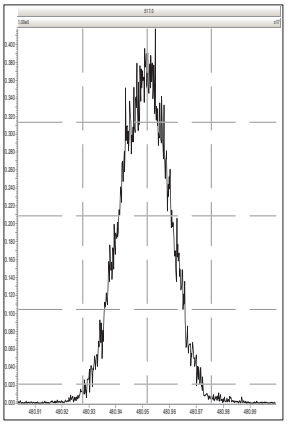
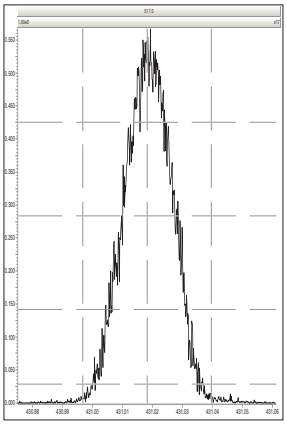
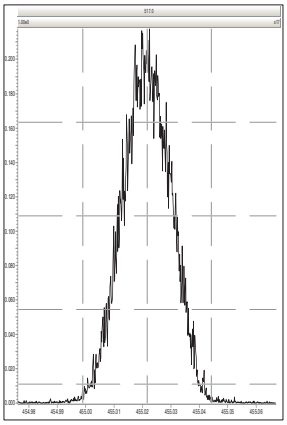


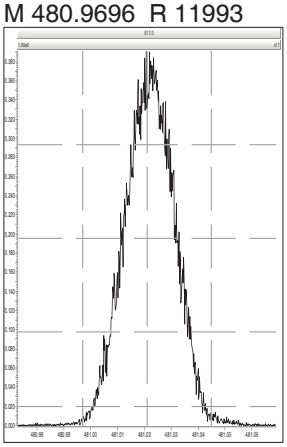
M 430.9728 R 12502



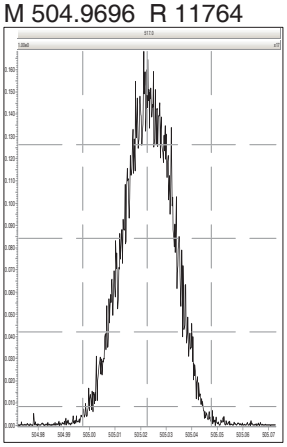
M 454.9728 R 12225



M 480.9696 R 11993



M 504.9696 R 11764



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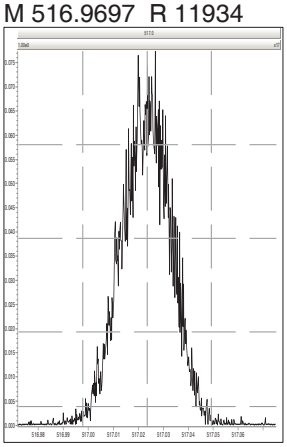

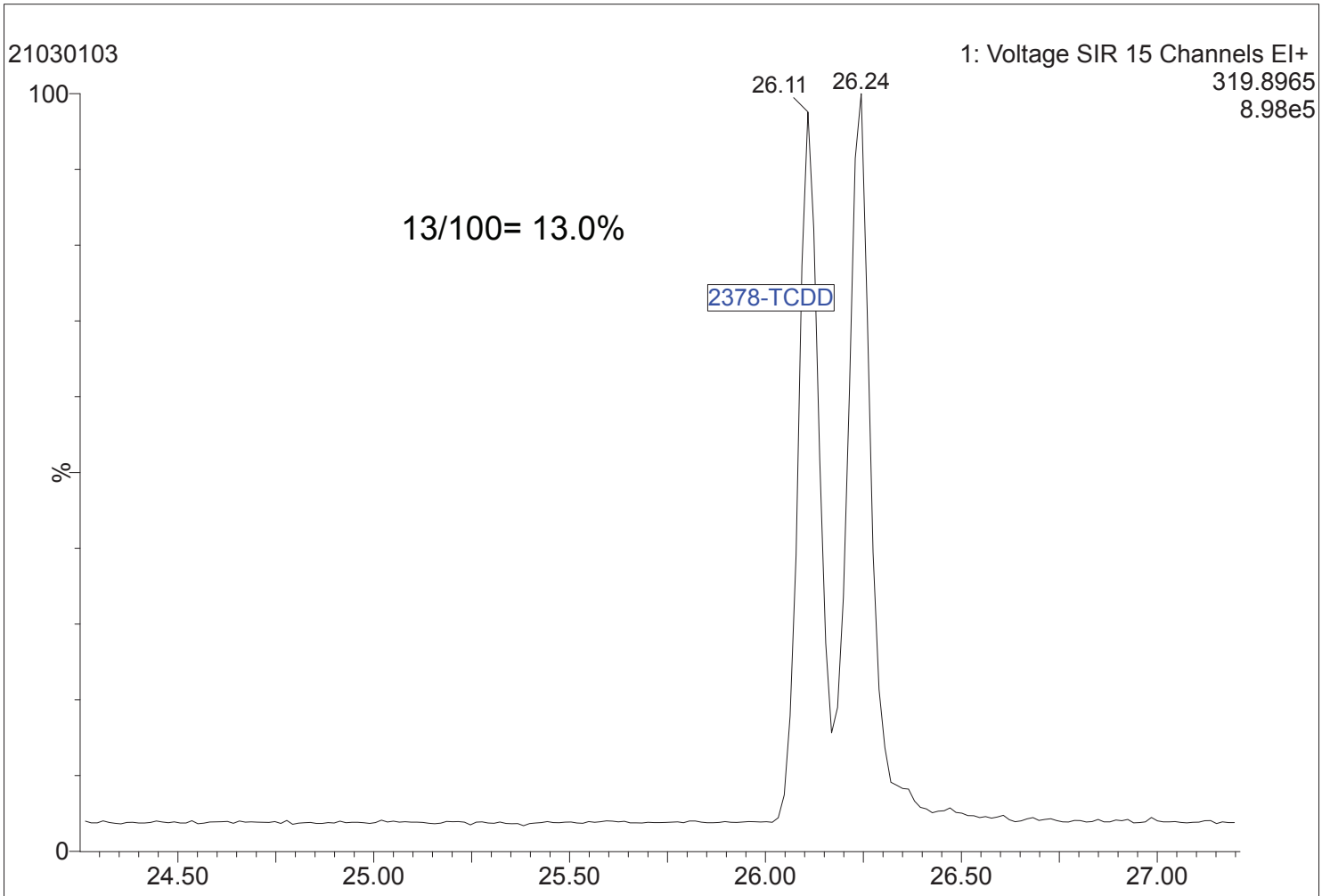
21030103
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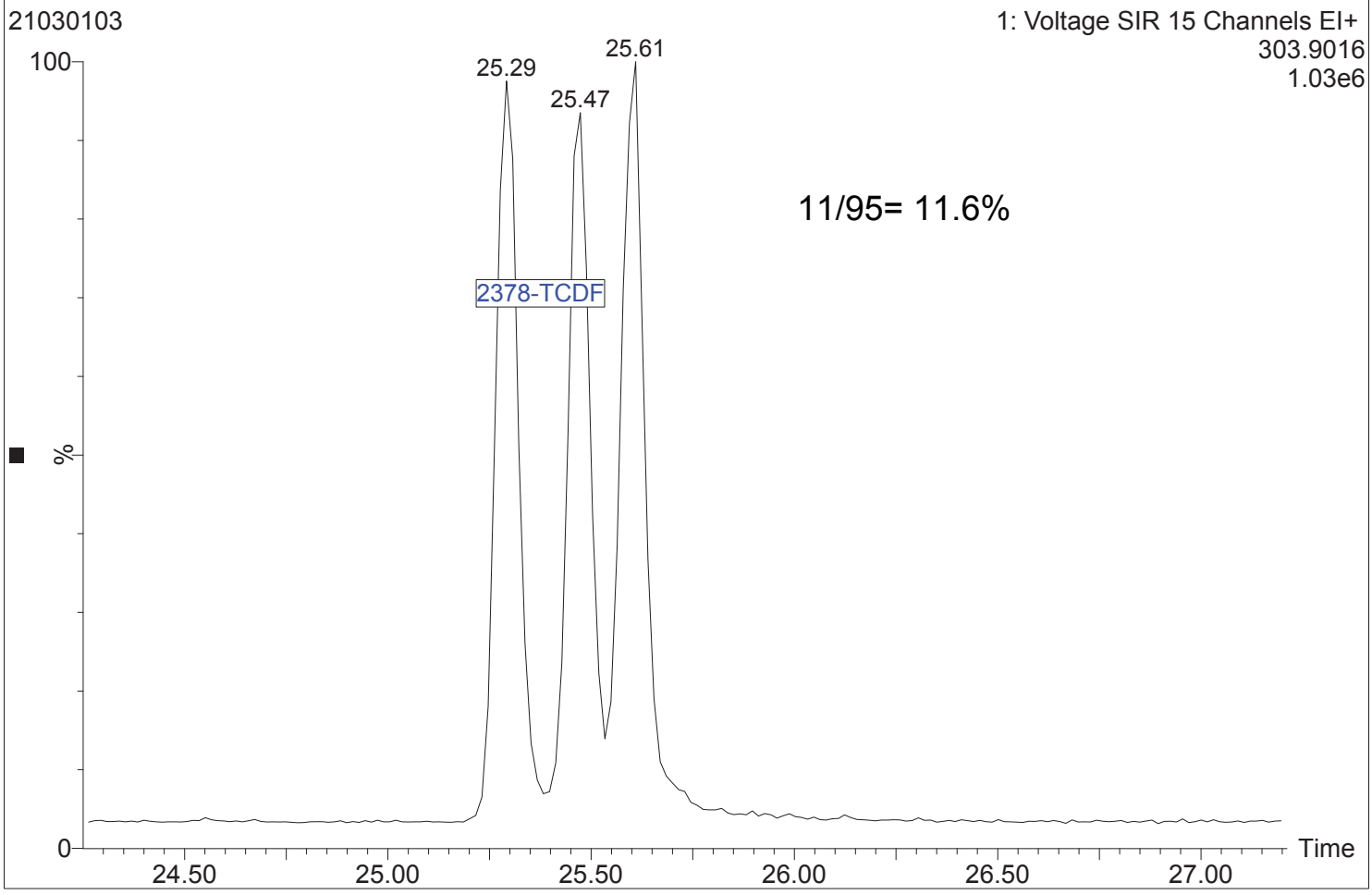
2378-TCDD
%
0
24.50
25.00
25.50
26.00
26.50
27.00


21030103
1: Voltage SIR 15 Channels EI+
303.9016
1.03e6
100
25.29
25.47
25.61
11/95= 11.6%
2378-TCDF
%
0
Time
24.50
25.00
25.50
26.00
26.50
27.00

INITIAL CALIBRATION CHECK

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Instrument ID:	AUTOSPEC01	Calibration:	EC00006
Lab File ID:	21040602	Calibration Date:	03/01/2021
Sequence:	SJC0474	Injection Date:	04/06/21
Lab Sample ID:	SJC0474-ICV1	Injection Time:	12:21
Sequence Name:	CS3C1		

		CONC. (ng/mL)		RESPONSE FACTOR			% DRIFT/DIFF	
COMPOUND	TYPE	STD	ICV	ICAL	ICV	MIN	ICV	LIMIT
2,3,7,8-TCDF	A	10.000	11.3	0.7815068	0.8796225		12.6	+/-16
2,3,7,8-TCDD	A	10.000	10.7	1.3074710	1.3991450		7.0	+/-22
1,2,3,7,8-PeCDF	A	50.000	57.6	0.8661132	0.9977393		15.2	+/-18
2,3,4,7,8-PeCDF	A	50.000	55.6	0.9798329	1.0902020		11.3	+/-18
1,2,3,7,8-PeCDD	A	50.000	52.3	0.9786280	1.0236570		4.6	+/-22
1,2,3,4,7,8-HxCDF	A	50.000	52.8	1.0022170	1.0573660		5.5	+/-10
1,2,3,6,7,8-HxCDF	A	50.000	50.8	0.9610616	0.9761048		1.6	+/-12
2,3,4,6,7,8-HxCDF	A	50.000	53.1	1.0430410	1.1073060		6.2	+/-12
1,2,3,7,8,9-HxCDF	A	50.000	50.2	0.9942991	0.9980251		0.4	+/-10
1,2,3,4,7,8-HxCDD	A	50.000	46.0	0.9561583	0.8789067		-8.1	+/-22
1,2,3,6,7,8-HxCDD	A	50.000	47.3	0.9525810	0.9007352		-5.4	+/-22
1,2,3,7,8,9-HxCDD	A	50.000	46.8	0.9268956	0.8681715		-6.3	+/-18
1,2,3,4,6,7,8-HpCDF	A	50.000	53.4	1.0579720	1.1292840		6.7	+/-10
1,2,3,4,7,8,9-HpCDF	A	50.000	56.4	1.0697390	1.2077320		12.9	+/-14
1,2,3,4,6,7,8-HpCDD	A	50.000	52.7	1.0550420	1.1122050		5.4	+/-14
OCDF	A	100.00	107	1.2566960	1.3421330		6.8	+/-37
OCDD	A	100.00	91.3	1.0458020	0.9809163		-8.7	+/-21
13C12-2,3,7,8-TCDF	A	100.00	102	1.9249160	1.9627827		2.0	+/-29
13C12-2,3,7,8-TCDD	A	100.00	92.6	1.1327550	1.0487809		-7.4	+/-18
13C12-1,2,3,7,8-PeCDF	A	100.00	102	1.4422400	1.4690269		1.9	+/-24
13C12-2,3,4,7,8-PeCDF	A	100.00	102	1.3866450	1.4084035		1.6	+/-23
13C12-1,2,3,7,8-PeCDD	A	100.00	94.6	0.9468647	0.8956403		-5.4	+/-38
13C12-1,2,3,4,7,8-HxCDF	A	100.00	91.8	1.0530710	0.9668135		-8.2	+/-24
13C12-1,2,3,6,7,8-HxCDF	A	100.00	97.2	1.1350140	1.1030463		-2.8	+/-30
13C12-2,3,4,6,7,8-HxCDF	A	100.00	90.1	1.0040700	0.9050175		-9.9	+/-27
13C12-1,2,3,7,8,9-HxCDF	A	100.00	91.6	0.9089439	0.8326731		-8.4	+/-26
13C12-1,2,3,4,7,8-HxCDD	A	100.00	99.8	0.9385700	0.9369977		-0.2	+/-15
13C12-1,2,3,6,7,8-HxCDD	A	100.00	93.7	1.0420460	0.9764466		-6.3	+/-15
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	96.1	0.9598082	0.9222500		-3.9	+/-22
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	93.4	0.7937117	0.7409765		-6.6	+/-23
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	90.0	0.7883415	0.7094167		-10.0	+/-18

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

INITIAL CALIBRATION CHECK

EPA 1613B

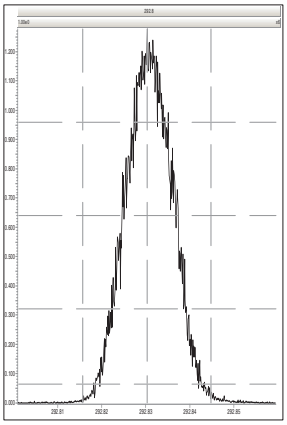
Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Instrument ID:	AUTOSPEC01	Calibration:	EC00006
Lab File ID:	21040602	Calibration Date:	03/01/2021
Sequence:	SJC0474	Injection Date:	04/06/21
Lab Sample ID:	SJC0474-ICV1	Injection Time:	12:21
Sequence Name:	CS3C1		

		CONC. (ng/mL)		RESPONSE FACTOR			% DRIFT/DIFF	
COMPOUND	TYPE	STD	ICV	ICAL	ICV	MIN	ICV	LIMIT
13C12-OCDD	A	200.00	183	0.7032915	0.6450637		-8.3	+/-52
37Cl4-2,3,7,8-TCDD	A	10.000	9.41	1.4170130	1.2210196		-5.9	+/-21

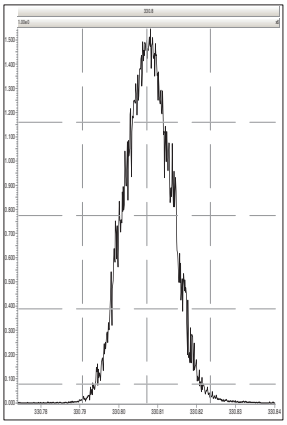
* Values outside of QC limits

Printed: Tuesday, April 06, 2021 11:23:37 Pacific Daylight Time

M 292.9824 R 12736



M 330.9792 R 12438



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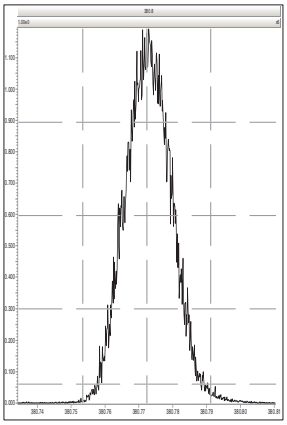

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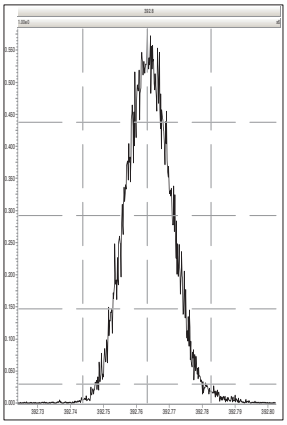

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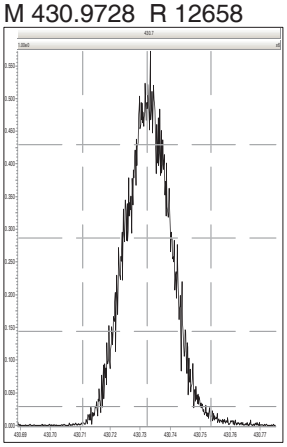

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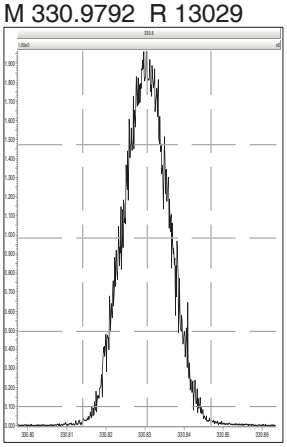

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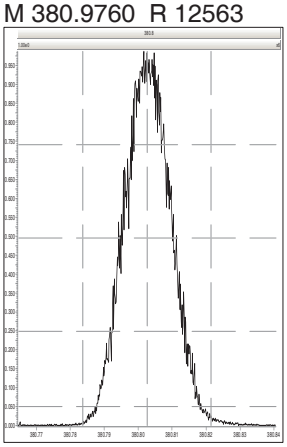

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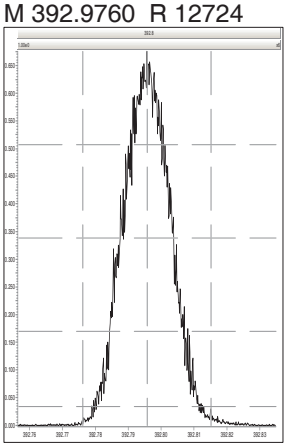

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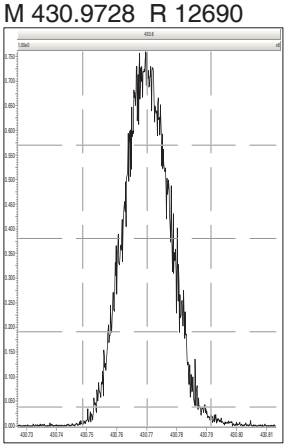
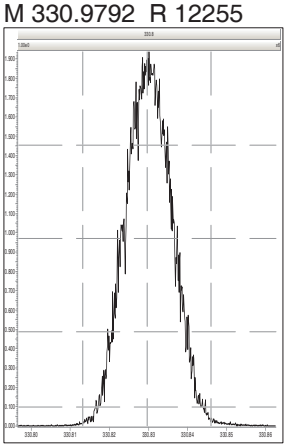


M 330.9792 R 12255



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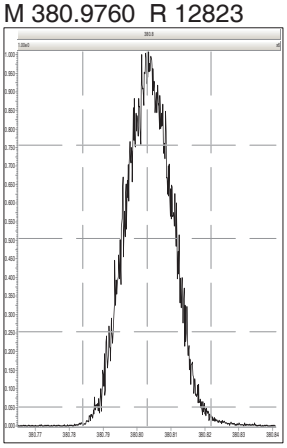

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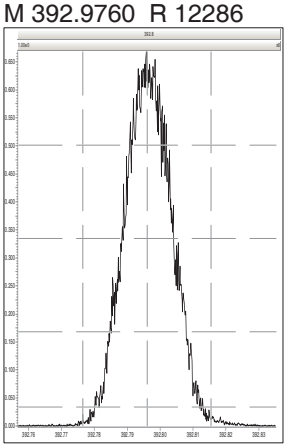

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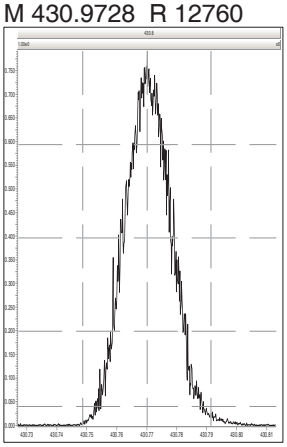
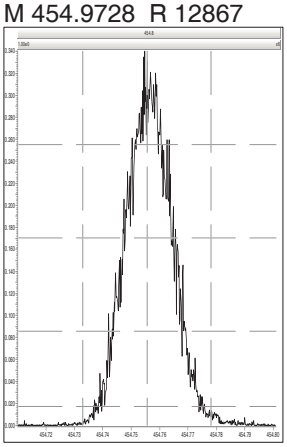
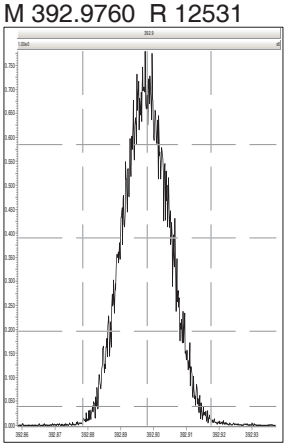


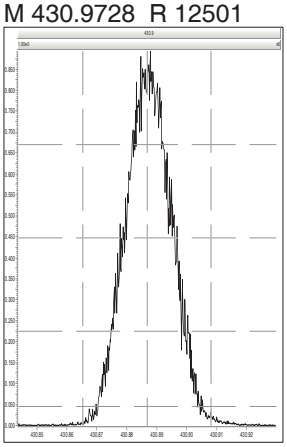
M 454.9728 R 12867



M 392.9760 R 12531



M 430.9728 R 12501



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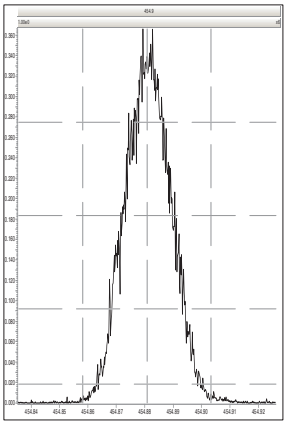
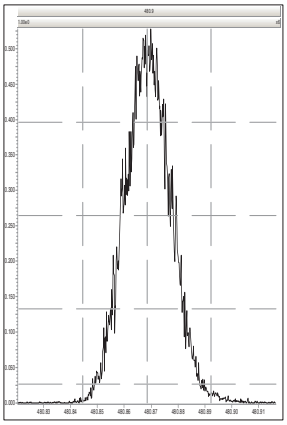
M 454.9728 R 12470



M 480.9696 R 12540



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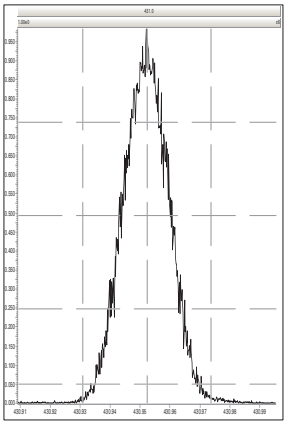
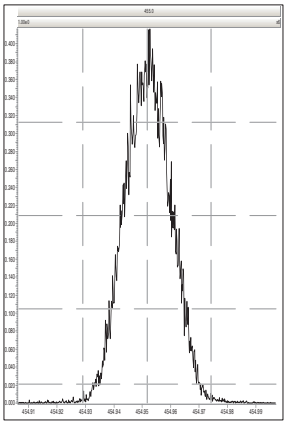
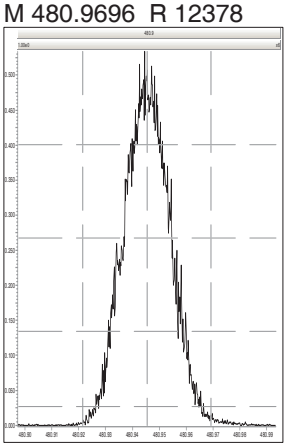


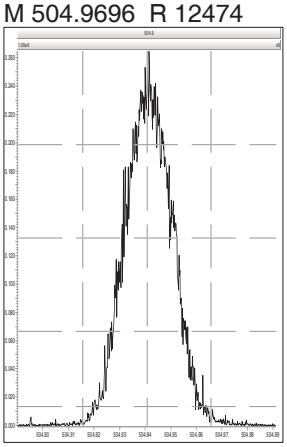
M 454.9728 R 12477



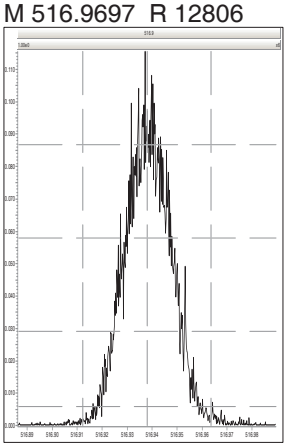
M 480.9696 R 12378

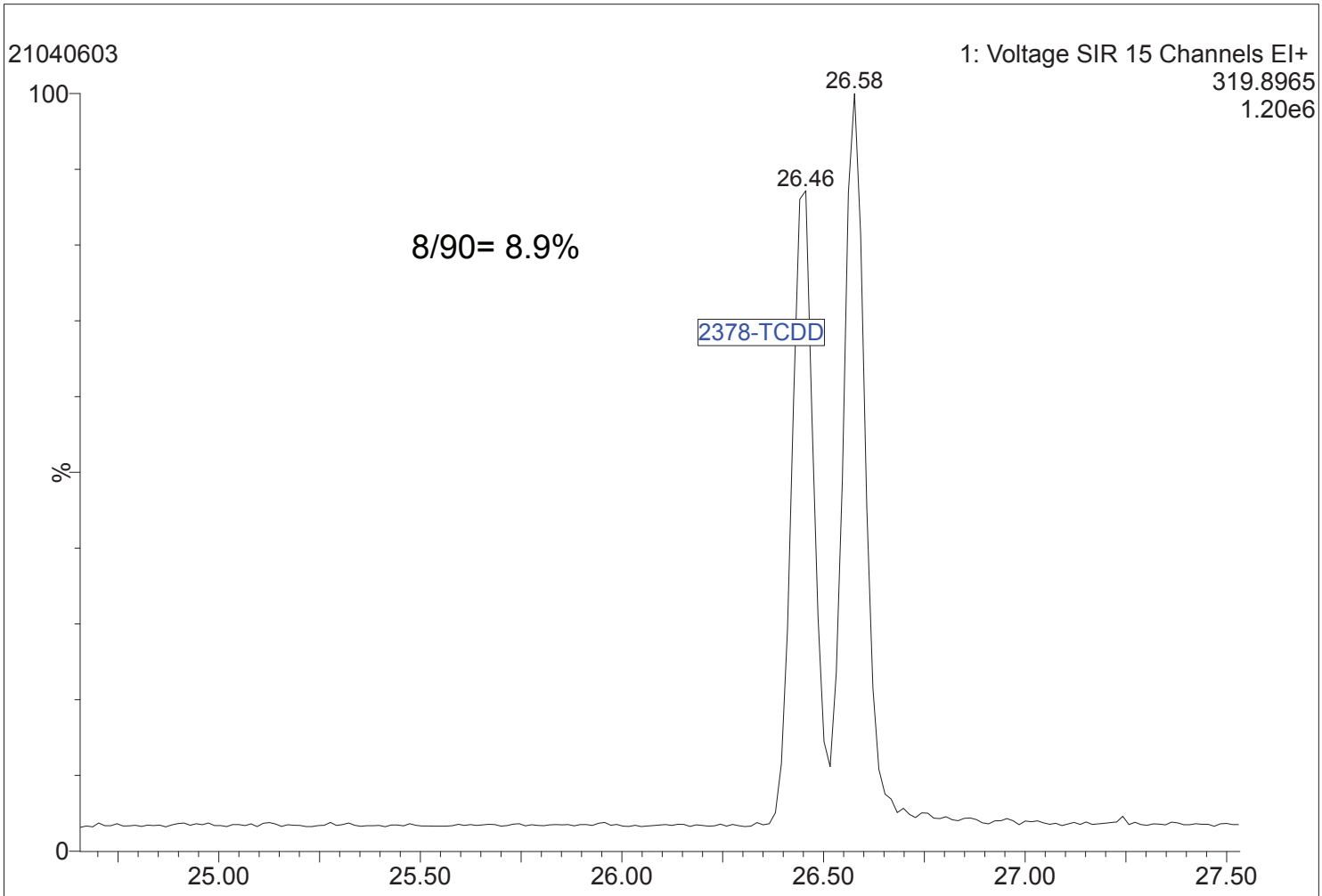


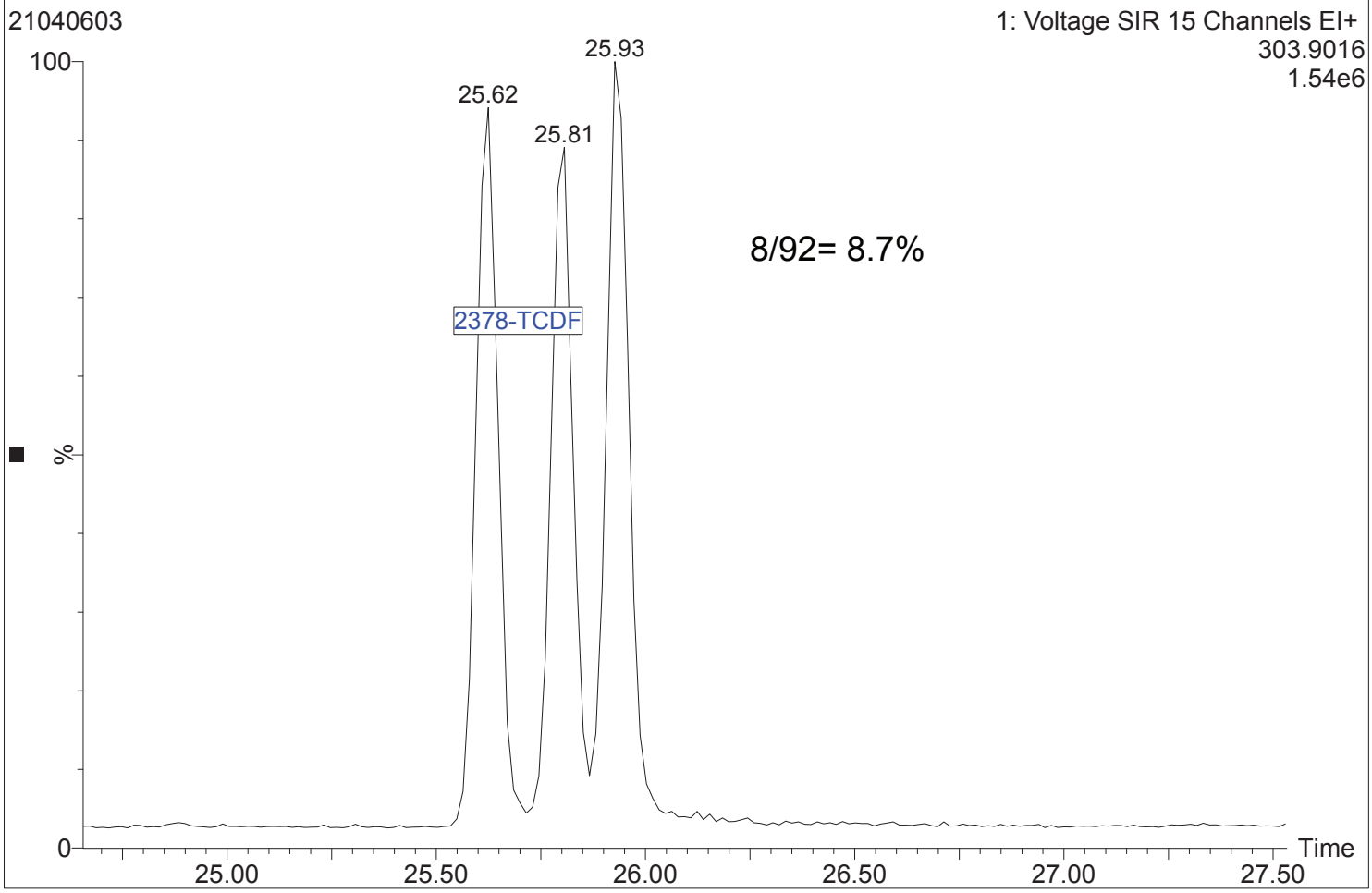
M 504.9696 R 12474



M 516.9697 R 12806




21040603
1: Voltage SIR 15 Channels EI+
319.8965
1.20e6
100
26.58
26.46
8/90= 8.9%
2378-TCDD
%
0
25.00
25.50
26.00
26.50
27.00
27.50


21040603
1: Voltage SIR 15 Channels EI+
303.9016
1.54e6
100
25.93
25.62
25.81
8/92= 8.7%
2378-TCDF
%
0
Time
25.00
25.50
26.00
26.50
27.00
27.50

INITIAL CALIBRATION CHECK

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Instrument ID:	AUTOSPEC01	Calibration:	EC00006
Lab File ID:	21040808A	Calibration Date:	03/01/2021
Sequence:	SJD0113	Injection Date:	04/08/21
Lab Sample ID:	SJD0113-ICV1	Injection Time:	16:02
Sequence Name:	CS3D2		

		CONC. (ng/mL)		RESPONSE FACTOR			% DRIFT/DIFF	
COMPOUND	TYPE	STD	ICV	ICAL	ICV	MIN	ICV	LIMIT
2,3,7,8-TCDF	A	10.000	11.0	0.7815068	0.8590065		9.9	+/-16
2,3,7,8-TCDD	A	10.000	10.6	1.3074710	1.3813940		5.7	+/-22
1,2,3,7,8-PeCDF	A	50.000	57.9	0.8661132	1.0033970		15.9	+/-18
2,3,4,7,8-PeCDF	A	50.000	56.0	0.9798329	1.0972600		12.0	+/-18
1,2,3,7,8-PeCDD	A	50.000	50.0	0.9786280	0.9792394		0.06	+/-22
1,2,3,4,7,8-HxCDF	A	50.000	54.5	1.0022170	1.0924730		9.0	+/-10
1,2,3,6,7,8-HxCDF	A	50.000	51.5	0.9610616	0.9901422		3.0	+/-12
2,3,4,6,7,8-HxCDF	A	50.000	56.9	1.0430410	1.1867430		13.8	+/-12
1,2,3,7,8,9-HxCDF	A	50.000	50.1	0.9942991	0.9964111		0.2	+/-10
1,2,3,4,7,8-HxCDD	A	50.000	47.3	0.9561583	0.9043110		-5.4	+/-22
1,2,3,6,7,8-HxCDD	A	50.000	48.3	0.9525810	0.9193838		-3.5	+/-22
1,2,3,7,8,9-HxCDD	A	50.000	45.5	0.9268956	0.8442354		-8.9	+/-18
1,2,3,4,6,7,8-HpCDF	A	50.000	53.5	1.0579720	1.1326040		7.1	+/-10
1,2,3,4,7,8,9-HpCDF	A	50.000	54.8	1.0697390	1.1719270		9.6	+/-14
1,2,3,4,6,7,8-HpCDD	A	50.000	55.5	1.0550420	1.1712140		11.0	+/-14
OCDF	A	100.00	104	1.2566960	1.3013060		3.5	+/-37
OCDD	A	100.00	90.3	1.0458020	0.9698654		-9.7	+/-21
13C12-2,3,7,8-TCDF	A	100.00	107	1.9249160	2.0517269		6.6	+/-29
13C12-2,3,7,8-TCDD	A	100.00	96.0	1.1327550	1.0871259		-4.0	+/-18
13C12-1,2,3,7,8-PeCDF	A	100.00	103	1.4422400	1.4799096		2.6	+/-24
13C12-2,3,4,7,8-PeCDF	A	100.00	98.3	1.3866450	1.3632337		-1.7	+/-23
13C12-1,2,3,7,8-PeCDD	A	100.00	97.6	0.9468647	0.9246067		-2.4	+/-38
13C12-1,2,3,4,7,8-HxCDF	A	100.00	95.5	1.0530710	1.0056976		-4.5	+/-24
13C12-1,2,3,6,7,8-HxCDF	A	100.00	107	1.1350140	1.2192603		7.4	+/-30
13C12-2,3,4,6,7,8-HxCDF	A	100.00	93.5	1.0040700	0.9388427		-6.5	+/-27
13C12-1,2,3,7,8,9-HxCDF	A	100.00	97.5	0.9089439	0.8862710		-2.5	+/-26
13C12-1,2,3,4,7,8-HxCDD	A	100.00	99.6	0.9385700	0.9351285		-0.4	+/-15
13C12-1,2,3,6,7,8-HxCDD	A	100.00	98.9	1.0420460	1.0305858		-1.1	+/-15
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	100	0.9598082	0.9605572		0.08	+/-22
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	95.1	0.7937117	0.7546591		-4.9	+/-23
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	94.7	0.7883415	0.7468909		-5.3	+/-28

* Values outside of QC limits

Analytical Resources, Incorporated
Analytical Chemists and Consultants

INITIAL CALIBRATION CHECK

EPA 1613B

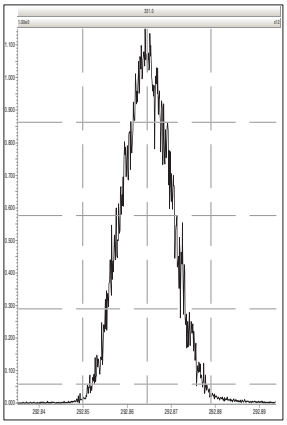
Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Instrument ID:	AUTOSPEC01	Calibration:	EC00006
Lab File ID:	21040808A	Calibration Date:	03/01/2021
Sequence:	SJD0113	Injection Date:	04/08/21
Lab Sample ID:	SJD0113-ICV1	Injection Time:	16:02
Sequence Name:	CS3D2		

		CONC. (ng/mL)		RESPONSE FACTOR			% DRIFT/DIFF	
COMPOUND	TYPE	STD	ICV	ICAL	ICV	MIN	ICV	LIMIT
13C12-OCDD	A	200.00	181	0.7032915	0.6370163		-9.4	+/-52
37Cl4-2,3,7,8-TCDD	A	10.000	10.2	1.4170130	1.3172725		1.5	

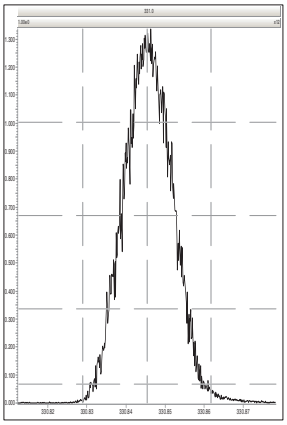
* Values outside of QC limits

Printed: Thursday, April 08, 2021 16:56:11 Pacific Daylight Time

M 292.9824 R 11576



M 330.9792 R 11948



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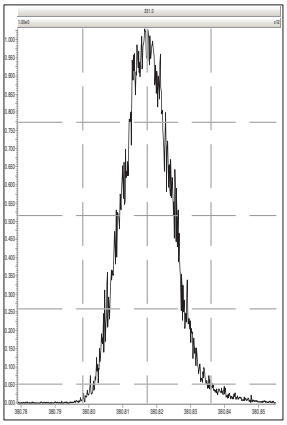

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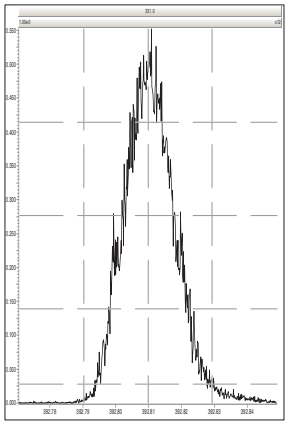

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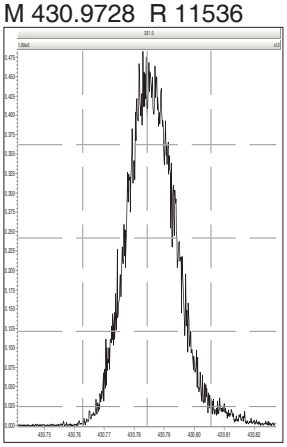
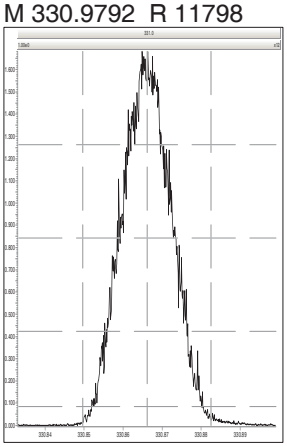


M 330.9792 R 11798



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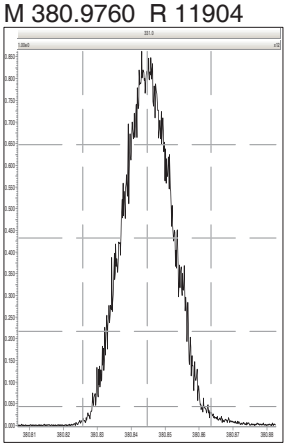

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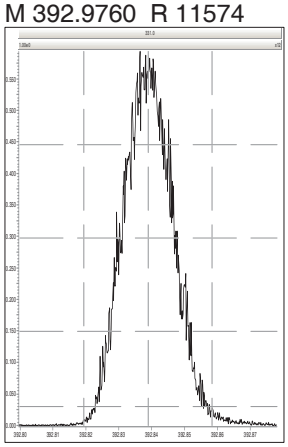

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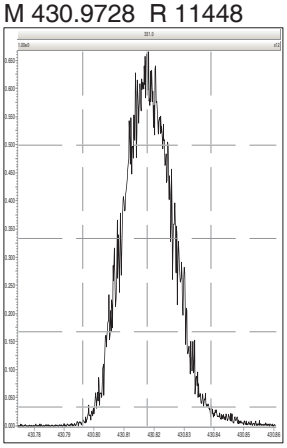

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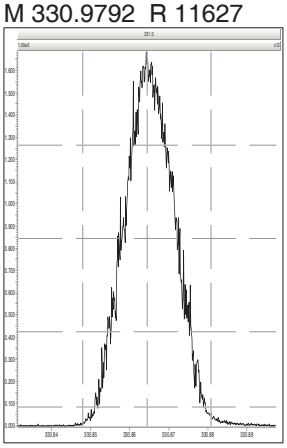

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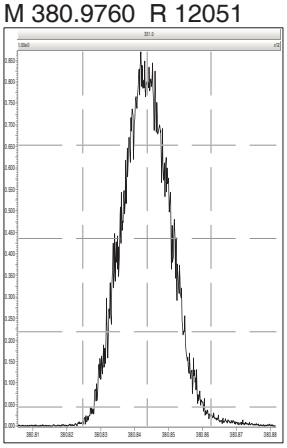

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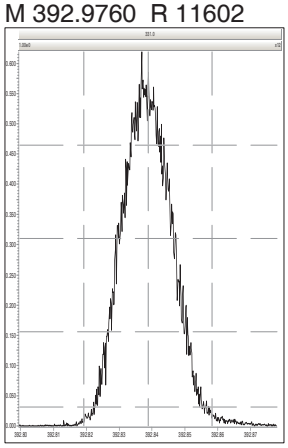

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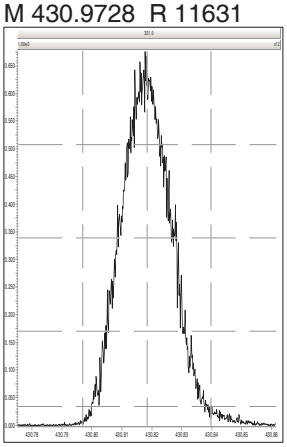

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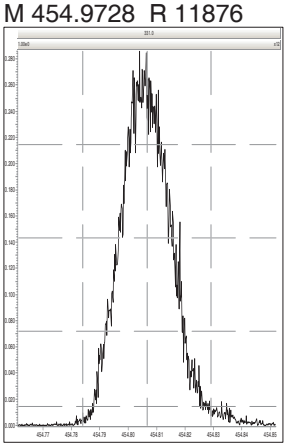

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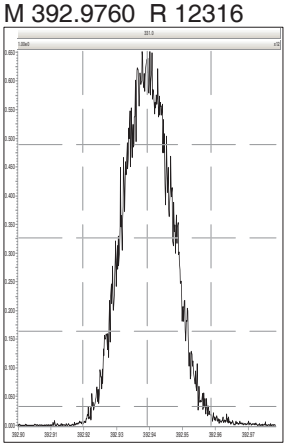

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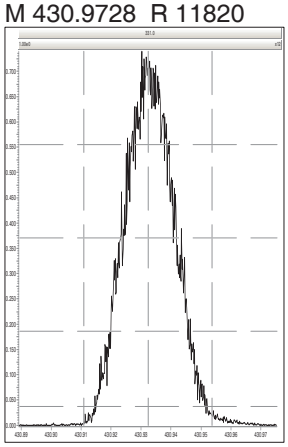

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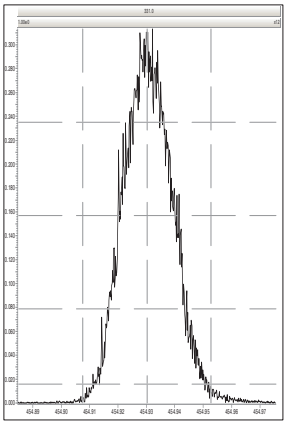

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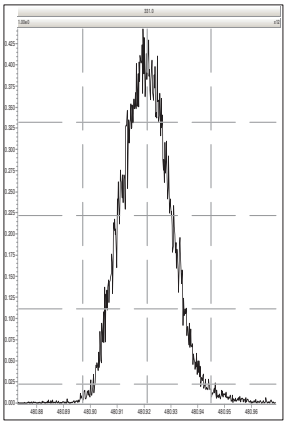

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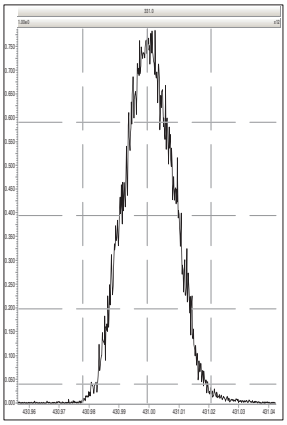

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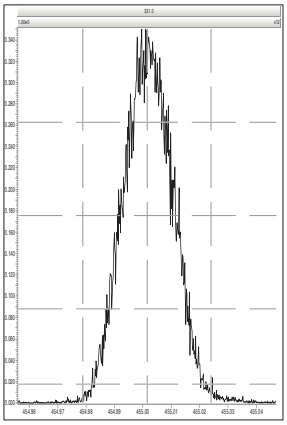
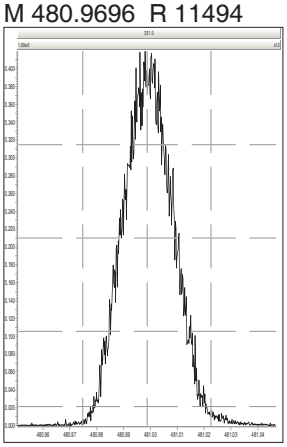
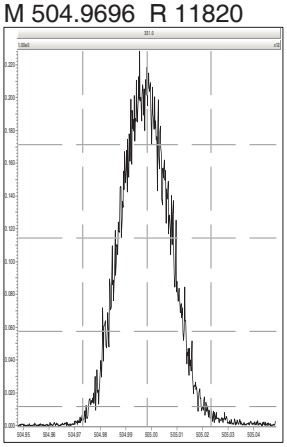


M 480.9696 R 11494



M 504.9696 R 11820



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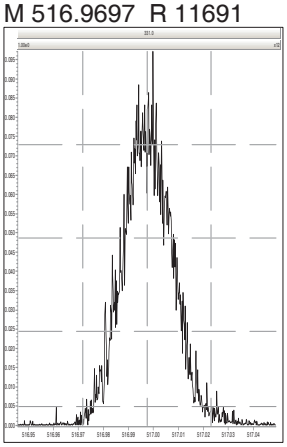
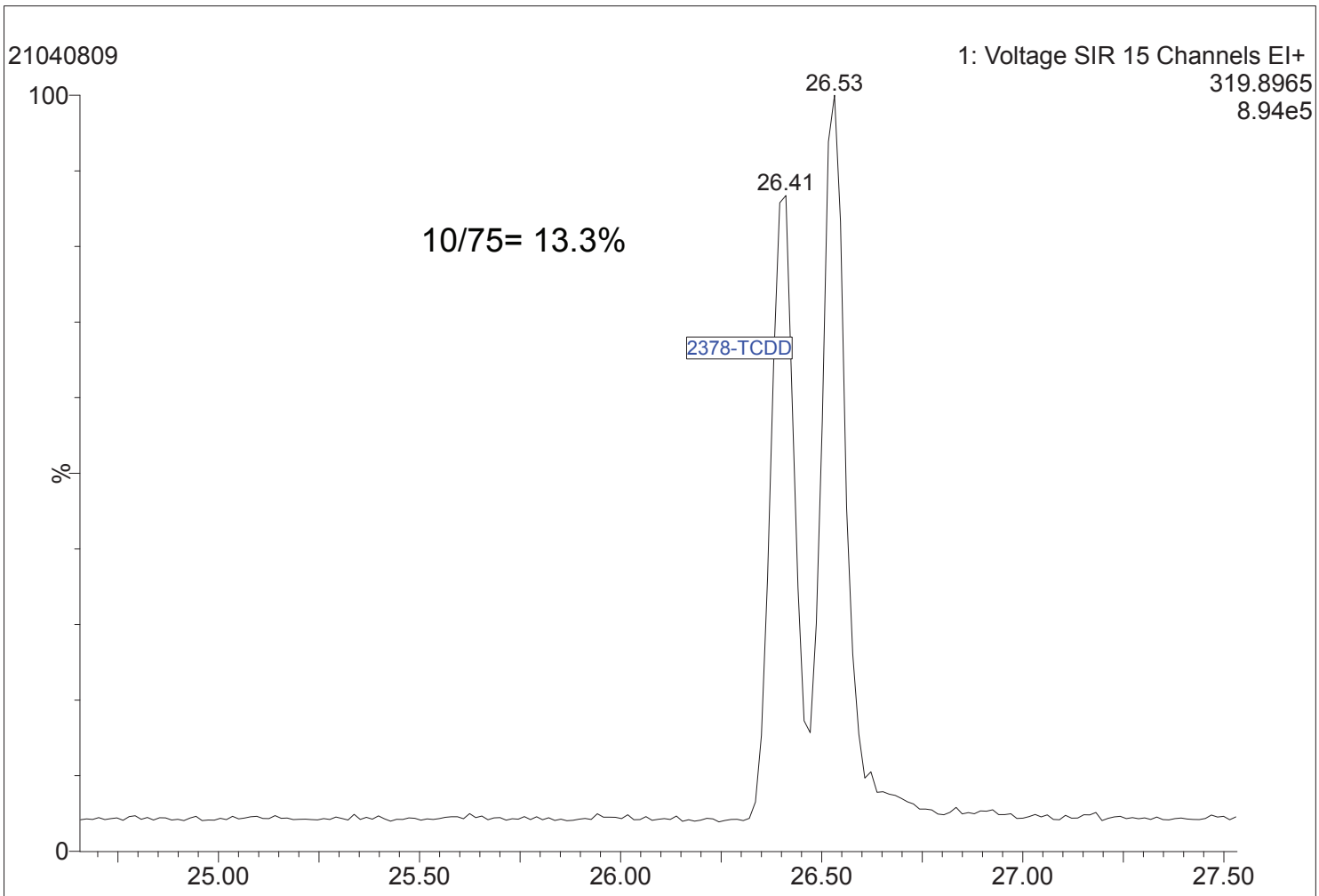
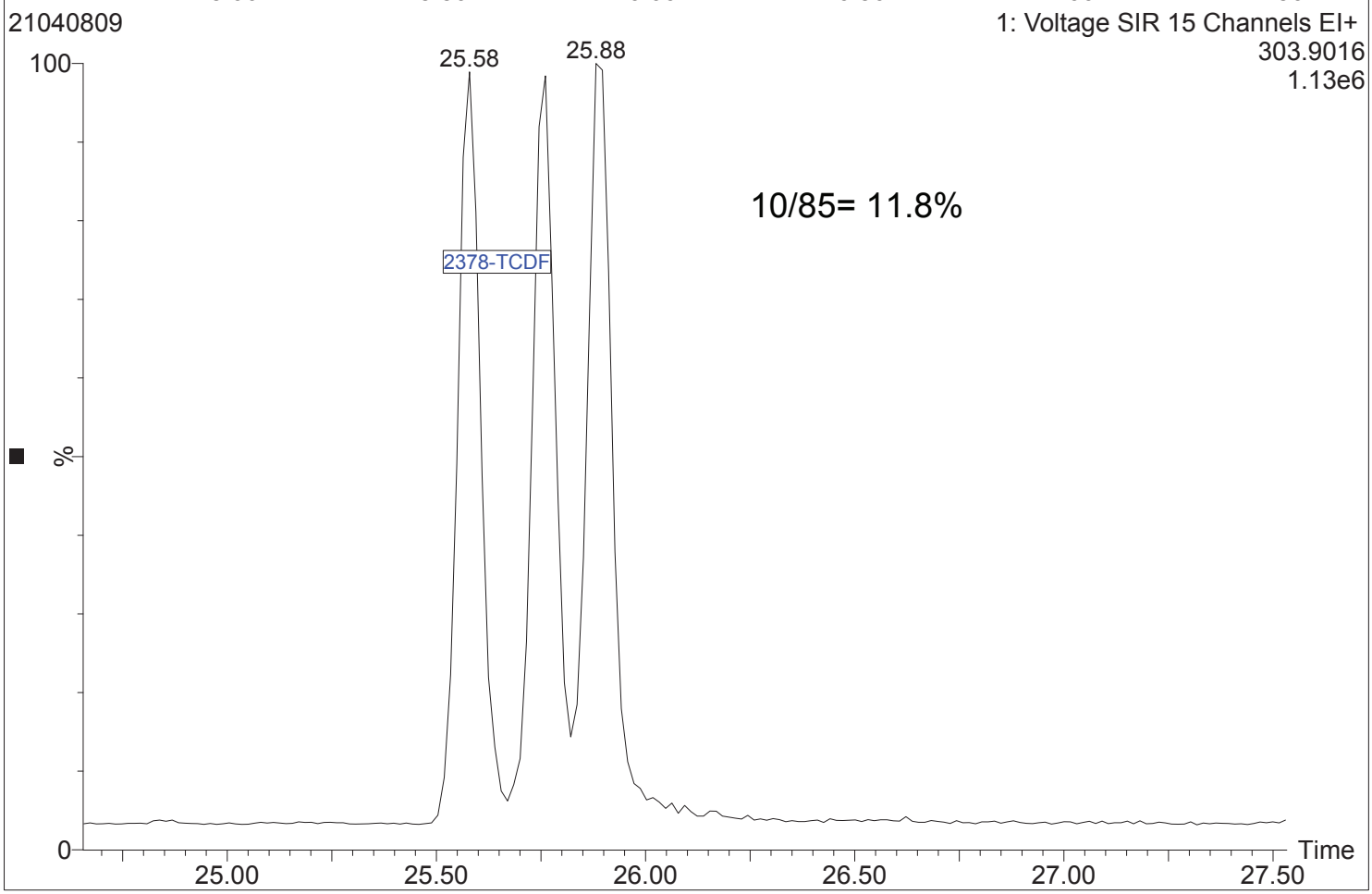



21040809
1: Voltage SIR 15 Channels EI+
319.8965
8.94e5
100
26.53
26.41
10/75= 13.3%
2378-TCDD
%
0
25.00
25.50
26.00
26.50
27.00
27.50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1.13e6
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25.58
25.88
10/85= 11.8%
2378-TCDF
%
0
Time
25.00
25.50
26.00
26.50
27.00
27.50

CONTINUING CALIBRATION CHECK
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Instrument ID:	AUTOSPEC01	Calibration:	EC00006
Lab File ID:	21030111A	Calibration Date:	03/01/2021
Sequence:	SJC0004	Injection Date:	03/01/21
Lab Sample ID:	SJC0004-CCV1	Injection Time:	19:13
Sequence Name:	CS3V2		

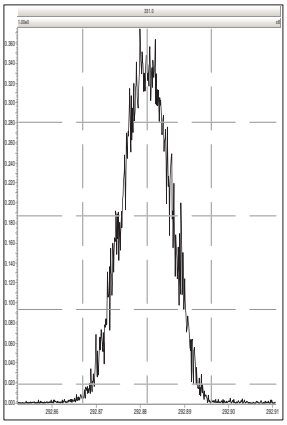
		CONC. (ng/mL)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
2,3,7,8-TCDF	A	10.000	9.64	0.7815068	0.7530337		-3.6	+/-16
2,3,7,8-TCDD	A	10.000	9.65	1.3074710	1.2616640		-3.5	+/-22
1,2,3,7,8-PeCDF	A	50.000	52.0	0.8661132	0.9008405		4.0	+/-18
2,3,4,7,8-PeCDF	A	50.000	49.0	0.9798329	0.9606136		-2.0	+/-18
1,2,3,7,8-PeCDD	A	50.000	50.5	0.9786280	0.9888719		1.0	+/-22
1,2,3,4,7,8-HxCDF	A	50.000	49.6	1.0022170	0.9946424		-0.8	+/-10
1,2,3,6,7,8-HxCDF	A	50.000	51.0	0.9610616	0.9806574		2.0	+/-12
2,3,4,6,7,8-HxCDF	A	50.000	49.6	1.0430410	1.0345720		-0.8	+/-12
1,2,3,7,8,9-HxCDF	A	50.000	46.3	0.9942991	0.9201414		-7.5	+/-10
1,2,3,4,7,8-HxCDD	A	50.000	50.5	0.9561583	0.9652618		1.0	+/-22
1,2,3,6,7,8-HxCDD	A	50.000	48.4	0.9525810	0.9228720		-3.1	+/-22
1,2,3,7,8,9-HxCDD	A	50.000	50.1	0.9268956	0.9292545		0.3	+/-18
1,2,3,4,6,7,8-HpCDF	A	50.000	52.7	1.0579720	1.1150140		5.4	+/-10
1,2,3,4,7,8,9-HpCDF	A	50.000	52.5	1.0697390	1.1239760		5.1	+/-14
1,2,3,4,6,7,8-HpCDD	A	50.000	51.1	1.0550420	1.0773570		2.1	+/-14
OCDF	A	100.00	96.4	1.2566960	1.2111070		-3.6	+/-37
OCDD	A	100.00	96.1	1.0458020	1.0318340		-3.9	+/-21
13C12-2,3,7,8-TCDF	A	100.00	101	1.9249160	1.9465136		1.1	+/-29
13C12-2,3,7,8-TCDD	A	100.00	101	1.1327550	1.1403393		0.7	+/-18
13C12-1,2,3,7,8-PeCDF	A	100.00	98.5	1.4422400	1.4208121		-1.5	+/-24
13C12-2,3,4,7,8-PeCDF	A	100.00	97.5	1.3866450	1.3525244		-2.5	+/-23
13C12-1,2,3,7,8-PeCDD	A	100.00	98.3	0.9468647	0.9303635		-1.7	+/-38
13C12-1,2,3,4,7,8-HxCDF	A	100.00	97.4	1.0530710	1.0259886		-2.6	+/-24
13C12-1,2,3,6,7,8-HxCDF	A	100.00	96.3	1.1350140	1.0933604		-3.7	+/-30
13C12-2,3,4,6,7,8-HxCDF	A	100.00	96.7	1.0040700	0.9713678		-3.3	+/-27
13C12-1,2,3,7,8,9-HxCDF	A	100.00	99.4	0.9089439	0.9035648		-0.6	+/-26
13C12-1,2,3,4,7,8-HxCDD	A	100.00	97.5	0.9385700	0.9147110		-2.5	+/-15
13C12-1,2,3,6,7,8-HxCDD	A	100.00	97.7	1.0420460	1.0185359		-2.3	+/-15
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	94.7	0.9598082	0.9092108		-5.3	+/-22
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	94.5	0.7937117	0.7503206		-5.5	+/-23
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	99.7	0.7883415	0.7860206		-0.3	+/-18
13C12-OCDD	A	200.00	185	0.7032915	0.6517301		-7.3	+/-52
37Cl4-2,3,7,8-TCDD	A	10.000	9.46	1.4170130	1.2274627		-5.4	+/-21

* Values outside of QC limits

* Values outside of QC limits

Printed: Monday, March 01, 2021 20:07:01 Pacific Standard Time

M 292.9824 R 12594



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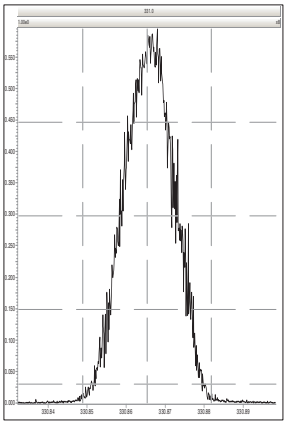

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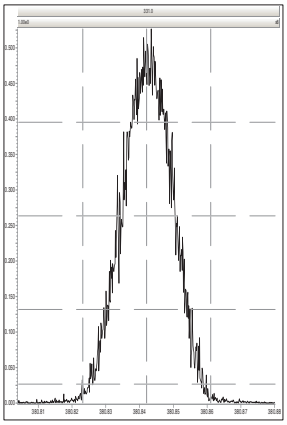
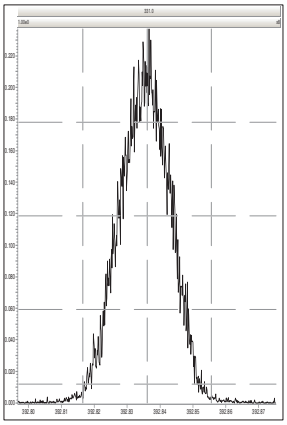


M 392.9760 R 12106



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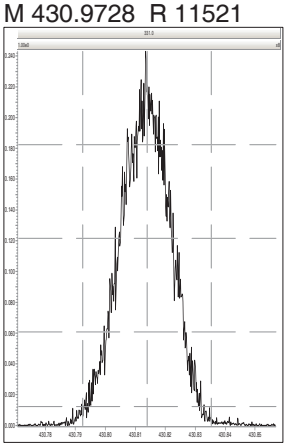

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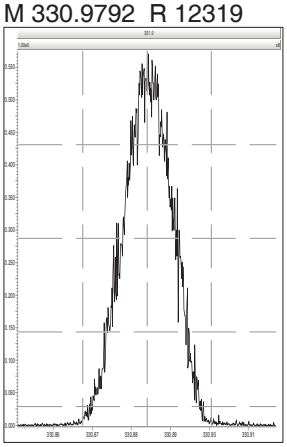

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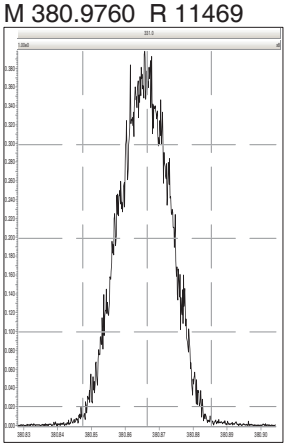

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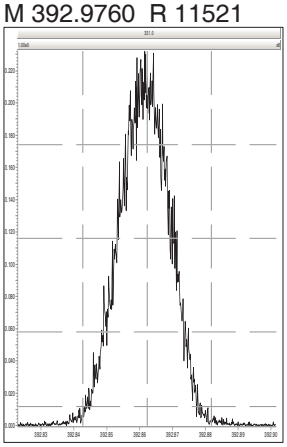
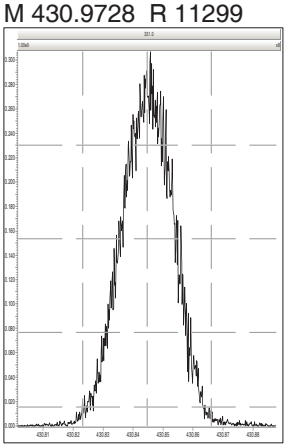
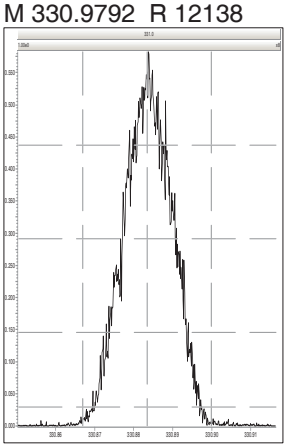


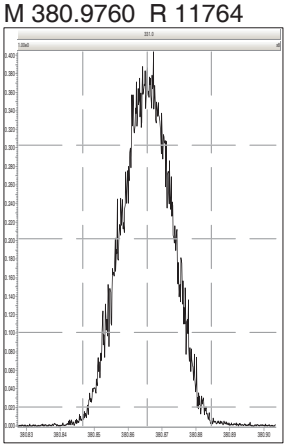
M 430.9728 R 11299



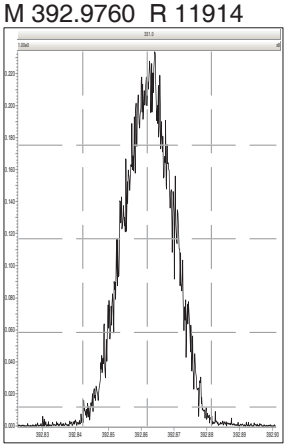
M 330.9792 R 12138



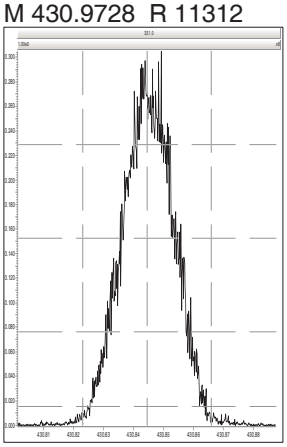
M 380.9760 R 11764



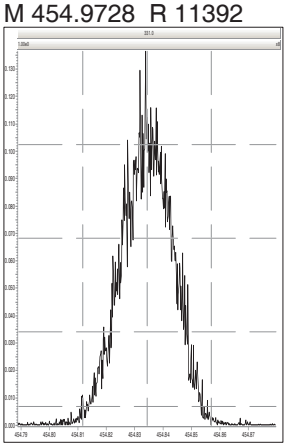
M 392.9760 R 11914



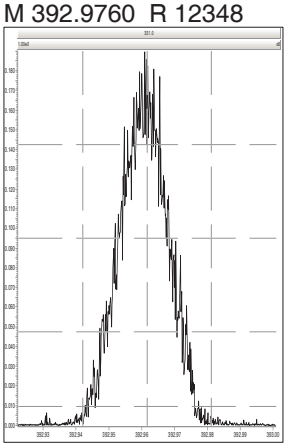
M 430.9728 R 11312



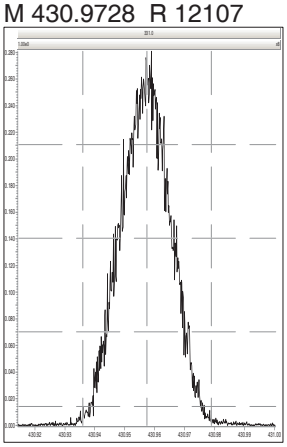
M 454.9728 R 11392



M 392.9760 R 12348

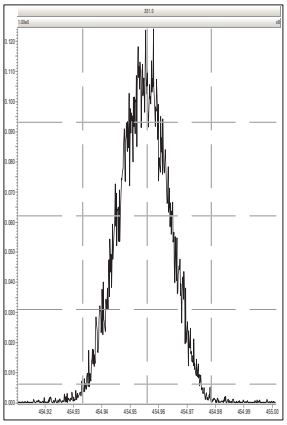


M 430.9728 R 12107

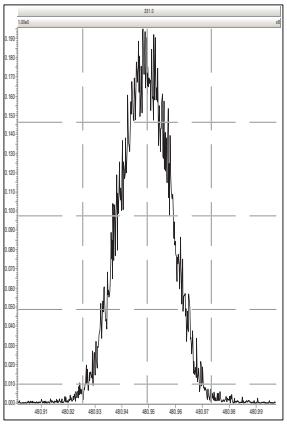


Printed: Monday, March 01, 2021 20:07:01 Pacific Standard Time

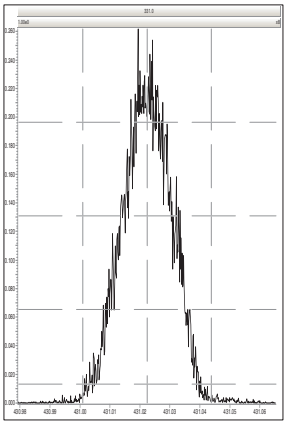
M 454.9728 R 11762



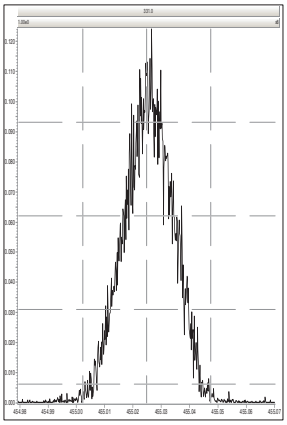
M 480.9696 R 11723



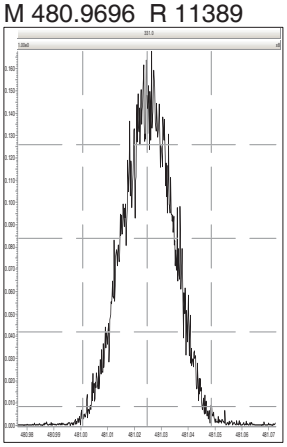
M 430.9728 R 12142



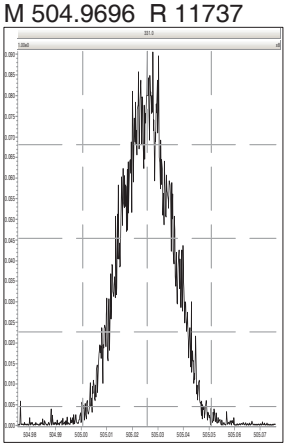
M 454.9728 R 11605



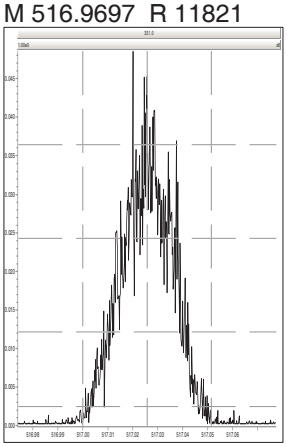
M 480.9696 R 11389

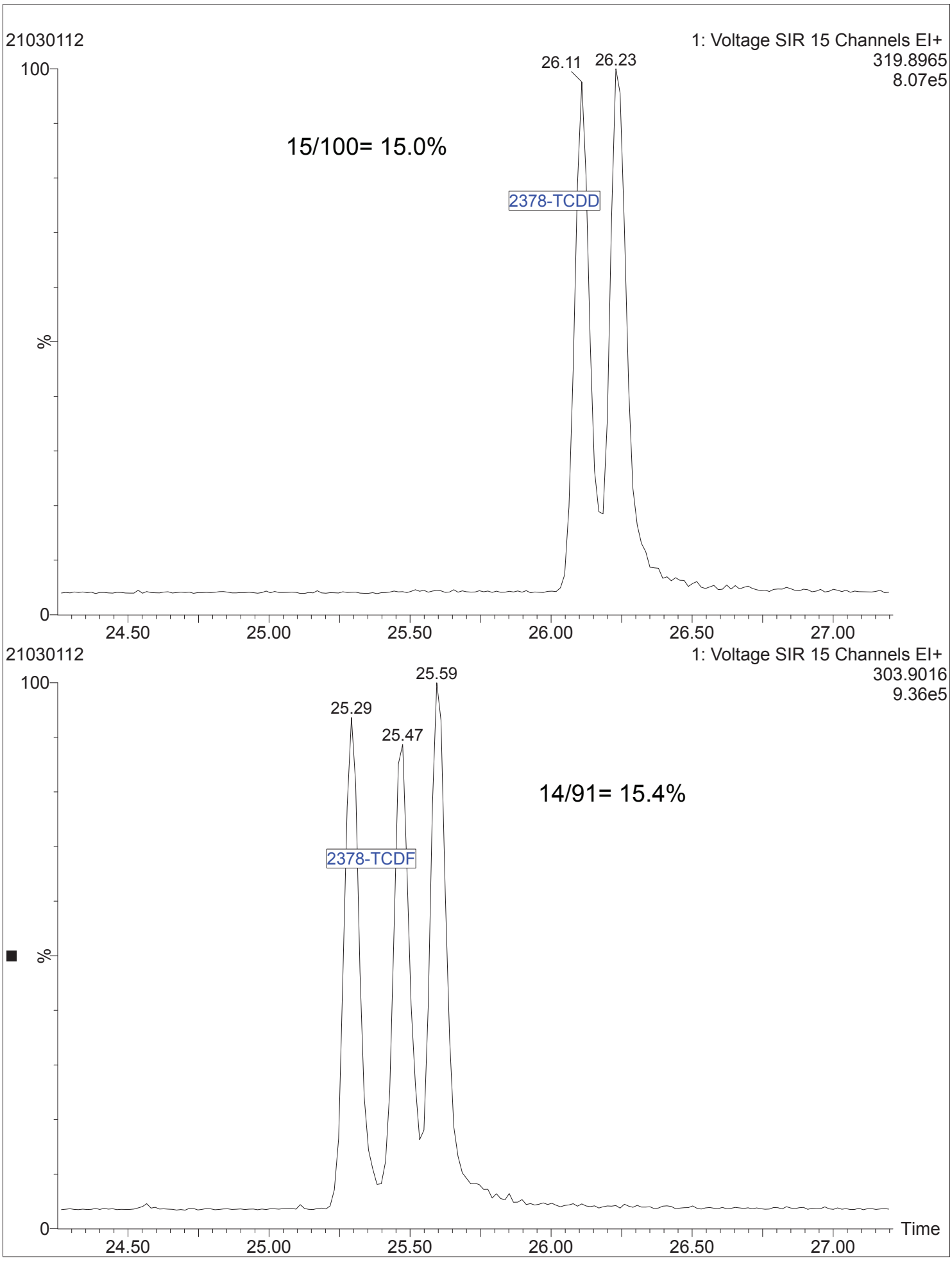


M 504.9696 R 11737



M 516.9697 R 11821

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8.07e5
100
26.11
26.23
15/100= 15.0%
2378-TCDD
%
0
24.50
25.00
25.50
26.00
26.50
27.00
21030112
1: Voltage SIR 15 Channels EI+
303.9016
9.36e5
100
25.59
25.29
25.47
14/91= 15.4%
2378-TCDF
%
0
Time
24.50
25.00
25.50
26.00
26.50
27.00

SECOND-SOURCE
CONTINUING CALIBRATION CHECK
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Instrument ID:	AUTOSPEC01	Calibration:	EC00006
Lab File ID:	21030110A	Calibration Date:	03/01/2021
Sequence:	SJC0004	Injection Date:	03/01/21
Lab Sample ID:	SJC0004-SCV1	Injection Time:	18:24
Sequence Name:	ICVCV		

		CONC. (ng/mL)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
2,3,7,8-TCDF	A	10.000	10.5	0.7815068	0.8213200		5.1	+/-20
2,3,7,8-TCDD	A	10.000	11.1	1.3074710	1.4569550		11.4	+/-20
1,2,3,7,8-PeCDF	A	50.000	55.1	0.8661132	0.9547719		10.2	+/-20
2,3,4,7,8-PeCDF	A	50.000	47.8	0.9798329	0.9369274		-4.4	+/-20
1,2,3,7,8-PeCDD	A	50.000	52.6	0.9786280	1.0289470		5.1	+/-20
1,2,3,4,7,8-HxCDF	A	50.000	53.2	1.0022170	1.0659060		6.4	+/-20
1,2,3,6,7,8-HxCDF	A	50.000	52.8	0.9610616	1.0153910		5.7	+/-20
2,3,4,6,7,8-HxCDF	A	50.000	53.6	1.0430410	1.1179160		7.2	+/-20
1,2,3,7,8,9-HxCDF	A	50.000	50.3	0.9942991	0.9994004		0.5	+/-20
1,2,3,4,7,8-HxCDD	A	50.000	52.1	0.9561583	0.9960413		4.2	+/-20
1,2,3,6,7,8-HxCDD	A	50.000	51.9	0.9525810	0.9880042		3.7	+/-20
1,2,3,7,8,9-HxCDD	A	50.000	50.9	0.9268956	7766.618		1.9	+/-20
1,2,3,4,6,7,8-HpCDF	A	50.000	57.0	1.0579720	1.2052320		13.9	+/-20
1,2,3,4,7,8,9-HpCDF	A	50.000	57.0	1.0697390	1.2190220		14.0	+/-20
1,2,3,4,6,7,8-HpCDD	A	50.000	51.6	1.0550420	1.0882970		3.2	+/-20
OCDF	A	100.00	100	1.2566960	1.2620580		0.4	+/-20
OCDD	A	100.00	106	1.0458020	1.1434700		6.5	+/-20
13C12-2,3,7,8-TCDF	A	100.00	97.8	1.9249160	1.8820314		-2.2	+/-20
13C12-2,3,7,8-TCDD	A	100.00	80.8	1.1327550	0.9156513		-19.2	+/-20
13C12-1,2,3,7,8-PeCDF	A	100.00	98.4	1.4422400	1.4193710		-1.6	+/-20
13C12-2,3,4,7,8-PeCDF	A	100.00	102	1.3866450	1.4086207		1.6	+/-20
13C12-1,2,3,7,8-PeCDD	A	100.00	95.4	0.9468647	0.9034650		-4.6	+/-20
13C12-1,2,3,4,7,8-HxCDF	A	100.00	112	1.0530710	1.1822840		12.3	+/-20
13C12-1,2,3,6,7,8-HxCDF	A	100.00	115	1.1350140	1.3104218		15.5	+/-20
13C12-2,3,4,6,7,8-HxCDF	A	100.00	110	1.0040700	1.1034654		9.9	+/-20
13C12-1,2,3,7,8,9-HxCDF	A	100.00	114	0.9089439	1.0355954		13.9	+/-20
13C12-1,2,3,4,7,8-HxCDD	A	100.00	115	0.9385700	1.0798912		15.1	+/-20
13C12-1,2,3,6,7,8-HxCDD	A	100.00	114	1.0420460	1.1891080		14.1	+/-20
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	111	0.9598082	1.0633236		10.8	+/-20
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	103	0.7937117	0.8172139		3.0	+/-20
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	106	0.7883415	0.8346998		5.9	+/-20
13C12-OCDD	A	200.00	204	0.7032915	0.7165406		1.9	+/-20
37Cl4-2,3,7,8-TCDD	A	10.000	10.5	1.4170130	1.3575226		4.6	+/-20

* Values outside of QC limits

CONTINUING CALIBRATION CHECK
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Instrument ID:	AUTOSPEC01	Calibration:	EC00006
Lab File ID:	21040615	Calibration Date:	03/01/2021
Sequence:	SJC0474	Injection Date:	04/06/21
Lab Sample ID:	SJC0474-CCV1	Injection Time:	23:06
Sequence Name:	CS3C3		

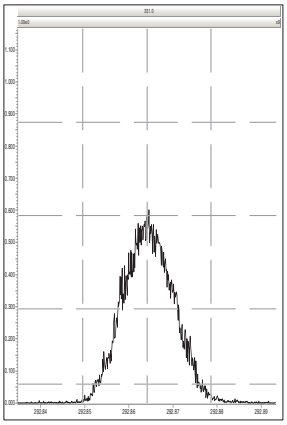
		CONC. (ng/mL)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
2,3,7,8-TCDF	A	10.000	11.2	0.7815068	0.8785908		12.4	+/-16
2,3,7,8-TCDD	A	10.000	10.5	1.3074710	1.3699110		4.8	+/-22
1,2,3,7,8-PeCDF	A	50.000	57.5	0.8661132	0.9956337		15.0	+/-18
2,3,4,7,8-PeCDF	A	50.000	57.2	0.9798329	1.1215920		14.5	+/-18
1,2,3,7,8-PeCDD	A	50.000	53.6	0.9786280	1.0497140		7.3	+/-22
1,2,3,4,7,8-HxCDF	A	50.000	53.0	1.0022170	1.0623960		6.0	+/-10
1,2,3,6,7,8-HxCDF	A	50.000	50.6	0.9610616	0.9722454		1.2	+/-12
2,3,4,6,7,8-HxCDF	A	50.000	49.8	1.0430410	1.0398410		-0.3	+/-12
1,2,3,7,8,9-HxCDF	A	50.000	50.0	0.9942991	0.9947839		0.05	+/-10
1,2,3,4,7,8-HxCDD	A	50.000	48.1	0.9561583	0.9204412		-3.7	+/-22
1,2,3,6,7,8-HxCDD	A	50.000	50.6	0.9525810	0.9637878		1.2	+/-22
1,2,3,7,8,9-HxCDD	A	50.000	45.8	0.9268956	0.8496101		-8.3	+/-18
1,2,3,4,6,7,8-HpCDF	A	50.000	52.3	1.0579720	1.1066300		4.6	+/-10
1,2,3,4,7,8,9-HpCDF	A	50.000	57.4	1.0697390	1.2290940		14.9	+/-14
1,2,3,4,6,7,8-HpCDD	A	50.000	52.1	1.0550420	1.0984660		4.1	+/-14
OCDF	A	100.00	117	1.2566960	1.4754670		17.4	+/-37
OCDD	A	100.00	94.7	1.0458020	1.0174590		-5.3	+/-21
13C12-2,3,7,8-TCDF	A	100.00	109	1.9249160	2.0973858		9.0	+/-29
13C12-2,3,7,8-TCDD	A	100.00	95.5	1.1327550	1.0820392		-4.5	+/-18
13C12-1,2,3,7,8-PeCDF	A	100.00	109	1.4422400	1.5738377		9.1	+/-24
13C12-2,3,4,7,8-PeCDF	A	100.00	104	1.3866450	1.4465603		4.3	+/-23
13C12-1,2,3,7,8-PeCDD	A	100.00	94.5	0.9468647	0.8948314		-5.5	+/-38
13C12-1,2,3,4,7,8-HxCDF	A	100.00	97.3	1.0530710	1.0251015		-2.7	+/-24
13C12-1,2,3,6,7,8-HxCDF	A	100.00	109	1.1350140	1.2369528		9.0	+/-30
13C12-2,3,4,6,7,8-HxCDF	A	100.00	103	1.0040700	1.0358230		3.2	+/-27
13C12-1,2,3,7,8,9-HxCDF	A	100.00	98.1	0.9089439	0.8917603		-1.9	+/-26
13C12-1,2,3,4,7,8-HxCDD	A	100.00	99.9	0.9385700	0.9371774		-0.1	+/-15
13C12-1,2,3,6,7,8-HxCDD	A	100.00	101	1.0420460	1.0474708		0.5	+/-15
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	111	0.9598082	1.0619836		10.6	+/-22
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	104	0.7937117	0.8293327		4.5	+/-23
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	99.1	0.7883415	0.7810905		-0.9	+/-18
13C12-OCDD	A	200.00	192	0.7032915	0.6734624		-4.2	+/-52
37Cl4-2,3,7,8-TCDD	A	10.000	10.2	1.4170130	1.3272275		2.3	+/-21

* Values outside of QC limits

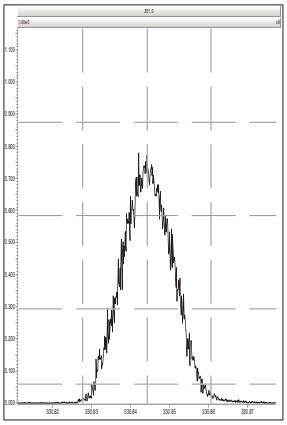
* Values outside of QC limits

Printed: Tuesday, April 06, 2021 23:59:28 Pacific Daylight Time

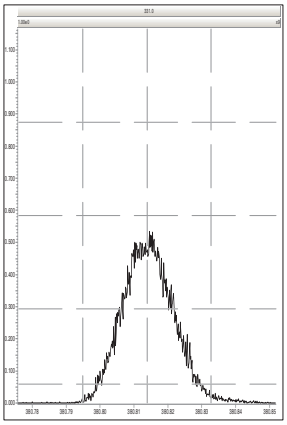
M 292.9824 R 11338



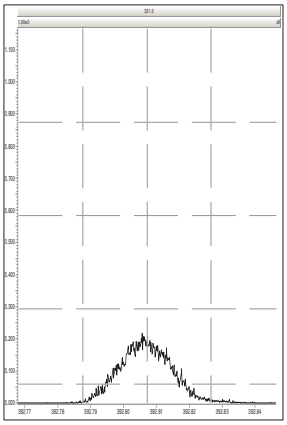
M 330.9792 R 11565



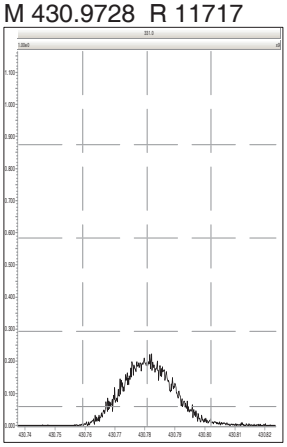
M 380.9760 R 11338



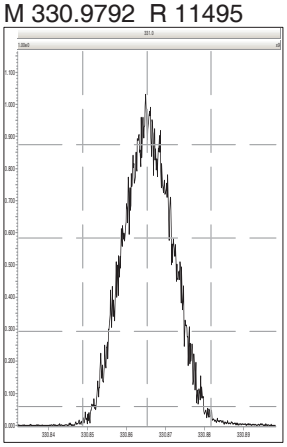
M 392.9760 R 11210



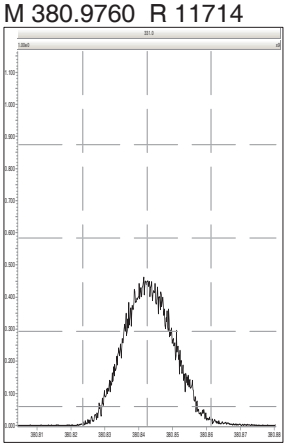
M 430.9728 R 11717



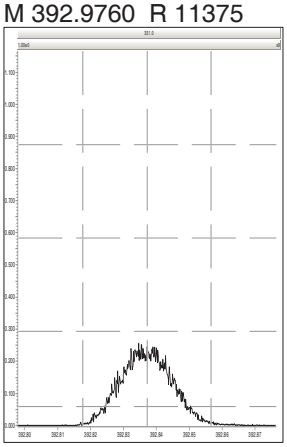
M 330.9792 R 11495



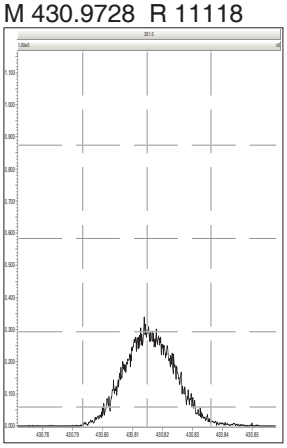
M 380.9760 R 11714



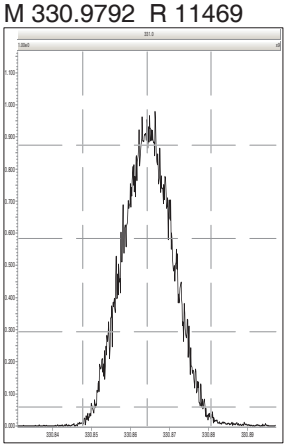
M 392.9760 R 11375



M 430.9728 R 11118



M 330.9792 R 11469



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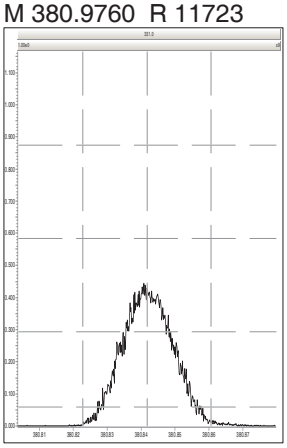

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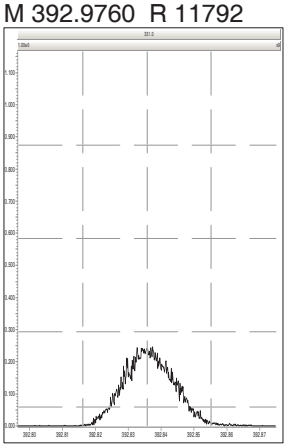

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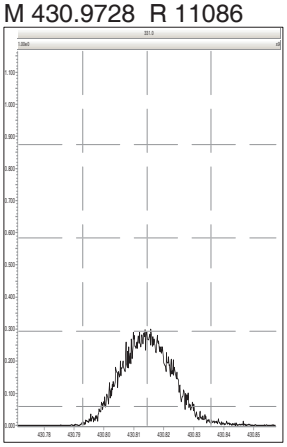

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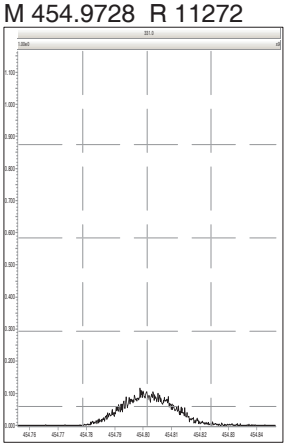

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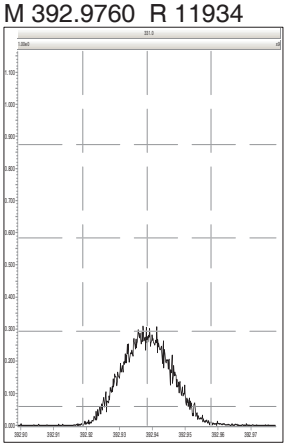

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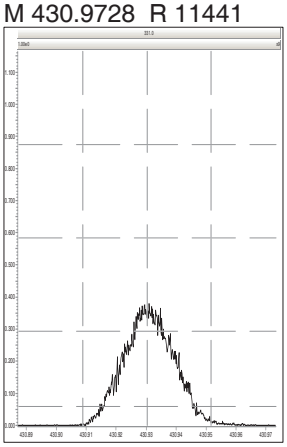

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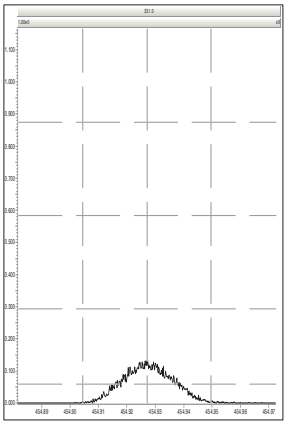

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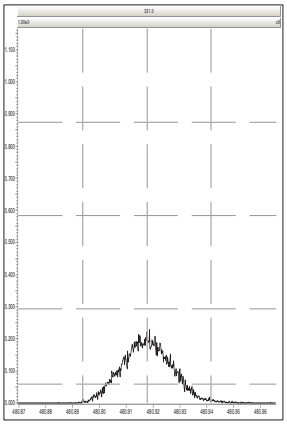

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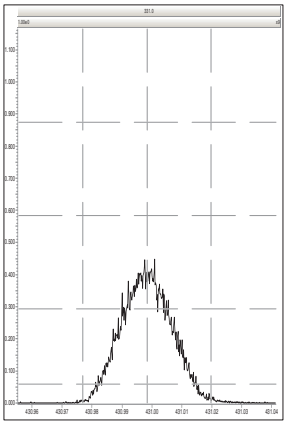

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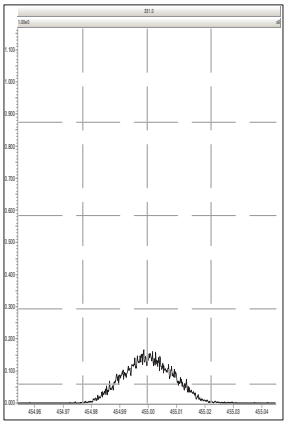

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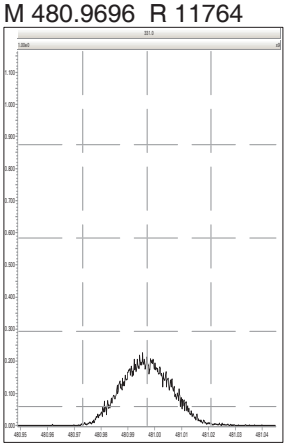
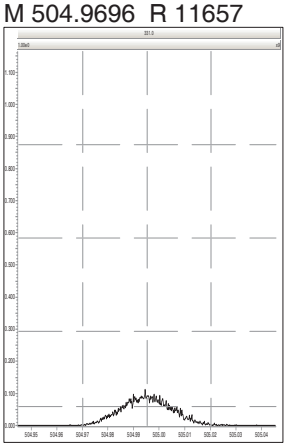
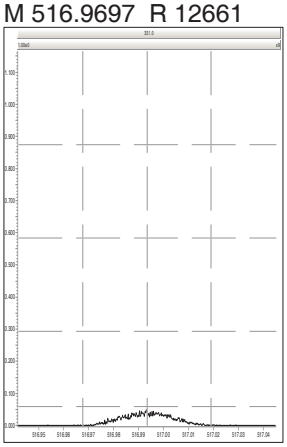
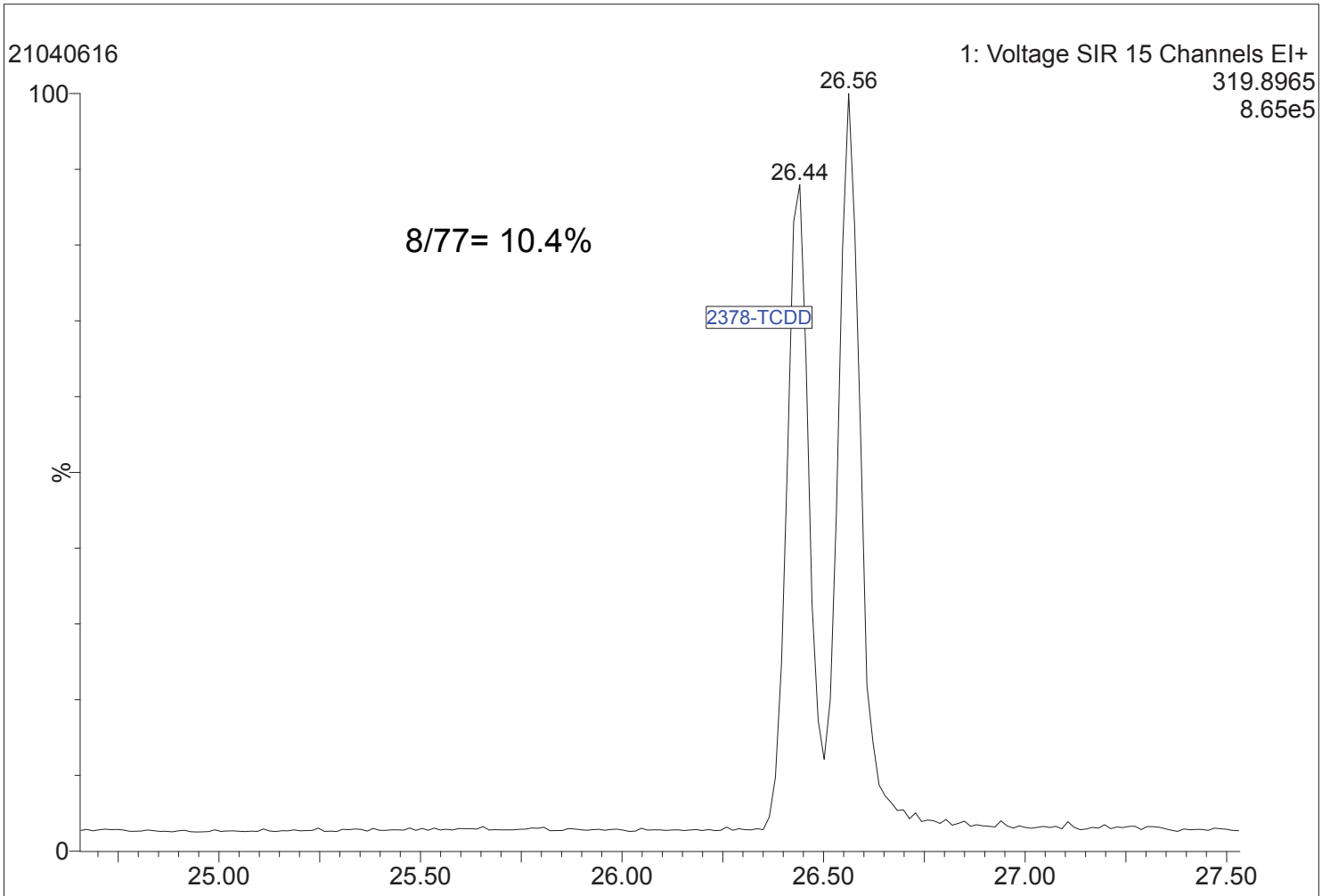


M 504.9696 R 11657



M 516.9697 R 12661

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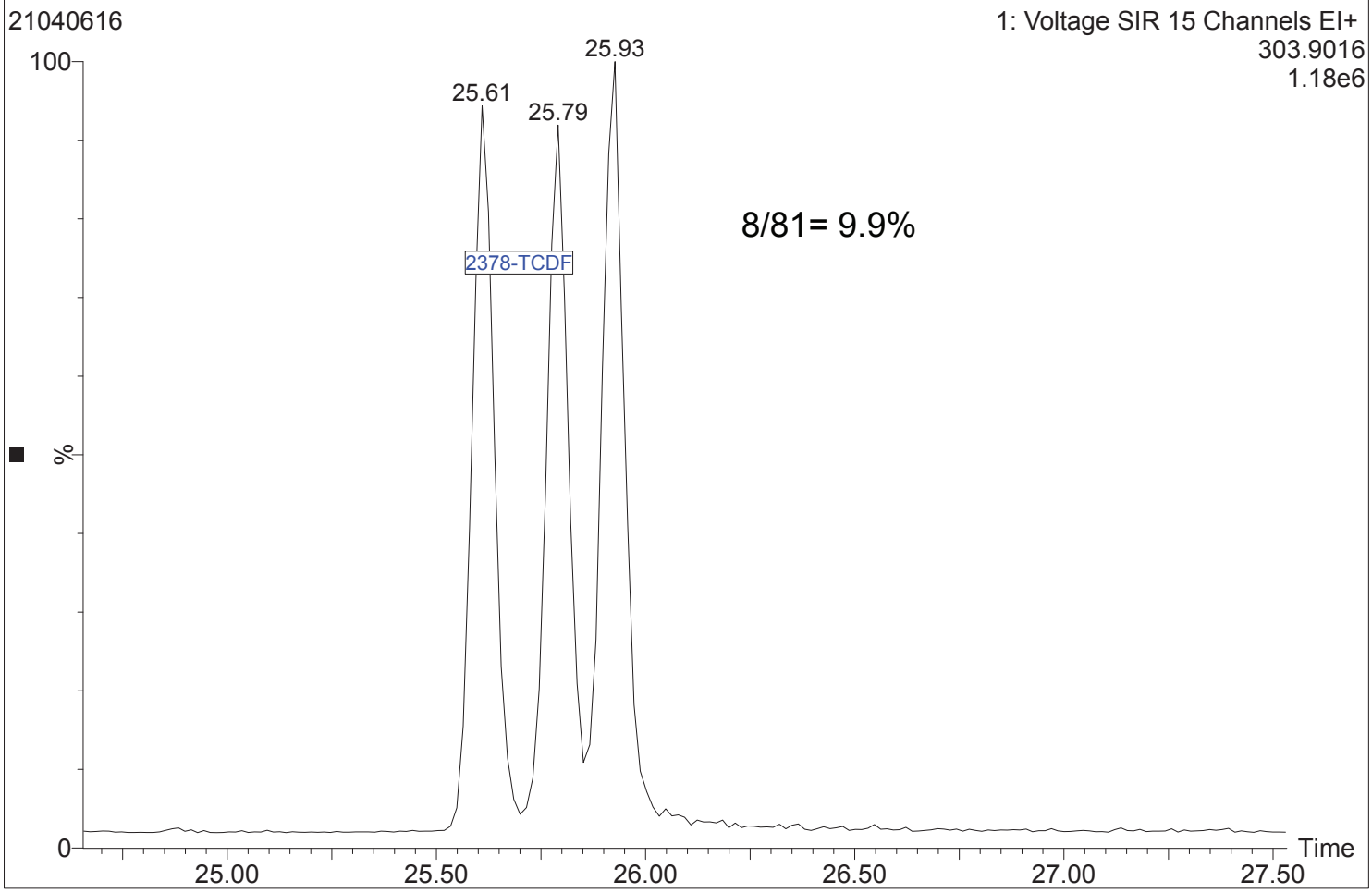
319.8965
8.65e5
100
26.56
26.44
8/77= 10.4%
2378-TCDD
%
0
25.00
25.50
26.00
26.50
27.00
27.50


21040616
1: Voltage SIR 15 Channels EI+
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1.18e6
100
25.93
25.61
25.79
8/81= 9.9%
2378-TCDF
%
0
Time
25.00
25.50
26.00
26.50
27.00
27.50

CONTINUING CALIBRATION CHECK
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Instrument ID:	AUTOSPEC01	Calibration:	EC00006
Lab File ID:	21040625	Calibration Date:	03/01/2021
Sequence:	SJC0474	Injection Date:	04/07/21
Lab Sample ID:	SJC0474-CCV2	Injection Time:	07:21
Sequence Name:	CS3C4		

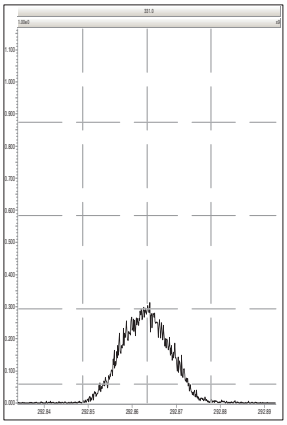
		CONC. (ng/mL)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF		
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN	CCV	LIMIT	
2,3,7,8-TCDF	A	10.000	11.6	0.7815068	0.9073137		16.1	+/-16	
2,3,7,8-TCDD	A	10.000	10.5	1.3074710	1.3675320		4.6	+/-22	
1,2,3,7,8-PeCDF	A	50.000	56.8	0.8661132	0.9839103		13.6	+/-18	
2,3,4,7,8-PeCDF	A	50.000	59.0	0.9798329	1.1561930		18.0	+/-18	
1,2,3,7,8-PeCDD	A	50.000	53.9	0.9786280	1.0552170		7.8	+/-22	
1,2,3,4,7,8-HxCDF	A	50.000	51.7	1.0022170	1.0369080		3.5	+/-10	
1,2,3,6,7,8-HxCDF	A	50.000	51.8	0.9610616	0.9962330		3.7	+/-12	
2,3,4,6,7,8-HxCDF	A	50.000	57.3	1.0430410	1.1959590		14.7	+/-12	*
1,2,3,7,8,9-HxCDF	A	50.000	56.0	0.9942991	1.1126600		11.9	+/-10	
1,2,3,4,7,8-HxCDD	A	50.000	48.6	0.9561583	0.9292226		-2.8	+/-22	
1,2,3,6,7,8-HxCDD	A	50.000	51.5	0.9525810	0.9804383		2.9	+/-22	
1,2,3,7,8,9-HxCDD	A	50.000	50.1	0.9268956	0.9291625		0.2	+/-18	
1,2,3,4,6,7,8-HpCDF	A	50.000	52.2	1.0579720	1.1048810		4.4	+/-10	
1,2,3,4,7,8,9-HpCDF	A	50.000	58.1	1.0697390	1.2420430		16.1	+/-14	
1,2,3,4,6,7,8-HpCDD	A	50.000	49.5	1.0550420	1.0445200		-1.0	+/-14	
OCDF	A	100.00	107	1.2566960	1.3473280		7.2	+/-37	
OCDD	A	100.00	88.2	1.0458020	0.9467706		-11.8	+/-21	
13C12-2,3,7,8-TCDF	A	100.00	111	1.9249160	2.1397130		11.2	+/-29	
13C12-2,3,7,8-TCDD	A	100.00	94.8	1.1327550	1.0743289		-5.2	+/-18	
13C12-1,2,3,7,8-PeCDF	A	100.00	109	1.4422400	1.5743035		9.2	+/-24	
13C12-2,3,4,7,8-PeCDF	A	100.00	103	1.3866450	1.4331469		3.4	+/-23	
13C12-1,2,3,7,8-PeCDD	A	100.00	93.0	0.9468647	0.8805847		-7.0	+/-38	
13C12-1,2,3,4,7,8-HxCDF	A	100.00	97.4	1.0530710	1.0261791		-2.6	+/-24	
13C12-1,2,3,6,7,8-HxCDF	A	100.00	108	1.1350140	1.2227286		7.7	+/-30	
13C12-2,3,4,6,7,8-HxCDF	A	100.00	99.0	1.0040700	0.9940155		-1.0	+/-27	
13C12-1,2,3,7,8,9-HxCDF	A	100.00	101	0.9089439	0.9198442		1.2	+/-26	
13C12-1,2,3,4,7,8-HxCDD	A	100.00	96.8	0.9385700	0.9084901		-3.2	+/-15	
13C12-1,2,3,6,7,8-HxCDD	A	100.00	96.6	1.0420460	1.0065518		-3.4	+/-15	
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	123	0.9598082	1.1840593		23.4	+/-22	
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	116	0.7937117	0.9168828		15.5	+/-23	
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	109	0.7883415	0.8611225		9.2	+/-18	
13C12-OCDD	A	200.00	221	0.7032915	0.7774333		10.5	+/-52	
37Cl4-2,3,7,8-TCDD	A	10.000	9.95	1.4170130	1.2909857		-0.5	+/-21	

* Values outside of QC limits

* Values outside of QC limits

Printed: Wednesday, April 07, 2021 08:14:40 Pacific Daylight Time

M 292.9824 R 12376



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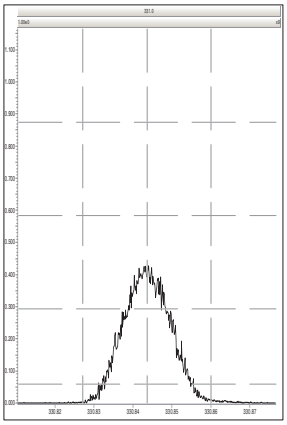

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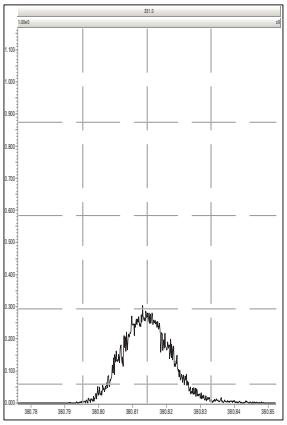

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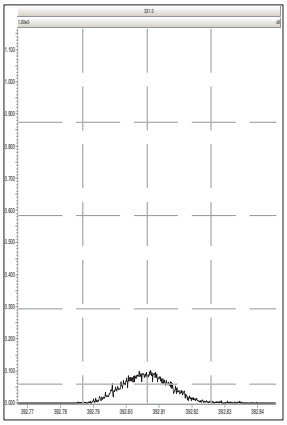

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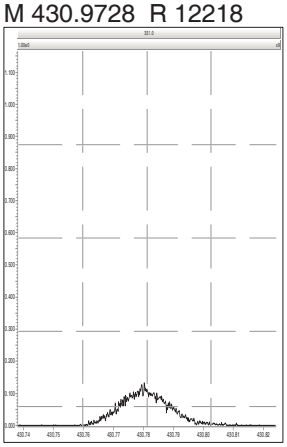

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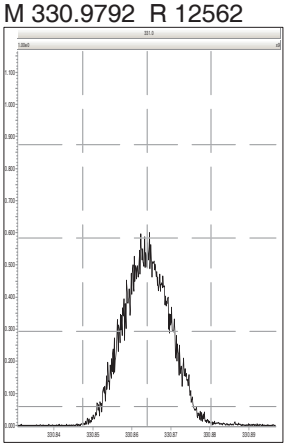

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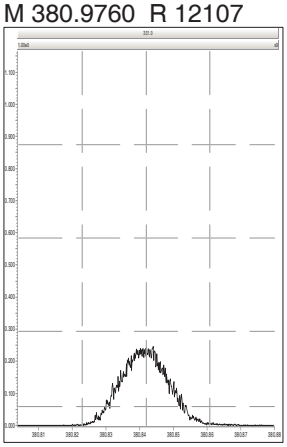

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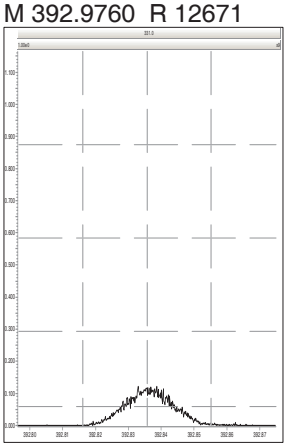

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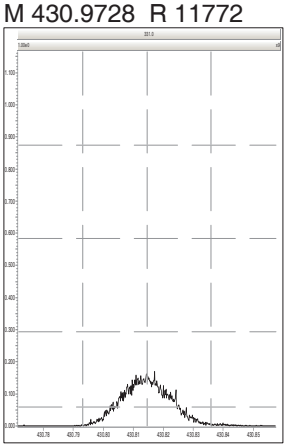

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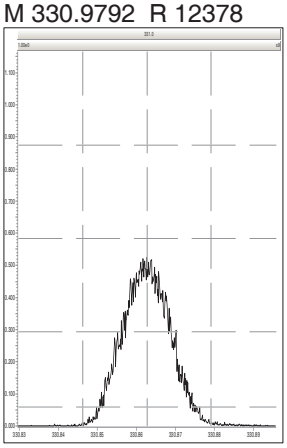

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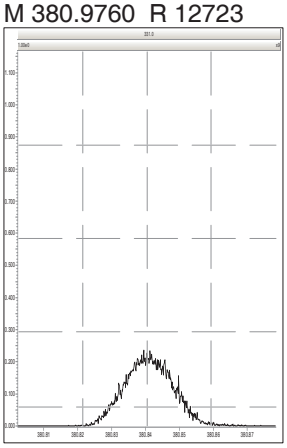

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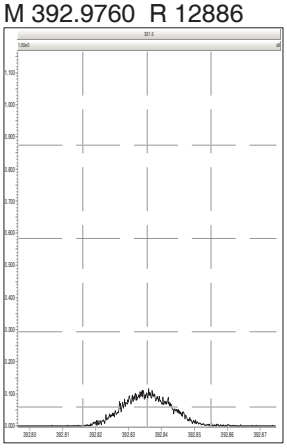

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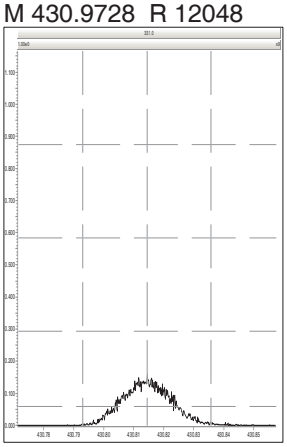

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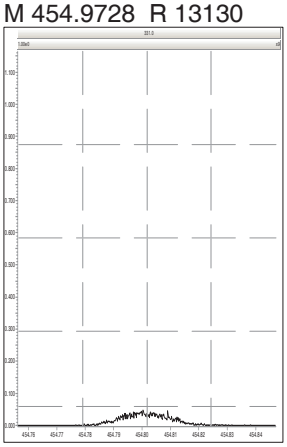

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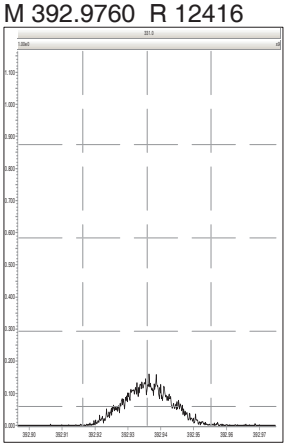

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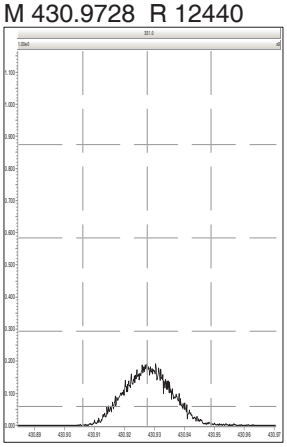

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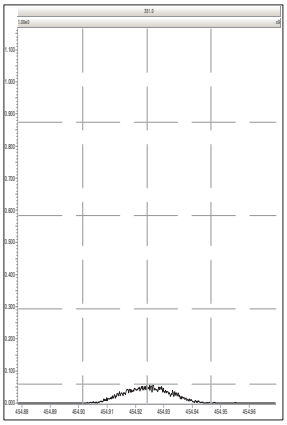

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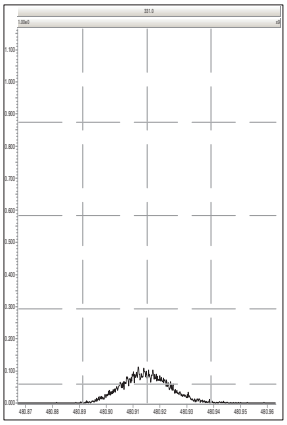

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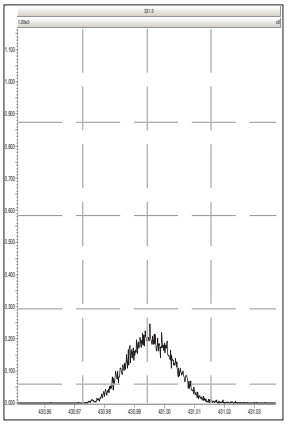
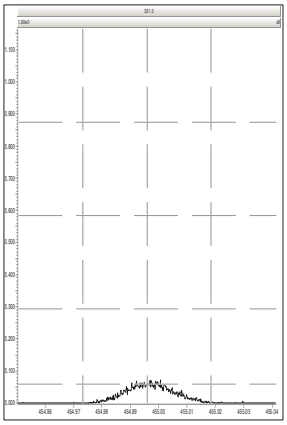
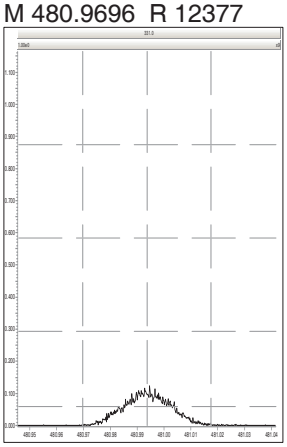


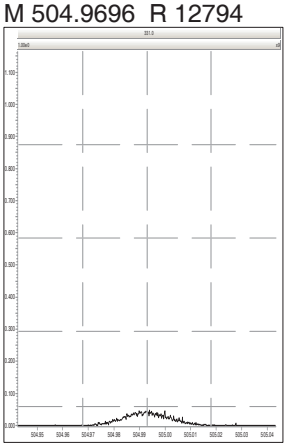
M 454.9728 R 12595



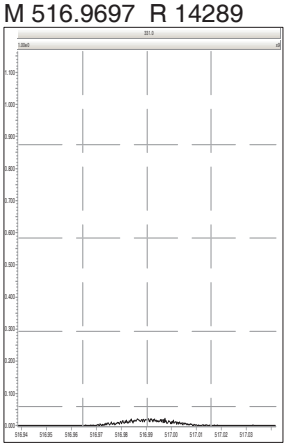
M 480.9696 R 12377

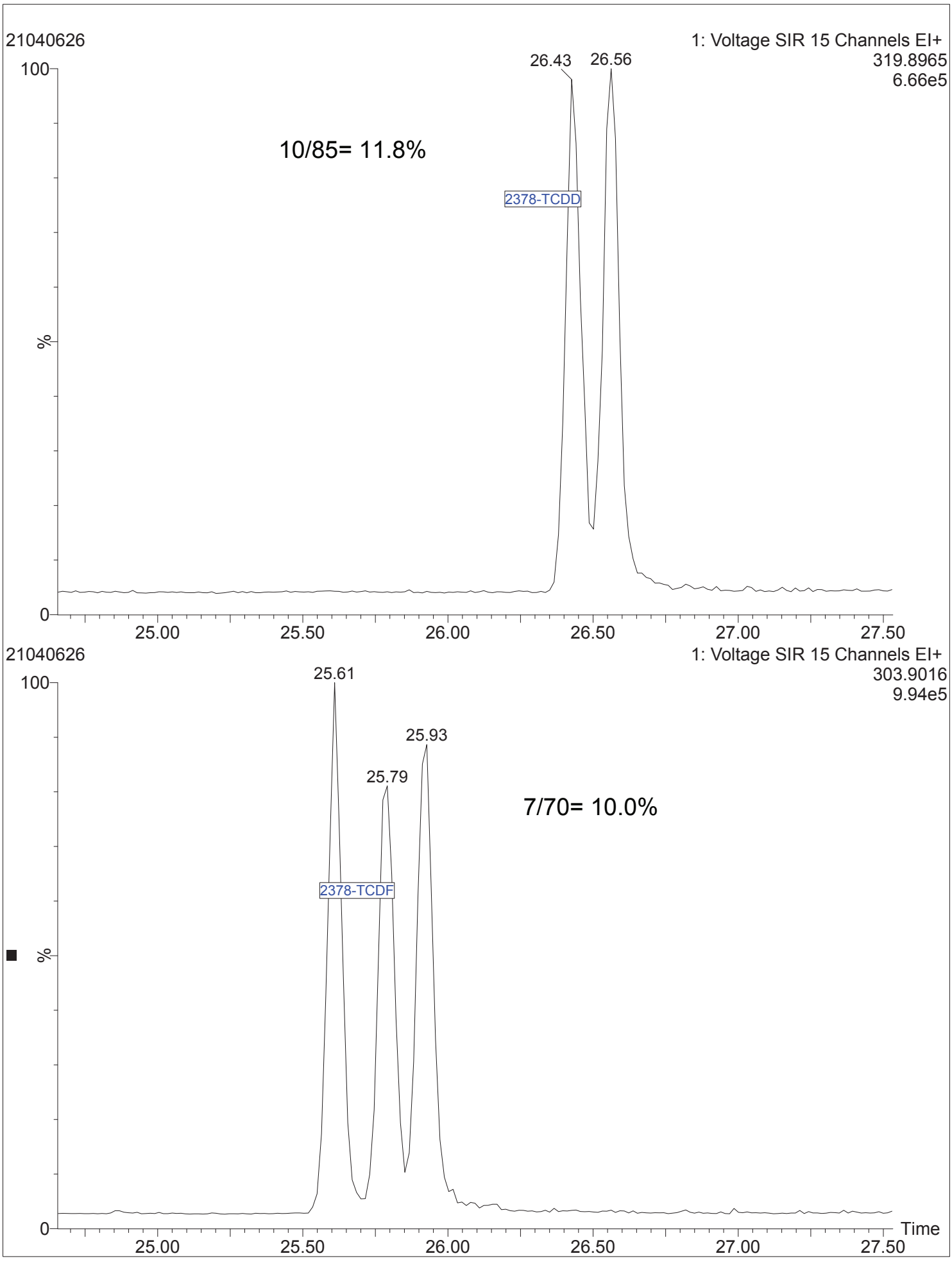


M 504.9696 R 12794



M 516.9697 R 14289




21040626
1: Voltage SIR 15 Channels EI+
319.8965
6.66e5
26.43
26.56
10/85= 11.8%
2378-TCDD
100
%
0
25.00
25.50
26.00
26.50
27.00
27.50
21040626
1: Voltage SIR 15 Channels EI+
303.9016
9.94e5
25.61
25.93
25.79
7/70= 10.0%
2378-TCDF
100
%
0
Time
25.00
25.50
26.00
26.50
27.00
27.50

CONTINUING CALIBRATION CHECK
EPA 1613B

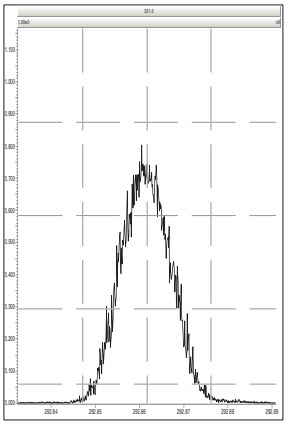
Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Instrument ID:	AUTOSPEC01	Calibration:	EC00006
Lab File ID:	21040637	Calibration Date:	03/01/2021
Sequence:	SJC0474	Injection Date:	04/07/21
Lab Sample ID:	SJC0474-CCV3	Injection Time:	17:15
Sequence Name:	CS3C5		

		CONC. (ng/mL)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF		
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN	CCV	LIMIT	
2,3,7,8-TCDF	A	10.000	10.9	0.7815068	0.8487526		8.6	+/-16	
2,3,7,8-TCDD	A	10.000	10.7	1.3074710	1.3991130		7.0	+/-22	
1,2,3,7,8-PeCDF	A	50.000	57.4	0.8661132	0.9947778		14.9	+/-18	
2,3,4,7,8-PeCDF	A	50.000	57.2	0.9798329	1.1213920		14.4	+/-18	
1,2,3,7,8-PeCDD	A	50.000	53.3	0.9786280	1.0431900		6.6	+/-22	
1,2,3,4,7,8-HxCDF	A	50.000	54.9	1.0022170	1.1013260		9.9	+/-10	
1,2,3,6,7,8-HxCDF	A	50.000	54.3	0.9610616	1.0444210		8.7	+/-12	
2,3,4,6,7,8-HxCDF	A	50.000	54.4	1.0430410	1.1340130		8.7	+/-12	
1,2,3,7,8,9-HxCDF	A	50.000	50.5	0.9942991	1.0050380		1.1	+/-10	
1,2,3,4,7,8-HxCDD	A	50.000	48.3	0.9561583	0.9236829		-3.4	+/-22	
1,2,3,6,7,8-HxCDD	A	50.000	49.4	0.9525810	0.9402694		-1.3	+/-22	
1,2,3,7,8,9-HxCDD	A	50.000	48.7	0.9268956	0.9034854		-2.5	+/-18	
1,2,3,4,6,7,8-HpCDF	A	50.000	55.9	1.0579720	1.1828500		11.8	+/-10	*
1,2,3,4,7,8,9-HpCDF	A	50.000	54.3	1.0697390	1.1618560		8.6	+/-14	
1,2,3,4,6,7,8-HpCDD	A	50.000	50.2	1.0550420	1.0599120		0.5	+/-14	
OCDF	A	100.00	105	1.2566960	1.3214760		5.2	+/-37	
OCDD	A	100.00	92.1	1.0458020	0.9892647		-7.9	+/-21	
13C12-2,3,7,8-TCDF	A	100.00	108	1.9249160	2.0782091		8.0	+/-29	
13C12-2,3,7,8-TCDD	A	100.00	94.9	1.1327550	1.0749879		-5.1	+/-18	
13C12-1,2,3,7,8-PeCDF	A	100.00	105	1.4422400	1.5172321		5.2	+/-24	
13C12-2,3,4,7,8-PeCDF	A	100.00	101	1.3866450	1.4034905		1.2	+/-23	
13C12-1,2,3,7,8-PeCDD	A	100.00	96.9	0.9468647	0.9176031		-3.1	+/-38	
13C12-1,2,3,4,7,8-HxCDF	A	100.00	95.6	1.0530710	1.0065949		-4.4	+/-24	
13C12-1,2,3,6,7,8-HxCDF	A	100.00	95.1	1.1350140	1.0795467		-4.9	+/-30	
13C12-2,3,4,6,7,8-HxCDF	A	100.00	94.9	1.0040700	0.9525719		-5.1	+/-27	
13C12-1,2,3,7,8,9-HxCDF	A	100.00	98.7	0.9089439	0.8967180		-1.3	+/-26	
13C12-1,2,3,4,7,8-HxCDD	A	100.00	97.8	0.9385700	0.9180041		-2.2	+/-15	
13C12-1,2,3,6,7,8-HxCDD	A	100.00	93.9	1.0420460	0.9787817		-6.1	+/-15	
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	99.5	0.9598082	0.9551904		-0.5	+/-22	
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	101	0.7937117	0.8000257		0.8	+/-23	
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	99.6	0.7883415	0.7848883		-0.4	+/-18	
13C12-OCDD	A	200.00	191	0.7032915	0.6718134		-4.5	+/-52	
37Cl4-2,3,7,8-TCDD	A	10.000	9.99	1.4170130	1.2967791		-0.06	+/-21	

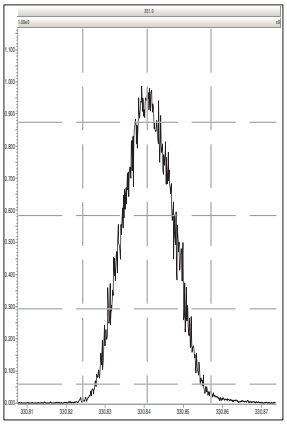
* Values outside of QC limits

Printed: Wednesday, April 07, 2021 18:08:28 Pacific Daylight Time

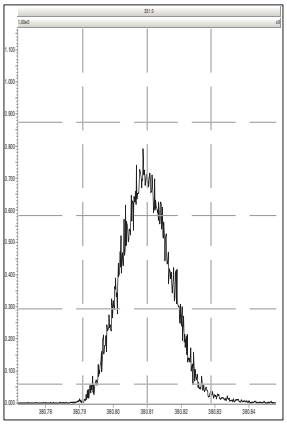
M 292.9824 R 11932



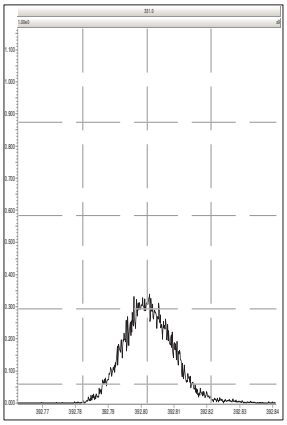
M 330.9792 R 11848



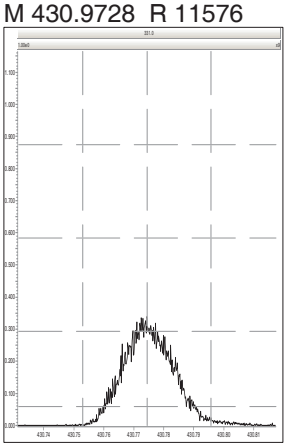
M 380.9760 R 11468



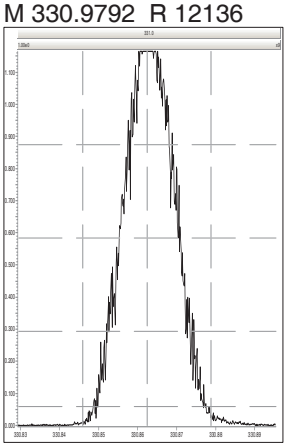
M 392.9760 R 11918



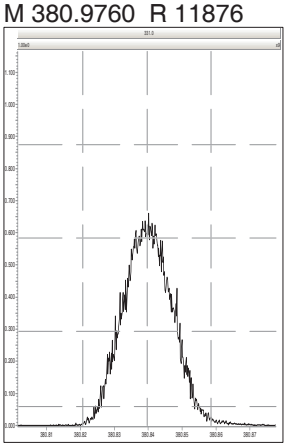
M 430.9728 R 11576



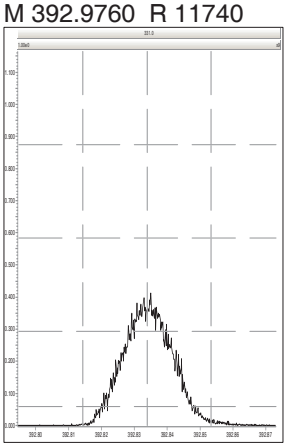
M 330.9792 R 12136



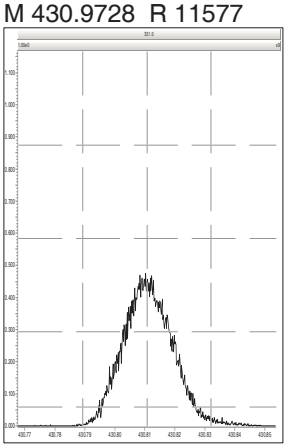
M 380.9760 R 11876



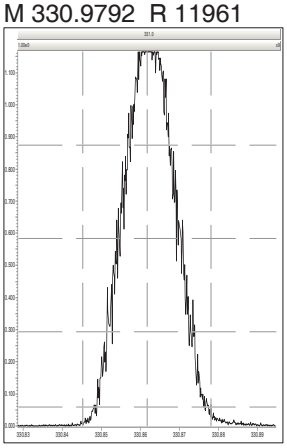
M 392.9760 R 11740



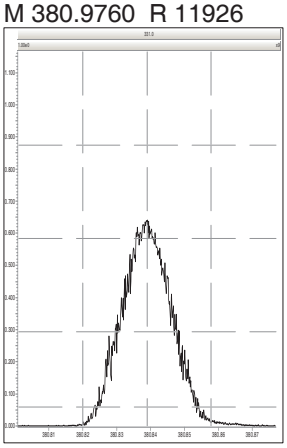
M 430.9728 R 11577



M 330.9792 R 11961



M 380.9760 R 11926



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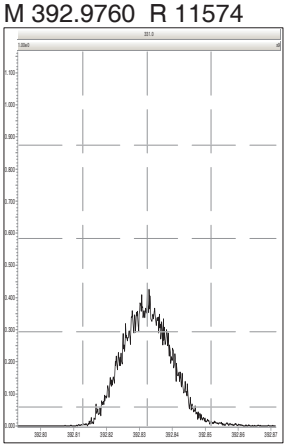
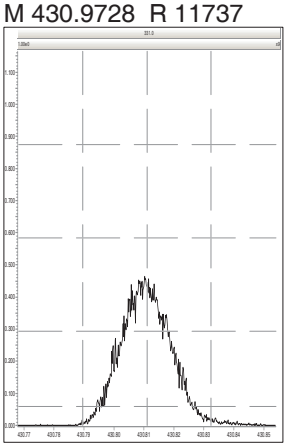
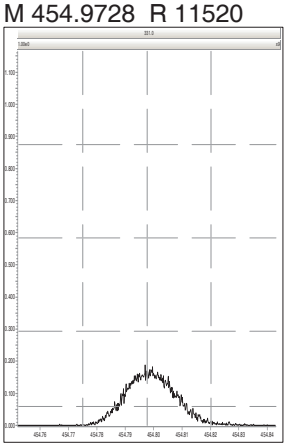


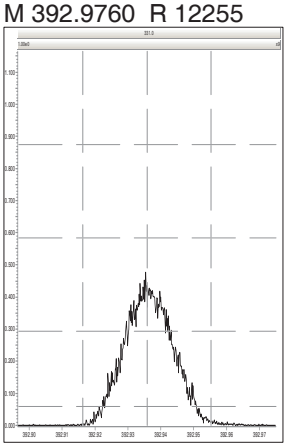
M 430.9728 R 11737



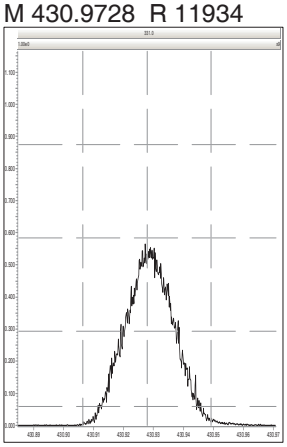
M 454.9728 R 11520



M 392.9760 R 12255

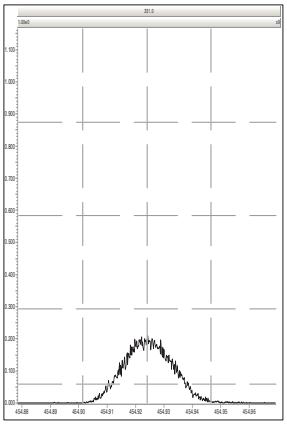


M 430.9728 R 11934

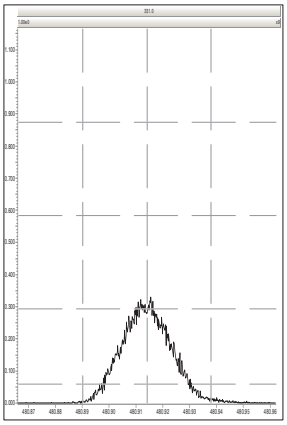


Printed: Wednesday, April 07, 2021 18:08:28 Pacific Daylight Time

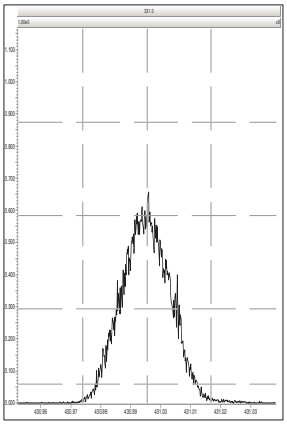
M 454.9728 R 12136



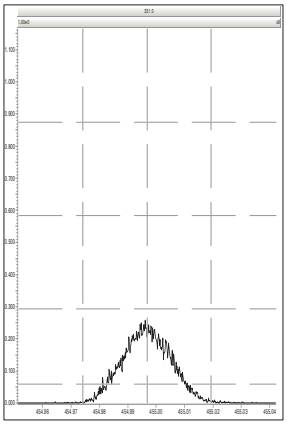
M 480.9696 R 11495



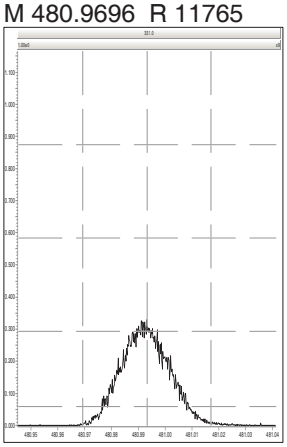
M 430.9728 R 12254



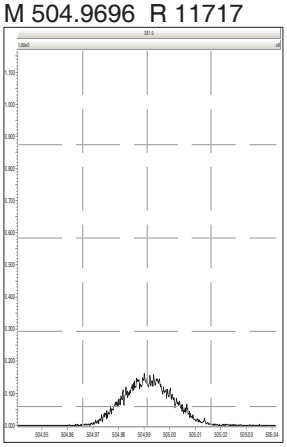
M 454.9728 R 12112



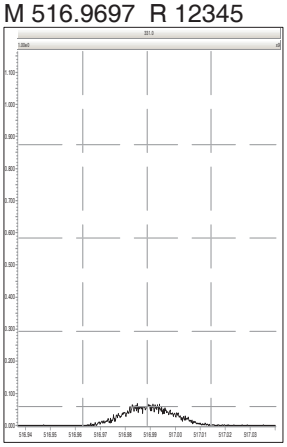
M 480.9696 R 11765

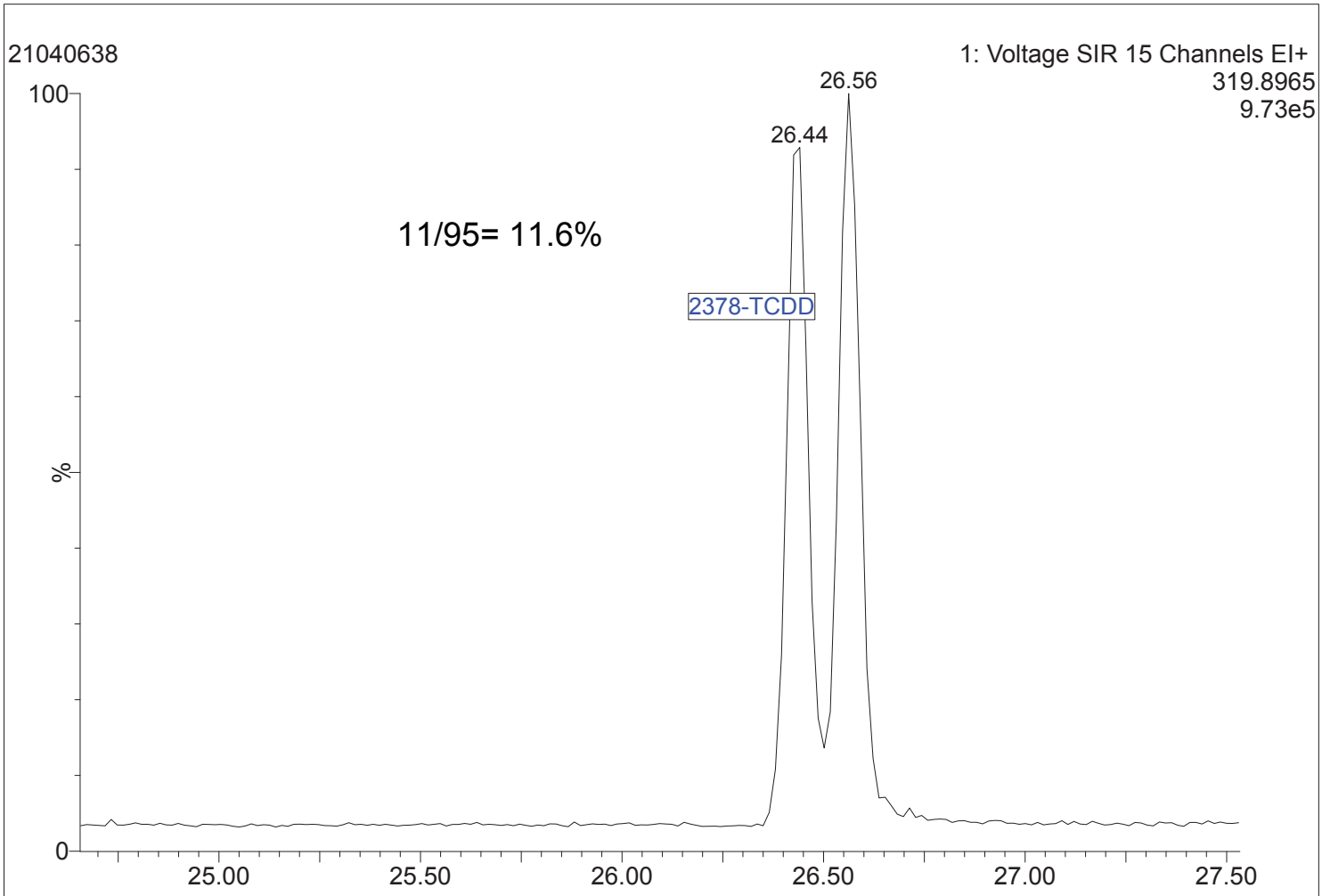


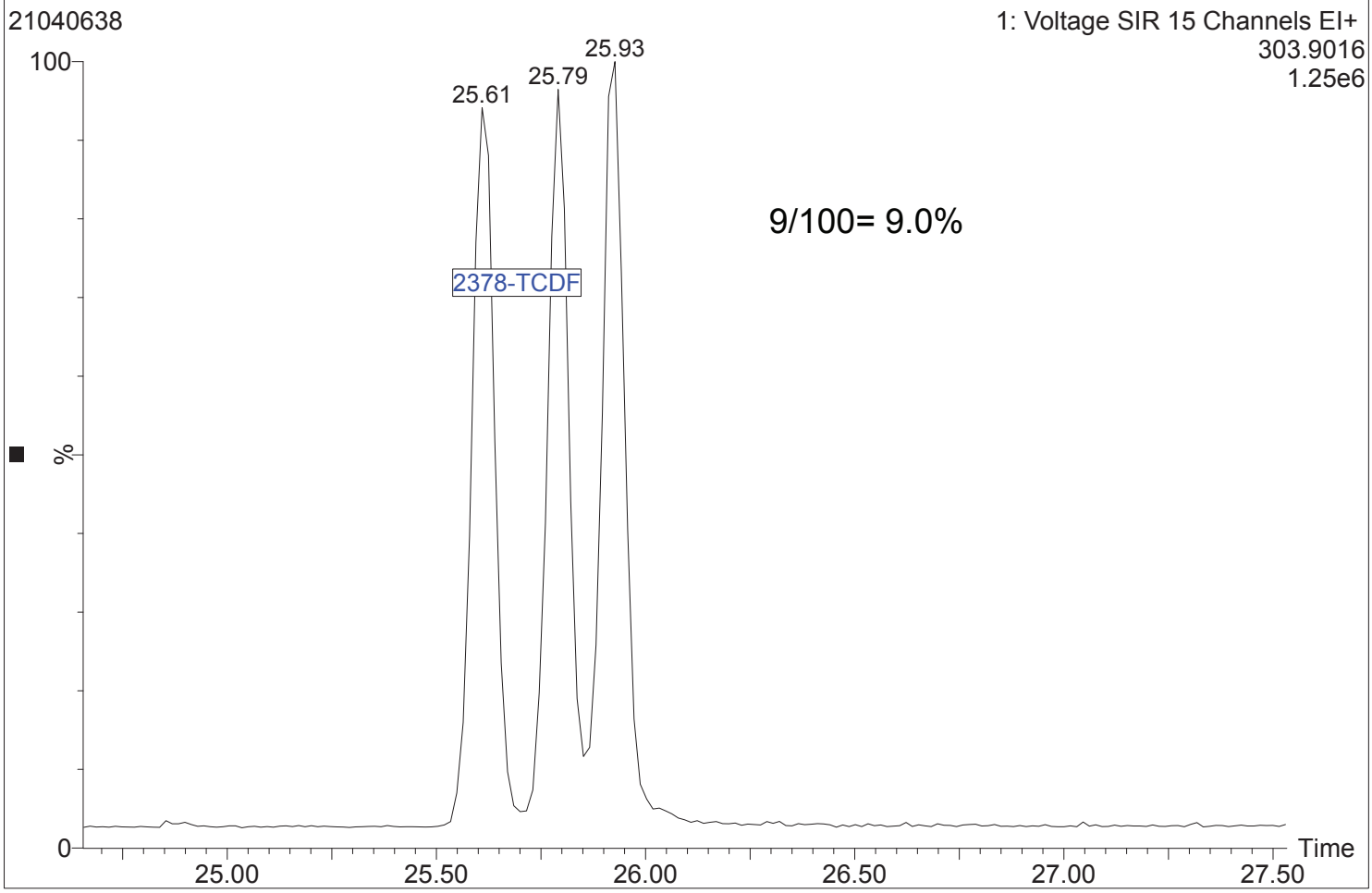
M 504.9696 R 11717



M 516.9697 R 12345




21040638
1: Voltage SIR 15 Channels EI+
319.8965
9.73e5
100
26.56
26.44
11/95= 11.6%
2378-TCDD
%
0
25.00
25.50
26.00
26.50
27.00
27.50


21040638
1: Voltage SIR 15 Channels EI+
303.9016
1.25e6
100
25.93
25.79
25.61
9/100= 9.0%
2378-TCDF
%
0
Time
25.00
25.50
26.00
26.50
27.00
27.50

CONTINUING CALIBRATION CHECK
EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Instrument ID:	AUTOSPEC01	Calibration:	EC00006
Lab File ID:	21040818	Calibration Date:	03/01/2021
Sequence:	SJD0113	Injection Date:	04/09/21
Lab Sample ID:	SJD0113-CCV1	Injection Time:	00:19
Sequence Name:	CS3D3		

		CONC. (ng/mL)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF	
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN	CCV	LIMIT
2,3,7,8-TCDF	A	10.000	11.1	0.7815068	0.8672540		11.0	+/-16
2,3,7,8-TCDD	A	10.000	10.7	1.3074710	1.3993230		7.0	+/-22
1,2,3,7,8-PeCDF	A	50.000	58.3	0.8661132	1.0093730		16.5	+/-18
2,3,4,7,8-PeCDF	A	50.000	58.0	0.9798329	1.1375520		16.1	+/-18
1,2,3,7,8-PeCDD	A	50.000	54.7	0.9786280	1.0699350		9.3	+/-22
1,2,3,4,7,8-HxCDF	A	50.000	56.2	1.0022170	1.1269050		12.4	+/-10
1,2,3,6,7,8-HxCDF	A	50.000	56.6	0.9610616	1.0881200		13.2	+/-12
2,3,4,6,7,8-HxCDF	A	50.000	53.7	1.0430410	1.1209000		7.5	+/-12
1,2,3,7,8,9-HxCDF	A	50.000	52.2	0.9942991	1.0380350		4.4	+/-10
1,2,3,4,7,8-HxCDD	A	50.000	49.7	0.9561583	0.9503715		-0.6	+/-22
1,2,3,6,7,8-HxCDD	A	50.000	49.5	0.9525810	0.9435962		-0.9	+/-22
1,2,3,7,8,9-HxCDD	A	50.000	49.5	0.9268956	0.9183309		-0.9	+/-18
1,2,3,4,6,7,8-HpCDF	A	50.000	53.8	1.0579720	1.1375140		7.5	+/-10
1,2,3,4,7,8,9-HpCDF	A	50.000	54.9	1.0697390	1.1745280		9.8	+/-14
1,2,3,4,6,7,8-HpCDD	A	50.000	53.4	1.0550420	1.1274370		6.9	+/-14
OCDF	A	100.00	104	1.2566960	1.3028910		3.7	+/-37
OCDD	A	100.00	94.2	1.0458020	1.0113860		-5.8	+/-21
13C12-2,3,7,8-TCDF	A	100.00	111	1.9249160	2.1383960		11.1	+/-29
13C12-2,3,7,8-TCDD	A	100.00	96.4	1.1327550	1.0919763		-3.6	+/-18
13C12-1,2,3,7,8-PeCDF	A	100.00	106	1.4422400	1.5282975		6.0	+/-24
13C12-2,3,4,7,8-PeCDF	A	100.00	104	1.3866450	1.4397256		3.8	+/-23
13C12-1,2,3,7,8-PeCDD	A	100.00	96.6	0.9468647	0.9144647		-3.4	+/-38
13C12-1,2,3,4,7,8-HxCDF	A	100.00	99.5	1.0530710	1.0483192		-0.5	+/-24
13C12-1,2,3,6,7,8-HxCDF	A	100.00	98.5	1.1350140	1.1181217		-1.5	+/-30
13C12-2,3,4,6,7,8-HxCDF	A	100.00	101	1.0040700	1.0129473		0.9	+/-27
13C12-1,2,3,7,8,9-HxCDF	A	100.00	98.2	0.9089439	0.8922599		-1.8	+/-26
13C12-1,2,3,4,7,8-HxCDD	A	100.00	98.2	0.9385700	0.9220598		-1.8	+/-15
13C12-1,2,3,6,7,8-HxCDD	A	100.00	95.2	1.0420460	0.9921366		-4.8	+/-15
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	109	0.9598082	1.0460197		9.0	+/-22
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	104	0.7937117	0.8226001		3.6	+/-23
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	99.6	0.7883415	0.7849021		-0.4	+/-28
13C12-OCDD	A	200.00	187	0.7032915	0.6585757		-6.4	+/-52
37Cl4-2,3,7,8-TCDD	A	10.000	10.1	1.4170130	1.3067464		0.7	

* Values outside of QC limits

* Values outside of QC limits

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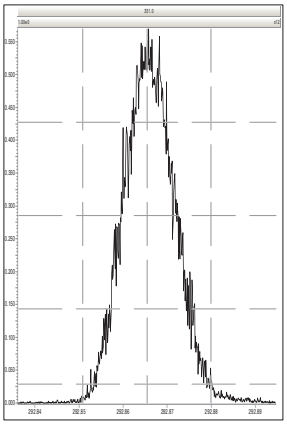
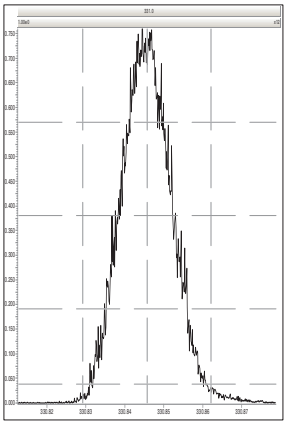
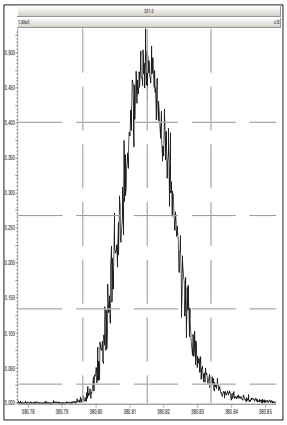
M 292.9824 R 11399



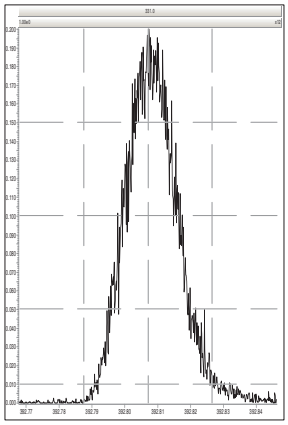
M 330.9792 R 11654



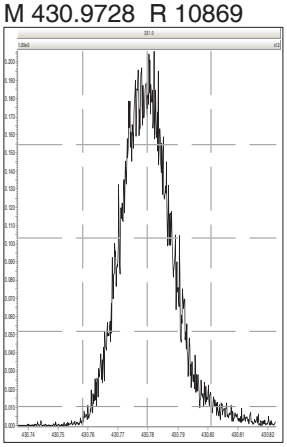
M 380.9760 R 11092



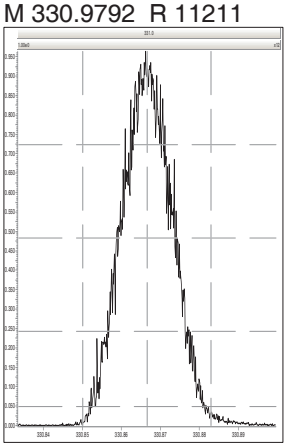
M 392.9760 R 11656



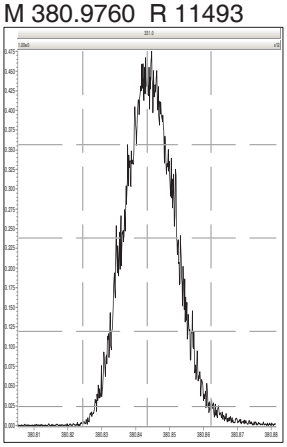
M 430.9728 R 10869



M 330.9792 R 11211



M 380.9760 R 11493



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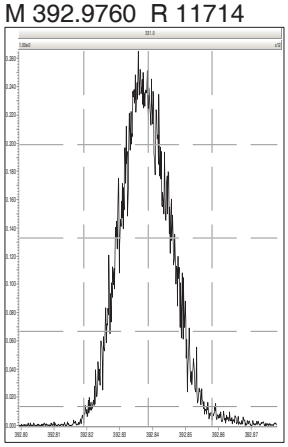

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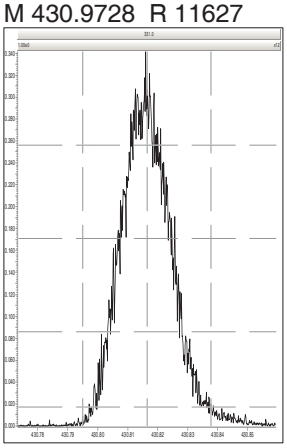

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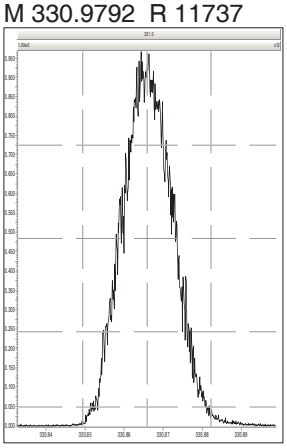

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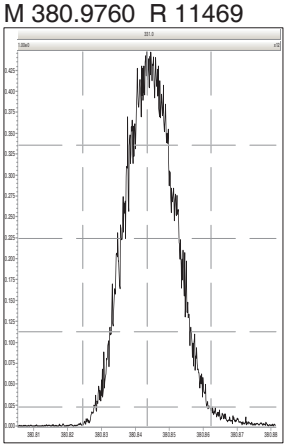
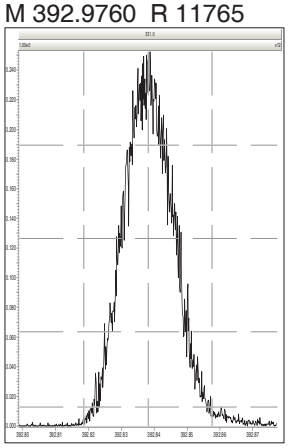


M 392.9760 R 11765



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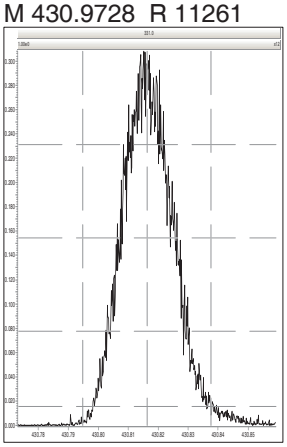
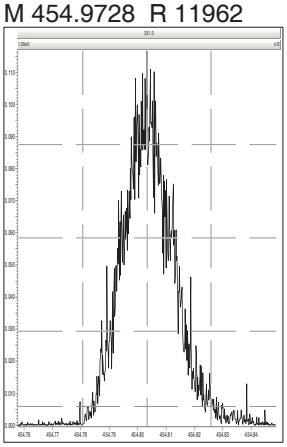
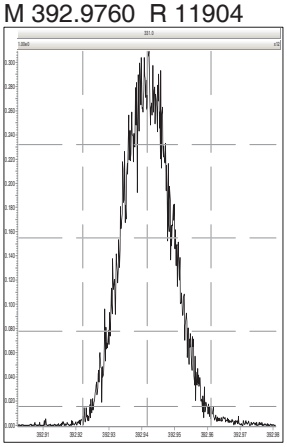


M 454.9728 R 11962



M 392.9760 R 11904



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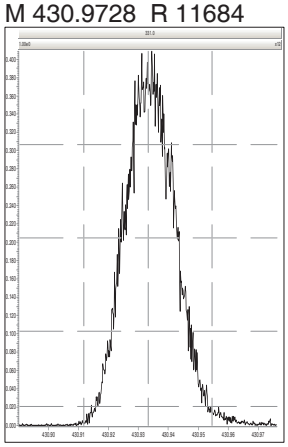

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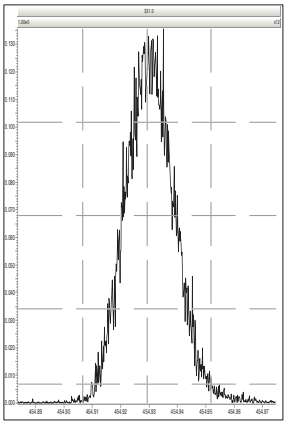
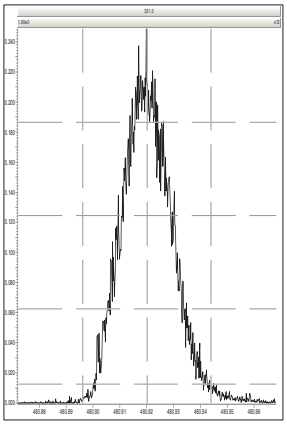
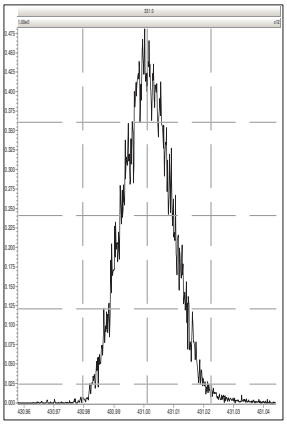
M 454.9728 R 11938



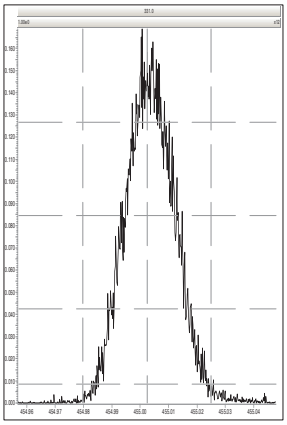
M 480.9696 R 12048



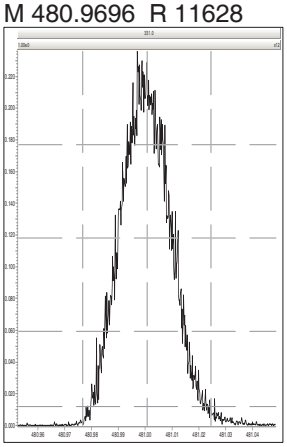
M 430.9728 R 11654



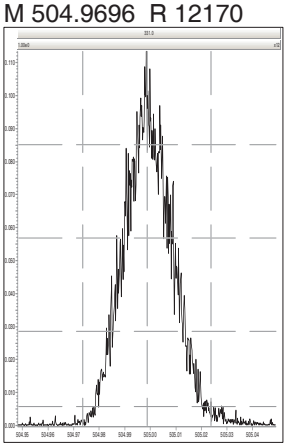
M 454.9728 R 11963



M 480.9696 R 11628



M 504.9696 R 12170



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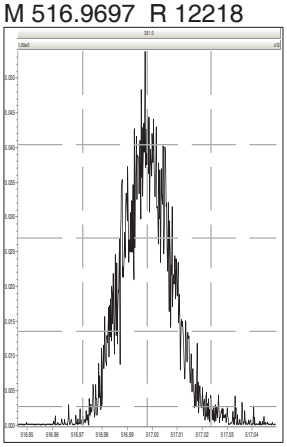
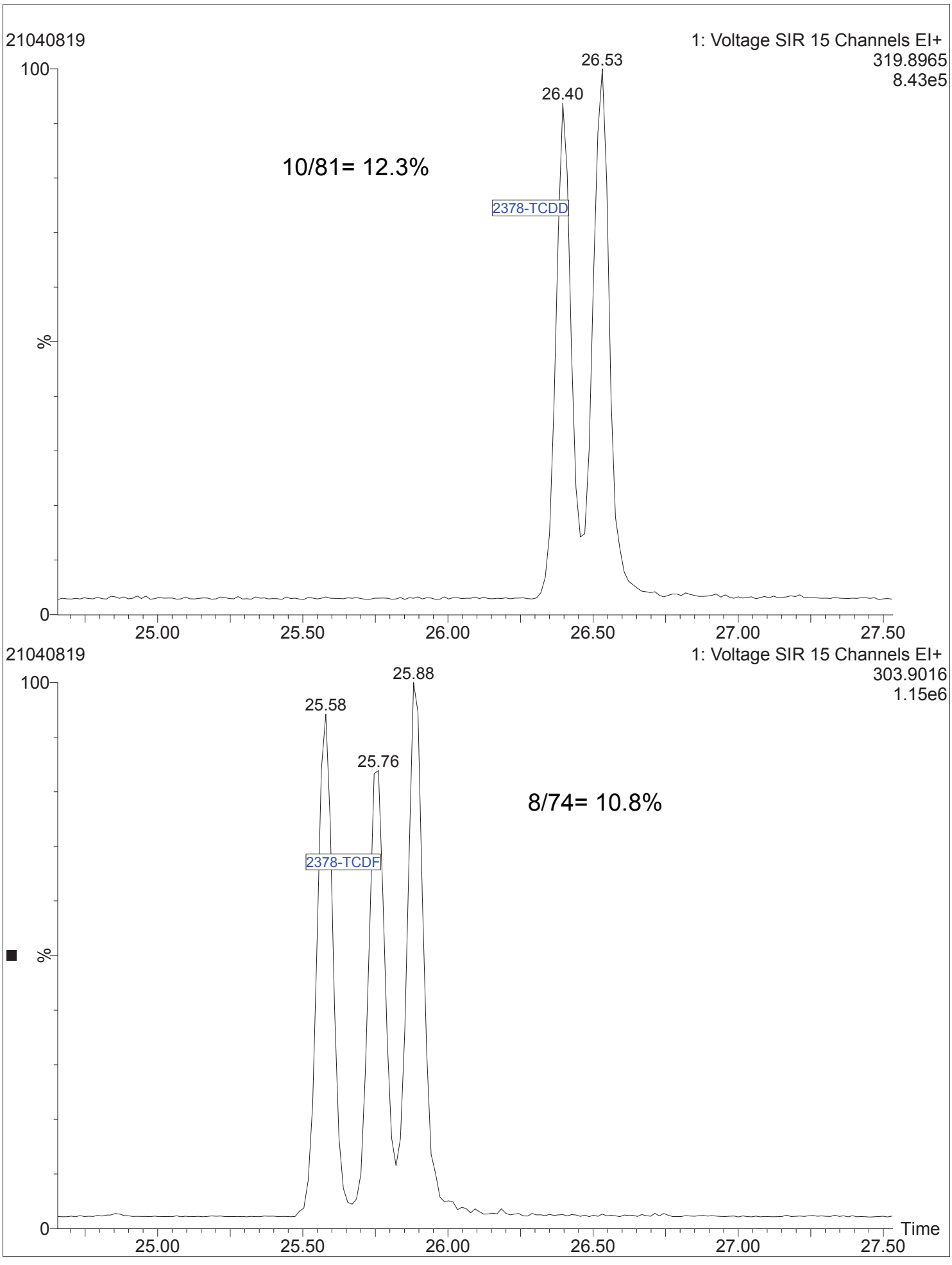



21040819
1: Voltage SIR 15 Channels EI+
319.8965
8.43e5
100
26.53
26.40
10/81= 12.3%
2378-TCDD
%
0
25.00
25.50
26.00
26.50
27.00
27.50
21040819
1: Voltage SIR 15 Channels EI+
303.9016
1.15e6
100
25.88
25.58
25.76
8/74= 10.8%
2378-TCDF
%
0
Time
25.00
25.50
26.00
26.50
27.00
27.50

CONTINUING CALIBRATION CHECK
EPA 1613B

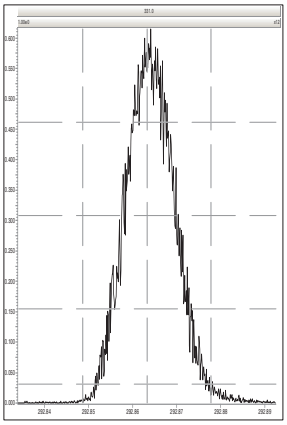
Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Instrument ID:	AUTOSPEC01	Calibration:	EC00006
Lab File ID:	21040827	Calibration Date:	03/01/2021
Sequence:	SJD0113	Injection Date:	04/09/21
Lab Sample ID:	SJD0113-CCV2	Injection Time:	07:46
Sequence Name:	CS3D4		

		CONC. (ng/mL)		RESPONSE FACTOR (RRF)			% DRIFT/DIFF		
COMPOUND	TYPE	STD	CCV	ICAL	CCV	MIN	CCV	LIMIT	
2,3,7,8-TCDF	A	10.000	11.1	0.7815068	0.8645849		10.6	+/-16	
2,3,7,8-TCDD	A	10.000	11.1	1.3074710	1.4468540		10.7	+/-22	
1,2,3,7,8-PeCDF	A	50.000	59.9	0.8661132	1.0380350		19.8	+/-18	
2,3,4,7,8-PeCDF	A	50.000	59.8	0.9798329	1.1712770		19.5	+/-18	
1,2,3,7,8-PeCDD	A	50.000	53.4	0.9786280	1.0448230		6.8	+/-22	
1,2,3,4,7,8-HxCDF	A	50.000	55.7	1.0022170	1.1156770		11.3	+/-10	
1,2,3,6,7,8-HxCDF	A	50.000	58.4	0.9610616	1.1220770		16.8	+/-12	*
2,3,4,6,7,8-HxCDF	A	50.000	55.6	1.0430410	1.1604620		11.3	+/-12	
1,2,3,7,8,9-HxCDF	A	50.000	53.5	0.9942991	1.0633040		6.9	+/-10	
1,2,3,4,7,8-HxCDD	A	50.000	48.6	0.9561583	0.9297407		-2.8	+/-22	
1,2,3,6,7,8-HxCDD	A	50.000	49.5	0.9525810	0.9431724		-1.0	+/-22	
1,2,3,7,8,9-HxCDD	A	50.000	49.3	0.9268956	0.8677783		-1.3	+/-18	
1,2,3,4,6,7,8-HpCDF	A	50.000	54.9	1.0579720	1.1612860		9.8	+/-10	
1,2,3,4,7,8,9-HpCDF	A	50.000	54.2	1.0697390	1.1594600		8.4	+/-14	
1,2,3,4,6,7,8-HpCDD	A	50.000	53.3	1.0550420	1.1249600		6.6	+/-14	
OCDF	A	100.00	106	1.2566960	1.3288480		5.7	+/-37	
OCDD	A	100.00	91.2	1.0458020	0.9792113		-8.8	+/-21	
13C12-2,3,7,8-TCDF	A	100.00	113	1.9249160	2.1752096		13.0	+/-29	
13C12-2,3,7,8-TCDD	A	100.00	98.2	1.1327550	1.1118614		-1.8	+/-18	
13C12-1,2,3,7,8-PeCDF	A	100.00	109	1.4422400	1.5690976		8.8	+/-24	
13C12-2,3,4,7,8-PeCDF	A	100.00	105	1.3866450	1.4544578		4.9	+/-23	
13C12-1,2,3,7,8-PeCDD	A	100.00	99.3	0.9468647	0.9406961		-0.7	+/-38	
13C12-1,2,3,4,7,8-HxCDF	A	100.00	99.3	1.0530710	1.0456553		-0.7	+/-24	
13C12-1,2,3,6,7,8-HxCDF	A	100.00	96.6	1.1350140	1.0965511		-3.4	+/-30	
13C12-2,3,4,6,7,8-HxCDF	A	100.00	96.8	1.0040700	0.9717492		-3.2	+/-27	
13C12-1,2,3,7,8,9-HxCDF	A	100.00	96.8	0.9089439	0.8801548		-3.2	+/-26	
13C12-1,2,3,4,7,8-HxCDD	A	100.00	98.9	0.9385700	0.9281443		-1.1	+/-15	
13C12-1,2,3,6,7,8-HxCDD	A	100.00	94.0	1.0420460	0.9798244		-6.0	+/-15	
13C12-1,2,3,4,6,7,8-HpCDF	A	100.00	105	0.9598082	1.0040145		4.6	+/-22	
13C12-1,2,3,4,7,8,9-HpCDF	A	100.00	102	0.7937117	0.8057514		1.5	+/-23	
13C12-1,2,3,4,6,7,8-HpCDD	A	100.00	95.7	0.7883415	0.7543909		-4.3	+/-28	
13C12-OCDD	A	200.00	179	0.7032915	0.6278636		-10.7	+/-52	
37Cl4-2,3,7,8-TCDD	A	10.000	10.3	1.4170130	1.3319034		2.6		

* Values outside of QC limits

Printed: Friday, April 09, 2021 08:39:24 Pacific Daylight Time

M 292.9824 R 11876



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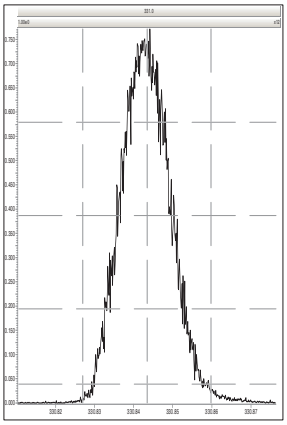
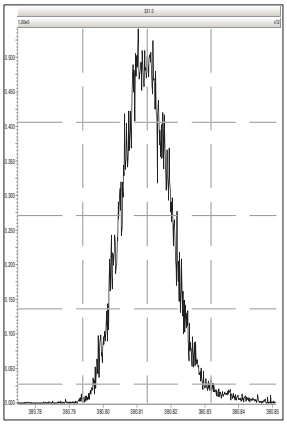
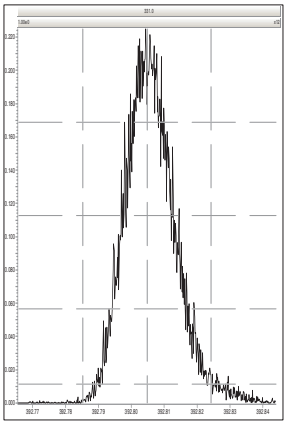


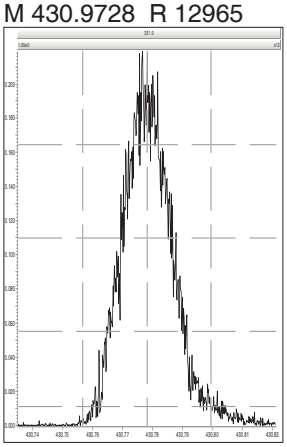
M 380.9760 R 12077



M 392.9760 R 11740



M 430.9728 R 12965



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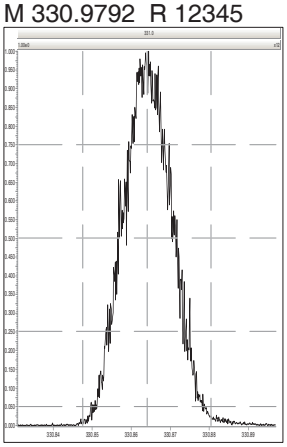

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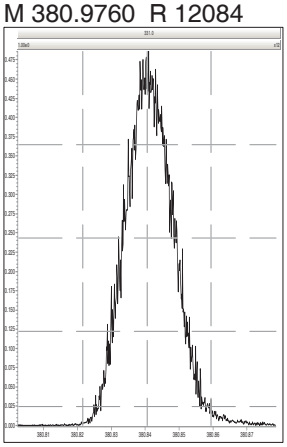
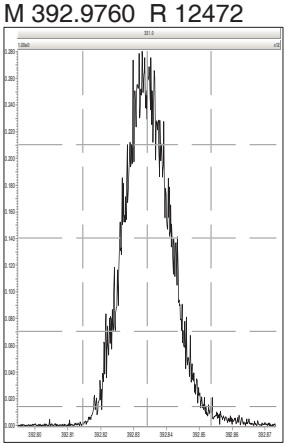
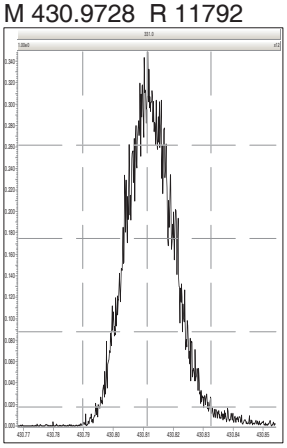


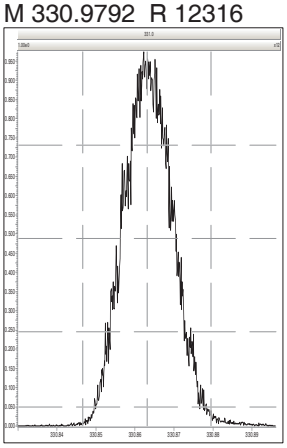
M 392.9760 R 12472



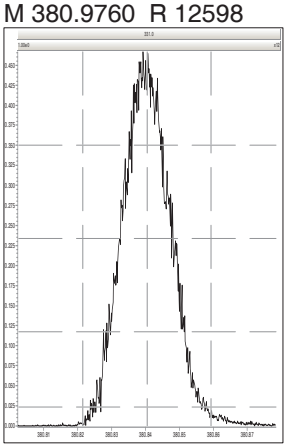
M 430.9728 R 11792



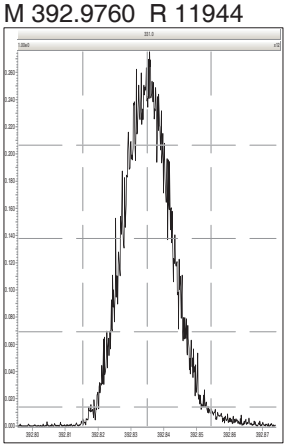
M 330.9792 R 12316



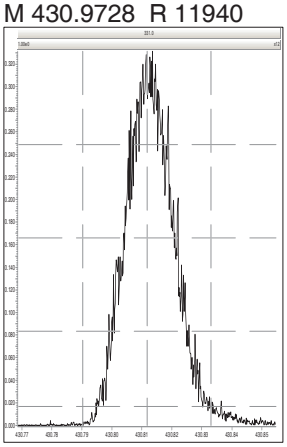
M 380.9760 R 12598



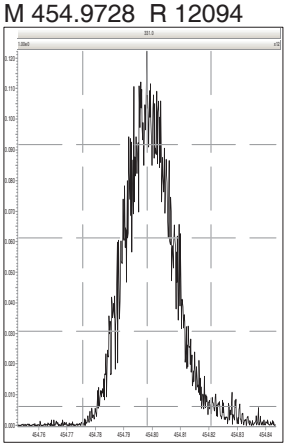
M 392.9760 R 11944



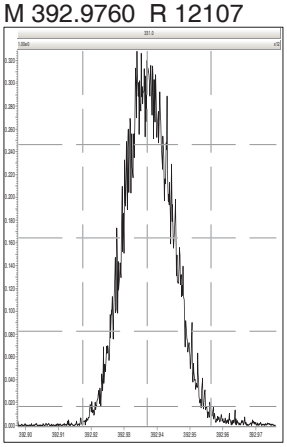
M 430.9728 R 11940



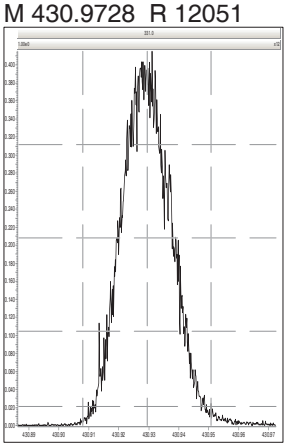
M 454.9728 R 12094



M 392.9760 R 12107

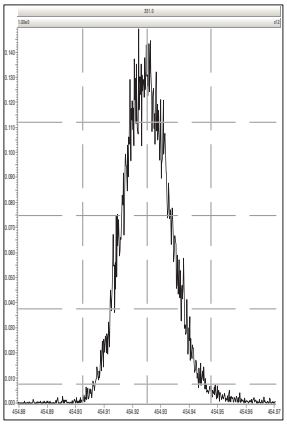


M 430.9728 R 12051

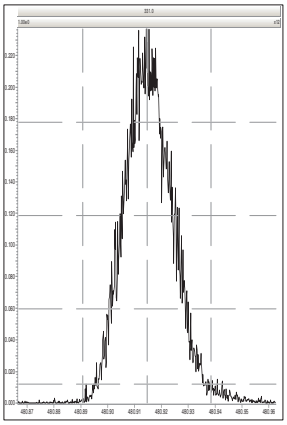


Printed: Friday, April 09, 2021 08:39:24 Pacific Daylight Time

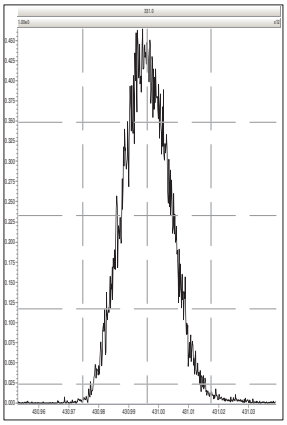
M 454.9728 R 12316



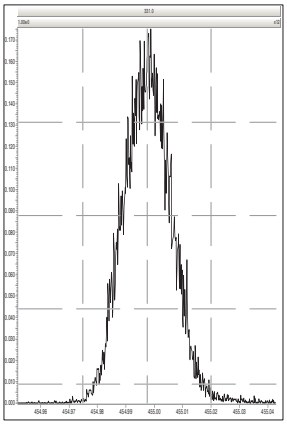
M 480.9696 R 12377



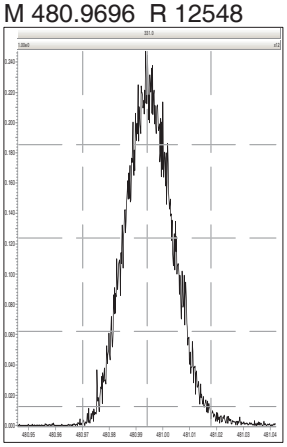
M 430.9728 R 12290



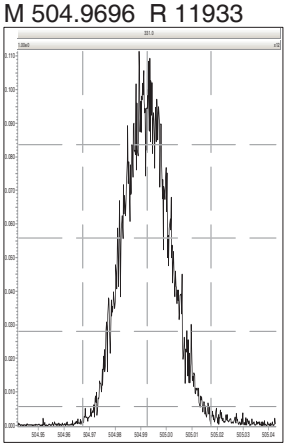
M 454.9728 R 12570



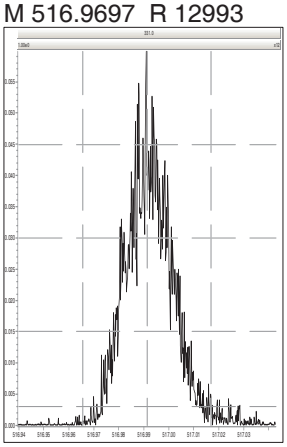
M 480.9696 R 12548

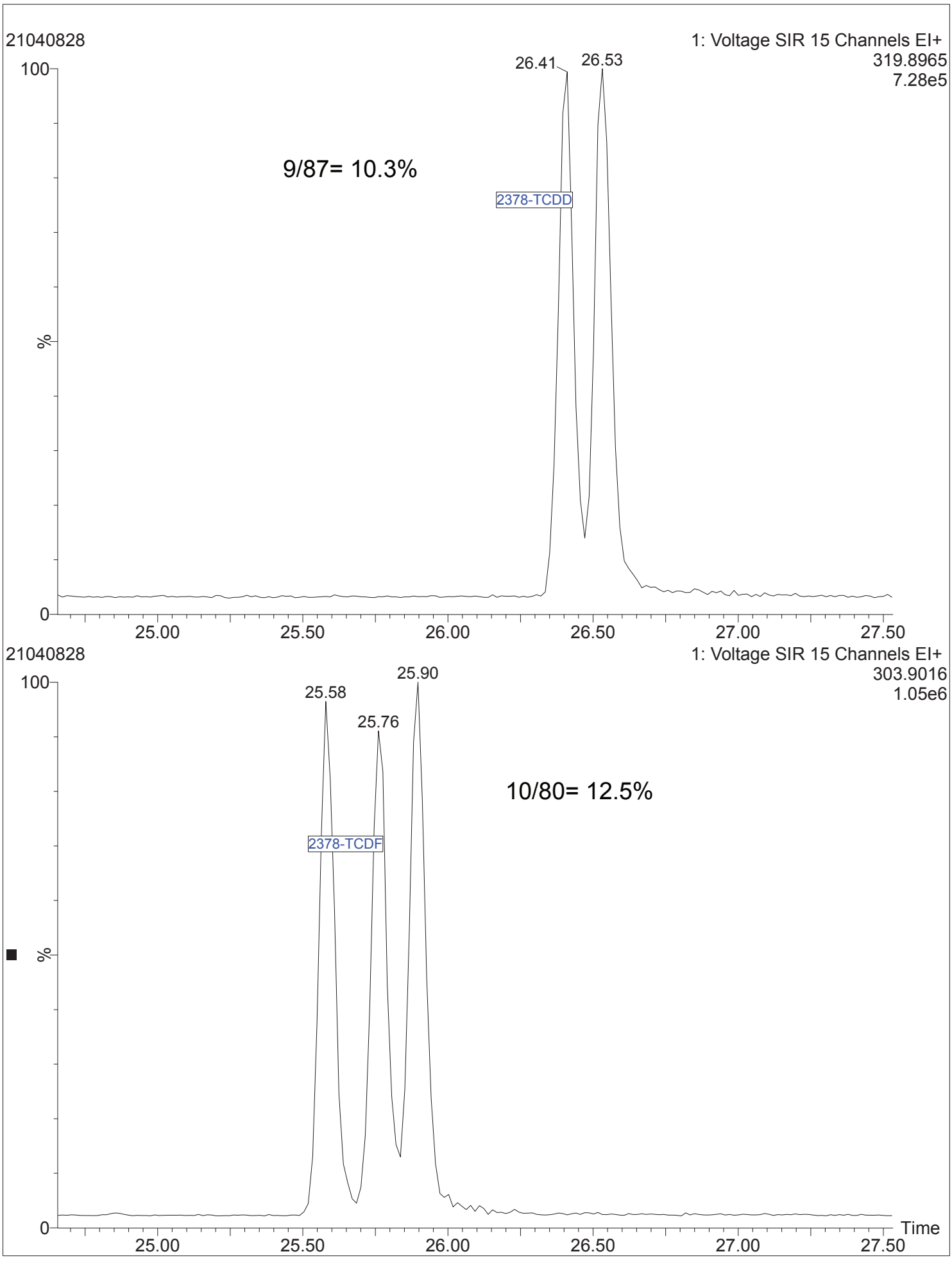


M 504.9696 R 11933



M 516.9697 R 12993




21040828
1: Voltage SIR 15 Channels EI+
319.8965
7.28e5
100
26.41
26.53
9/87= 10.3%
2378-TCDD
%
0
25.00
25.50
26.00
26.50
27.00
27.50
21040828
1: Voltage SIR 15 Channels EI+
303.9016
1.05e6
100
25.58
25.90
25.76
10/80= 12.5%
2378-TCDF
%
0
Time
25.00
25.50
26.00
26.50
27.00
27.50

CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc. SDG: 21C0250

Instrument .ID: AUTOSPEC01 Lab File ID: 21030103

Date Analyzed: 03/01/21 Time Analyzed: 12:05

Lab Sample ID: SJC0004-RES1 Sequence: SJC0004

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 13

3467-TCDF/2378-TCDF: 11.6

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJC0004-ICV1	CS3V2	21030102A	03/01/2021	11:16
SJC0004-RES1	ISCV2	21030103	03/01/2021	12:05
SJC0004-CAL1	CSLCV	21030104	03/01/2021	12:54
SJC0004-CAL2	CS1CV	21030105A	03/01/2021	13:49
SJC0004-CAL3	CS2CV	21030106A	03/01/2021	15:09
SJC0004-CAL4	CS3CV	21030107A	03/01/2021	15:57
SJC0004-CAL5	CS4CV	21030108A	03/01/2021	16:46
SJC0004-CAL6	CS5CV	21030109A	03/01/2021	17:35
SJC0004-SCV1	ICVCV	21030110A	03/01/2021	18:24
SJC0004-CCV1	CS3V2	21030111A	03/01/2021	19:13
SJC0004-RES2	ISCV2	21030112	03/01/2021	20:07

CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc. SDG: 21C0250

Instrument .ID: AUTOSPEC01 Lab File ID: 21030112

Date Analyzed: 03/01/21 Time Analyzed: 20:07

Lab Sample ID: SJC0004-RES2 Sequence: SJC0004

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 15

3467-TCDF/2378-TCDF: 15.4

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJC0004-ICV1	CS3V2	21030102A	03/01/2021	11:16
SJC0004-RES1	ISCV2	21030103	03/01/2021	12:05
SJC0004-CAL1	CSLCV	21030104	03/01/2021	12:54
SJC0004-CAL2	CS1CV	21030105A	03/01/2021	13:49
SJC0004-CAL3	CS2CV	21030106A	03/01/2021	15:09
SJC0004-CAL4	CS3CV	21030107A	03/01/2021	15:57
SJC0004-CAL5	CS4CV	21030108A	03/01/2021	16:46
SJC0004-CAL6	CS5CV	21030109A	03/01/2021	17:35
SJC0004-SCV1	ICVCV	21030110A	03/01/2021	18:24
SJC0004-CCV1	CS3V2	21030111A	03/01/2021	19:13
SJC0004-RES2	ISCV2	21030112	03/01/2021	20:07

CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc. SDG: 21C0250

Instrument .ID: AUTOSPEC01 Lab File ID: 21040603

Date Analyzed: 04/06/21 Time Analyzed: 13:09

Lab Sample ID: SJC0474-RES1 Sequence: SJC0474

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 8.9

3467-TCDF/2378-TCDF: 8.7

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJC0474-ICV1	CS3C1	21040602	04/06/2021	12:21
SJC0474-RES1	ISCC1	21040603	04/06/2021	13:09
BJC0518-BLK2	Blank	21040604	04/06/2021	14:00
BJC0518-BS2	LCS	21040605	04/06/2021	14:48
21C0250-04	MW-VB3-031621	21040610	04/06/2021	19:00
21C0250-06	MW-CP7-031621	21040612	04/06/2021	20:38
21C0250-07	MW-CP6-031621	21040613	04/06/2021	21:27
21C0250-08	MW-CP4-031621	21040614	04/06/2021	22:16
SJC0474-CCV1	CS3C3	21040615	04/06/2021	23:06
SJC0474-RES2	ISCC3	21040616	04/06/2021	23:59
21C0250-10	MW-CP2-031721	21040617	04/07/2021	00:49
21C0250-11	MW-CP2-031721-D	21040618	04/07/2021	01:38
21C0250-12	MW-CP3-031721	21040619	04/07/2021	02:27
21C0250-13	MW-CP1-031721	21040620	04/07/2021	03:16
21C0250-14	MW-C1/VB1-031721	21040621	04/07/2021	04:05
21C0250-15	MW-VB2-031721	21040622	04/07/2021	04:54
SJC0474-CCV2	CS3C4	21040625	04/07/2021	07:21
SJC0474-RES3	ISCC4	21040626	04/07/2021	08:14
BJC0519-BLK1	Blank	21040633	04/07/2021	13:59
BJC0519-BS1	LCS	21040634	04/07/2021	14:48
BJC0519-BSD1	LCS Dup	21040635	04/07/2021	15:37
21C0250-09	MW-CP5-031621	21040636	04/07/2021	16:26
SJC0474-CCV3	CS3C5	21040637	04/07/2021	17:15
SJC0474-RES4	ISCC5	21040638	04/07/2021	18:08

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc.
SDG: 21C0250
Instrument .ID: AUTOSPEC01
Lab File ID: 21040616
Date Analyzed: 04/06/21
Time Analyzed: 23:59
Lab Sample ID: SJC0474-RES2
Sequence: SJC0474

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 10.4
3467-TCDF/2378-TCDF: 9.9

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJC0474-ICV1	CS3C1	21040602	04/06/2021	12:21
SJC0474-RES1	ISCC1	21040603	04/06/2021	13:09
BJC0518-BLK2	Blank	21040604	04/06/2021	14:00
BJC0518-BS2	LCS	21040605	04/06/2021	14:48
21C0250-04	MW-VB3-031621	21040610	04/06/2021	19:00
21C0250-06	MW-CP7-031621	21040612	04/06/2021	20:38
21C0250-07	MW-CP6-031621	21040613	04/06/2021	21:27
21C0250-08	MW-CP4-031621	21040614	04/06/2021	22:16
SJC0474-CCV1	CS3C3	21040615	04/06/2021	23:06
SJC0474-RES2	ISCC3	21040616	04/06/2021	23:59
21C0250-10	MW-CP2-031721	21040617	04/07/2021	00:49
21C0250-11	MW-CP2-031721-D	21040618	04/07/2021	01:38
21C0250-12	MW-CP3-031721	21040619	04/07/2021	02:27
21C0250-13	MW-CP1-031721	21040620	04/07/2021	03:16
21C0250-14	MW-C1/VB1-031721	21040621	04/07/2021	04:05
21C0250-15	MW-VB2-031721	21040622	04/07/2021	04:54
SJC0474-CCV2	CS3C4	21040625	04/07/2021	07:21
SJC0474-RES3	ISCC4	21040626	04/07/2021	08:14
BJC0519-BLK1	Blank	21040633	04/07/2021	13:59
BJC0519-BS1	LCS	21040634	04/07/2021	14:48
BJC0519-BSD1	LCS Dup	21040635	04/07/2021	15:37
21C0250-09	MW-CP5-031621	21040636	04/07/2021	16:26
SJC0474-CCV3	CS3C5	21040637	04/07/2021	17:15
SJC0474-RES4	ISCC5	21040638	04/07/2021	18:08

CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc. SDG: 21C0250

Instrument .ID: AUTOSPEC01 Lab File ID: 21040626

Date Analyzed: 04/07/21 Time Analyzed: 08:14

Lab Sample ID: SJC0474-RES3 Sequence: SJC0474

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 11.8

3467-TCDF/2378-TCDF: 10

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJC0474-ICV1	CS3C1	21040602	04/06/2021	12:21
SJC0474-RES1	ISCC1	21040603	04/06/2021	13:09
BJC0518-BLK2	Blank	21040604	04/06/2021	14:00
BJC0518-BS2	LCS	21040605	04/06/2021	14:48
21C0250-04	MW-VB3-031621	21040610	04/06/2021	19:00
21C0250-06	MW-CP7-031621	21040612	04/06/2021	20:38
21C0250-07	MW-CP6-031621	21040613	04/06/2021	21:27
21C0250-08	MW-CP4-031621	21040614	04/06/2021	22:16
SJC0474-CCV1	CS3C3	21040615	04/06/2021	23:06
SJC0474-RES2	ISCC3	21040616	04/06/2021	23:59
21C0250-10	MW-CP2-031721	21040617	04/07/2021	00:49
21C0250-11	MW-CP2-031721-D	21040618	04/07/2021	01:38
21C0250-12	MW-CP3-031721	21040619	04/07/2021	02:27
21C0250-13	MW-CP1-031721	21040620	04/07/2021	03:16
21C0250-14	MW-C1/VB1-031721	21040621	04/07/2021	04:05
21C0250-15	MW-VB2-031721	21040622	04/07/2021	04:54
SJC0474-CCV2	CS3C4	21040625	04/07/2021	07:21
SJC0474-RES3	ISCC4	21040626	04/07/2021	08:14
BJC0519-BLK1	Blank	21040633	04/07/2021	13:59
BJC0519-BS1	LCS	21040634	04/07/2021	14:48
BJC0519-BSD1	LCS Dup	21040635	04/07/2021	15:37
21C0250-09	MW-CP5-031621	21040636	04/07/2021	16:26
SJC0474-CCV3	CS3C5	21040637	04/07/2021	17:15
SJC0474-RES4	ISCC5	21040638	04/07/2021	18:08

CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc. SDG: 21C0250

Instrument .ID: AUTOSPEC01 Lab File ID: 21040638

Date Analyzed: 04/07/21 Time Analyzed: 18:08

Lab Sample ID: SJC0474-RES4 Sequence: SJC0474

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 11.6

3467-TCDF/2378-TCDF: 9

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJC0474-ICV1	CS3C1	21040602	04/06/2021	12:21
SJC0474-RES1	ISCC1	21040603	04/06/2021	13:09
BJC0518-BLK2	Blank	21040604	04/06/2021	14:00
BJC0518-BS2	LCS	21040605	04/06/2021	14:48
21C0250-04	MW-VB3-031621	21040610	04/06/2021	19:00
21C0250-06	MW-CP7-031621	21040612	04/06/2021	20:38
21C0250-07	MW-CP6-031621	21040613	04/06/2021	21:27
21C0250-08	MW-CP4-031621	21040614	04/06/2021	22:16
SJC0474-CCV1	CS3C3	21040615	04/06/2021	23:06
SJC0474-RES2	ISCC3	21040616	04/06/2021	23:59
21C0250-10	MW-CP2-031721	21040617	04/07/2021	00:49
21C0250-11	MW-CP2-031721-D	21040618	04/07/2021	01:38
21C0250-12	MW-CP3-031721	21040619	04/07/2021	02:27
21C0250-13	MW-CP1-031721	21040620	04/07/2021	03:16
21C0250-14	MW-C1/VB1-031721	21040621	04/07/2021	04:05
21C0250-15	MW-VB2-031721	21040622	04/07/2021	04:54
SJC0474-CCV2	CS3C4	21040625	04/07/2021	07:21
SJC0474-RES3	ISCC4	21040626	04/07/2021	08:14
BJC0519-BLK1	Blank	21040633	04/07/2021	13:59
BJC0519-BS1	LCS	21040634	04/07/2021	14:48
BJC0519-BSD1	LCS Dup	21040635	04/07/2021	15:37
21C0250-09	MW-CP5-031621	21040636	04/07/2021	16:26
SJC0474-CCV3	CS3C5	21040637	04/07/2021	17:15
SJC0474-RES4	ISCC5	21040638	04/07/2021	18:08

CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc. SDG: 21C0250

Instrument .ID: AUTOSPEC01 Lab File ID: 21040809

Date Analyzed: 04/08/21 Time Analyzed: 16:56

Lab Sample ID: SJD0113-RES1 Sequence: SJD0113

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 13.3

3467-TCDF/2378-TCDF: 11.8

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJD0113-ICV1	CS3D2	21040808A	04/08/2021	16:02
SJD0113-RES1	ISCD2	21040809	04/08/2021	16:56
21C0250-05	HCOO-B312-031621	21040810	04/08/2021	17:47
SJD0113-CCV1	CS3D3	21040818	04/09/2021	00:19
SJD0113-RES2	ISCD3	21040819	04/09/2021	01:12
SJD0113-CCV2	CS3D4	21040827	04/09/2021	07:46
SJD0113-RES3	ISCD4	21040828	04/09/2021	08:39

Analytical Resources, Incorporated
Analytical Chemists and Consultants

CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc.
SDG: 21C0250
Instrument .ID: AUTOSPEC01
Lab File ID: 21040819
Date Analyzed: 04/09/21
Time Analyzed: 01:12
Lab Sample ID: SJD0113-RES2
Sequence: SJD0113

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 12.3

3467-TCDF/2378-TCDF: 10.8

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJD0113-ICV1	CS3D2	21040808A	04/08/2021	16:02
SJD0113-RES1	ISCD2	21040809	04/08/2021	16:56
21C0250-05	HCOO-B312-031621	21040810	04/08/2021	17:47
SJD0113-CCV1	CS3D3	21040818	04/09/2021	00:19
SJD0113-RES2	ISCD3	21040819	04/09/2021	01:12
SJD0113-CCV2	CS3D4	21040827	04/09/2021	07:46
SJD0113-RES3	ISCD4	21040828	04/09/2021	08:39

CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY
EPA 1613B

Lab Name: Analytical Resources, Inc. SDG: 21C0250

Instrument .ID: AUTOSPEC01 Lab File ID: 21040828

Date Analyzed: 04/09/21 Time Analyzed: 08:39

Lab Sample ID: SJD0113-RES3 Sequence: SJD0113

Percent Valley Determination for Column: RTX-Dioxin2 ID: 0.25 (mm)

1278-TCDD/2378-TCDD: 10.3

3467-TCDF/2378-TCDF: 12.5

Quality Control (QC) Limits: ≤ 25%

Lab Sample ID	Sample Name	Lab File ID	Data Analyzed	Time Analyzed
SJD0113-ICV1	CS3D2	21040808A	04/08/2021	16:02
SJD0113-RES1	ISCD2	21040809	04/08/2021	16:56
21C0250-05	HCOO-B312-031621	21040810	04/08/2021	17:47
SJD0113-CCV1	CS3D3	21040818	04/09/2021	00:19
SJD0113-RES2	ISCD3	21040819	04/09/2021	01:12
SJD0113-CCV2	CS3D4	21040827	04/09/2021	07:46
SJD0113-RES3	ISCD4	21040828	04/09/2021	08:39

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0004	Instrument:	AUTOSPEC01
		Calibration:	EC00006

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
CS3V2	SJC0004-ICV1	21030102A	NA	03/01/21 11:16
ISCV2	SJC0004-RES1	21030103	NA	03/01/21 12:05
CSLCV	SJC0004-CAL1	21030104	NA	03/01/21 12:54
CS1CV	SJC0004-CAL2	21030105A	NA	03/01/21 13:49
CS2CV	SJC0004-CAL3	21030106A	NA	03/01/21 15:09
CS3CV	SJC0004-CAL4	21030107A	NA	03/01/21 15:57
CS4CV	SJC0004-CAL5	21030108A	NA	03/01/21 16:46
CS5CV	SJC0004-CAL6	21030109A	NA	03/01/21 17:35
ICVCV	SJC0004-SCV1	21030110A	NA	03/01/21 18:24
CS3V2	SJC0004-CCV1	21030111A	NA	03/01/21 19:13
ISCV2	SJC0004-RES2	21030112	NA	03/01/21 20:07

Analytical Resources, Incorporated
Analytical Chemists and Consultants

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 1613B

Laboratory: Analytical Resources, Inc.
Client: Floyd - Snider
Sequence: SJC0474

SDG: 21C0250
Project: Lora Lake
Instrument: AUTOSPEC01
Calibration: EC00006

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
CS3C1	SJC0474-ICV1	21040602	NA	04/06/21 12:21
ISCC1	SJC0474-RES1	21040603	NA	04/06/21 13:09
Blank	BJC0518-BLK2	21040604	Water	04/06/21 14:00
LCS	BJC0518-BS2	21040605	Water	04/06/21 14:48
MW-VB3-031621	21C0250-04	21040610	Water	04/06/21 19:00
MW-CP7-031621	21C0250-06	21040612	Water	04/06/21 20:38
MW-CP6-031621	21C0250-07	21040613	Water	04/06/21 21:27
MW-CP4-031621	21C0250-08	21040614	Water	04/06/21 22:16
CS3C3	SJC0474-CCV1	21040615	NA	04/06/21 23:06
ISCC3	SJC0474-RES2	21040616	NA	04/06/21 23:59
MW-CP2-031721	21C0250-10	21040617	Water	04/07/21 00:49
MW-CP2-031721-D	21C0250-11	21040618	Water	04/07/21 01:38
MW-CP3-031721	21C0250-12	21040619	Water	04/07/21 02:27
MW-CP1-031721	21C0250-13	21040620	Water	04/07/21 03:16
MW-C1/VB1-031721	21C0250-14	21040621	Water	04/07/21 04:05
MW-VB2-031721	21C0250-15	21040622	Water	04/07/21 04:54
CS3C4	SJC0474-CCV2	21040625	NA	04/07/21 07:21
ISCC4	SJC0474-RES3	21040626	NA	04/07/21 08:14
Blank	BJC0519-BLK1	21040633	Water	04/07/21 13:59
LCS	BJC0519-BS1	21040634	Water	04/07/21 14:48
LCS Dup	BJC0519-BSD1	21040635	Water	04/07/21 15:37
MW-CP5-031621	21C0250-09	21040636	Water	04/07/21 16:26
CS3C5	SJC0474-CCV3	21040637	NA	04/07/21 17:15
ISCC5	SJC0474-RES4	21040638	NA	04/07/21 18:08

Printed: 4/8/2021 11:41:01AM

ANALYSIS SEQUENCE

SJC0474

Instrument: AUTOSPEC01 Element Column ID: J3761
Calibration ID: EC00006 Tune File: APR0521_1-5
EM Voltage: 370 Resolution check times : 11:23, 23:59, 08:14, 18:08

Lab Number	Sample Name	Analysis	Container	Order	STD ID	ISTD ID	Comments
SJC0474-ICV1	CS3C1	QC		1	I005452		
SJC0474-RES1	ISCC1	QC		2	I008888		
BJC0518-BLK2	Blank	QC		3		I010342	
BJC0518-BS2	LCS	QC		4		I010342	
21C0250-04	MW-VB3-031621	1613B Dioxin	A 01	5		I010342	
21C0250-05	HCOO-B312-031621	1613B Dioxin	A 01	6		I010342	
21C0250-06	MW-CP7-031621	1613B Dioxin	A 01	7		I010342	
21C0250-07	MW-CP6-031621	1613B Dioxin	A 01	8		I010342	
21C0250-08	MW-CP4-031621	1613B Dioxin	A 01	9		I010342	
SJC0474-CCV1	CS3C3	QC		10	I005452		
SJC0474-RES2	ISCC3	QC		11	I008888		
21C0250-10	MW-CP2-031721	1613B Dioxin	A 01	12		I010342	
21C0250-11	MW-CP2-031721-D	1613B Dioxin	A 01	13		I010342	
21C0250-12	MW-CP3-031721	1613B Dioxin	A 01	14		I010342	
21C0250-13	MW-CP1-031721	1613B Dioxin	A 01	15		I010342	
21C0250-14	MW-C1/VB1-031721	1613B Dioxin	A 01	16		I010342	
21C0250-15	MW-VB2-031721	1613B Dioxin	A 01	17		I010342	
21C0289-11	T117-RB-20210318	1613B Dioxin	A 01	18		I010342	
21C0289-12	T117-FB-20210318	1613B Dioxin	A 01	19		I010342	
SJC0474-CCV2	CS3C4	QC		20	I005452		
SJC0474-RES3	ISCC4	QC		21	I008888		
BJC0796-BLK1	Blank	QC		22		I010342	

Printed: 4/8/2021 11:41:01AM

ANALYSIS SEQUENCE

SJC0474

Instrument: AUTOSPEC01 Element Column ID: J3761
Calibration ID: EC00006 Tune File: APR0521_1-5
EM Voltage: 370 Resolution check times : 11:23, 23:59, 08:14, 18:08

Lab Number	Sample Name	Analysis	Container	Order	STD ID	ISTD ID	Comments
BJC0796-BS1	LCS	QC		23		I010342	
BJC0796-BSD1	LCS Dup	QC		24		I010342	
21C0289-13	T117-FW-B-20210318	1613B Dioxin	A 01	25		I010342	
21C0289-14	T117-FW-S-20210318	1613B Dioxin	A 01	26		I010342	
21C0289-15	T117-FWB-20210318	1613B Dioxin	A 01	27		I010342	
BJC0519-BLK1	Blank	QC		28		I010342	
BJC0519-BS1	LCS	QC		29		I010342	
BJC0519-BSD1	LCS Dup	QC		30		I010342	
21C0250-09	MW-CP5-031621	1613B Dioxin	A 01	31		I010342	
SJC0474-CCV3	CS3C5	QC		32	I005452		
SJC0474-RES4	ISCC5	QC		33	I008888		

Analytical Resources, Incorporated
Analytical Chemists and Consultants

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJD0113	Instrument:	AUTOSPEC01
		Calibration:	EC00006

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
CS3D2	SJD0113-ICV1	21040808A	NA	04/08/21 16:02
ISCD2	SJD0113-RES1	21040809	NA	04/08/21 16:56
HCOO-B312-031621	21C0250-05	21040810	Water	04/08/21 17:47
CS3D3	SJD0113-CCV1	21040818	NA	04/09/21 00:19
ISCD3	SJD0113-RES2	21040819	NA	04/09/21 01:12
CS3D4	SJD0113-CCV2	21040827	NA	04/09/21 07:46
ISCD4	SJD0113-RES3	21040828	NA	04/09/21 08:39

Printed: 4/9/2021 2:57:16PM

ANALYSIS SEQUENCE

SJD0113

Instrument: AUTOSPEC01 Element Column ID: J3761
Calibration ID: EC00006 Tune File: APR0521_1-5
EM Voltage: 370 Resolution check times : 16:56, 01:12, 08:39

Lab Number	Sample Name	Analysis	Container	Order	STD ID	ISTD ID	Comments
SJD0113-ICV1	CS3D2	QC		1	I005452		
SJD0113-RES1	ISCD2	QC		2	I008888		
21C0250-05	HCOO-B312-031621	1613B Dioxin	A 01	3		I010342	
BJD0001-BLK1	Blank	QC		4		I010342	
BJD0001-BS1	LCS	QC		5		I010342	
BJD0001-SRM1	Reference	QC		6		I010342	
BJD0001-DUP1	Duplicate	QC		7		I010342	
21C0289-01	T117-LTM1-20210318	1613B Dioxin	A 01	8		I010342	
21C0289-02	T117-LTM2-20210318	1613B Dioxin	A 01	9		I010342	
21C0289-03	T117-LTM3-20210318	1613B Dioxin	A 01	10		I010342	
SJD0113-CCV1	CS3D3	QC		11	I005452		
SJD0113-RES2	ISCD3	QC		12	I008888		
21C0289-04	T117-LTM4-20210318	1613B Dioxin	A 01	13		I010342	
21C0289-05	PERIM-1-LTM-20210318	1613B Dioxin	A 01	14		I010342	
21C0289-06	PERIM-2-LTM-20210318	1613B Dioxin	A 01	15		I010342	
21C0289-07	PERIM-3-LTM-20210318	1613B Dioxin	A 01	16		I010342	
21C0289-08	PERIM-4-LTM-20210318	1613B Dioxin	A 01	17		I010342	
21C0289-09	PERIM-5-LTM-20210318	1613B Dioxin	A 01	18		I010342	
21C0289-10	T117-LTM103-20210318	1613B Dioxin	A 01	19		I010342	
SJD0113-CCV2	CS3D4	QC		20	I005452		
SJD0113-RES3	ISCD4	QC		21	I008888		

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0004	Instrument:	AUTOSPEC01
Sample ID:	SJC0004-ICV1	Calibration:	EC00006
File ID:	21030102A	Analyzed:	03/01/21 11:16

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	100.00	99.0	71 - 129	25.4735	25.4532	0.0203	N/A	
13C12-2,3,7,8-TCDD	100.00	99.3	82 - 118	26.1085	26.0882	0.0203	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	97.2	76 - 124	29.6053	29.59205	0.0132	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	98.2	77 - 123	30.9533	30.93272	0.0206	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	101	62 - 138	31.1985	31.1852	0.0133	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	99.8	76 - 124	34.5743	34.55915	0.0151	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	98.0	70 - 130	34.7192	34.70027	0.0189	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	99.6	73 - 127	35.588	35.57105	0.0170	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	100	74 - 126	36.613	36.6072	0.0058	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	101	85 - 115	35.6995	35.69363	0.0059	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	94.2	85 - 115	35.822	35.8069	0.0151	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	103	78 - 122	38.4625	38.44928	0.0132	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	104	77 - 123	40.6685	40.65702	0.0115	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	104	82 - 118	39.933	39.9273	0.0057	N/A	
13C12-OCDD	200.00	107	48 - 152	44.564	44.55902	0.0050	N/A	
37Cl4-2,3,7,8-TCDD	10.000	98.7	79 - 121	26.1237	26.10587	0.0178	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0004	Instrument:	AUTOSPEC01
Sample ID:	SJC0004-SCV1	Calibration:	EC00006
File ID:	21030110A	Analyzed:	03/01/21 18:24

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	100.00	97.8	80 - 120	25.4582	25.4532	0.0050	N/A	
13C12-2,3,7,8-TCDD	100.00	80.8	80 - 120	26.0933	26.0882	0.0051	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	98.4	80 - 120	29.5938	29.59205	0.0018	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	102	80 - 120	30.942	30.93272	0.0093	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	95.4	80 - 120	31.1872	31.1852	0.0020	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	112	80 - 120	34.5628	34.55915	0.0037	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	115	80 - 120	34.7077	34.70027	0.0074	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	110	80 - 120	35.5767	35.57105	0.0057	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	114	80 - 120	36.6128	36.6072	0.0056	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	115	80 - 120	35.6992	35.69363	0.0056	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	114	80 - 120	35.8107	35.8069	0.0038	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	111	80 - 120	38.451	38.44928	0.0017	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	103	80 - 120	40.657	40.65702	0.0000	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	106	80 - 120	39.9328	39.9273	0.0055	N/A	
13C12-OCDD	200.00	102	80 - 120	44.5543	44.55902	-0.0047	N/A	
37Cl4-2,3,7,8-TCDD	10.000	105	80 - 120	26.1083	26.10587	0.0024	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0004	Instrument:	AUTOSPEC01
Sample ID:	SJC0004-CCV1	Calibration:	EC00006
File ID:	21030111A	Analyzed:	03/01/21 19:13

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	100.00	101	71 - 129	25.4432	25.4532	-0.0100	N/A	
13C12-2,3,7,8-TCDD	100.00	101	82 - 118	26.0782	26.0882	-0.0100	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	98.5	76 - 124	29.5828	29.59205	-0.0093	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	97.5	77 - 123	30.9308	30.93272	-0.0019	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	98.3	62 - 138	31.1872	31.1852	0.0020	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	97.4	76 - 124	34.5517	34.55915	-0.0075	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	96.3	70 - 130	34.6963	34.70027	-0.0040	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	96.7	73 - 127	35.5653	35.57105	-0.0057	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	99.4	74 - 126	36.6015	36.6072	-0.0057	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	97.5	85 - 115	35.6878	35.69363	-0.0058	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	97.7	85 - 115	35.7993	35.8069	-0.0076	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	94.7	78 - 122	38.4508	38.44928	0.0015	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	94.5	77 - 123	40.6567	40.65702	-0.0003	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	99.7	82 - 118	39.9213	39.9273	-0.0060	N/A	
13C12-OCDD	200.00	92.7	48 - 152	44.5537	44.55902	-0.0053	N/A	
37Cl4-2,3,7,8-TCDD	10.000	94.6	79 - 121	26.1085	26.10587	0.0026	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	SJC0474-ICV1	Calibration:	EC00006
File ID:	21040602	Analyzed:	04/06/21 12:21

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	100.00	102	71 - 129	25.7758	25.4532	0.3226	N/A	
13C12-2,3,7,8-TCDD	100.00	92.6	82 - 118	26.426	26.0882	0.3378	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	102	76 - 124	29.9522	29.59205	0.3602	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	102	77 - 123	31.289	30.93272	0.3563	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	94.6	62 - 138	31.5452	31.1852	0.3600	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	91.8	76 - 124	34.9098	34.55915	0.3506	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	97.2	70 - 130	35.0547	34.70027	0.3544	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	90.1	73 - 127	35.9125	35.57105	0.3415	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	91.6	74 - 126	36.9487	36.6072	0.3415	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	99.8	85 - 115	36.035	35.69363	0.3414	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	93.7	85 - 115	36.1577	35.8069	0.3508	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	96.1	78 - 122	38.7868	38.44928	0.3375	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	93.4	77 - 123	41.0373	40.65702	0.3803	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	90.0	82 - 118	40.302	39.9273	0.3747	N/A	
13C12-OCDD	200.00	91.7	48 - 152	45.0592	44.55902	0.5002	N/A	
37Cl4-2,3,7,8-TCDD	10.000	94.1	79 - 121	26.441	26.10587	0.3351	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	BJC0518-BLK2	Calibration:	EC00006
File ID:	21040604	Analyzed:	04/06/21 14:00

Surrogate Compound	Spike Level pg/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	2000.0	92.0	24 - 169	25.7758	25.4532	0.3226	N/A	
13C12-2,3,7,8-TCDD	2000.0	87.0	25 - 164	26.426	26.0882	0.3378	N/A	
13C12-1,2,3,7,8-PeCDF	2000.0	94.0	24 - 185	29.9412	29.59205	0.3491	N/A	
13C12-2,3,4,7,8-PeCDF	2000.0	92.5	21 - 178	31.2892	30.93272	0.3565	N/A	
13C12-1,2,3,7,8-PeCDD	2000.0	89.1	25 - 181	31.5453	31.1852	0.3601	N/A	
13C12-1,2,3,4,7,8-HxCDF	2000.0	86.0	26 - 152	34.91	34.55915	0.3508	N/A	
13C12-1,2,3,6,7,8-HxCDF	2000.0	87.3	26 - 123	35.0548	34.70027	0.3545	N/A	
13C12-2,3,4,6,7,8-HxCDF	2000.0	85.0	28 - 136	35.9128	35.57105	0.3417	N/A	
13C12-1,2,3,7,8,9-HxCDF	2000.0	86.5	29 - 147	36.9488	36.6072	0.3416	N/A	
13C12-1,2,3,4,7,8-HxCDD	2000.0	89.2	32 - 141	36.0353	35.69363	0.3417	N/A	
13C12-1,2,3,6,7,8-HxCDD	2000.0	83.6	28 - 130	36.1578	35.8069	0.3509	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	2000.0	90.4	28 - 143	38.7872	38.44928	0.3379	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	2000.0	88.4	26 - 138	41.0377	40.65702	0.3807	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	2000.0	87.7	23 - 140	40.3023	39.9273	0.3750	N/A	
13C12-OCDD	4000.0	73.9	17 - 157	45.0503	44.55902	0.4913	N/A	
37Cl4-2,3,7,8-TCDD	800.00	92.5	35 - 197	26.4412	26.10587	0.3353	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	BJC0518-BS2	Calibration:	EC00006
File ID:	21040605	Analyzed:	04/06/21 14:48

Surrogate Compound	Spike Level pg/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	2000.0	101	24 - 169	25.7755	25.4532	0.3223	N/A	
13C12-2,3,7,8-TCDD	2000.0	94.1	25 - 164	26.4105	26.0882	0.3223	N/A	
13C12-1,2,3,7,8-PeCDF	2000.0	97.7	24 - 185	29.9405	29.59205	0.3485	N/A	
13C12-2,3,4,7,8-PeCDF	2000.0	96.4	21 - 178	31.2885	30.93272	0.3558	N/A	
13C12-1,2,3,7,8-PeCDD	2000.0	91.5	25 - 181	31.5448	31.1852	0.3596	N/A	
13C12-1,2,3,4,7,8-HxCDF	2000.0	88.7	26 - 152	34.9092	34.55915	0.3500	N/A	
13C12-1,2,3,6,7,8-HxCDF	2000.0	91.8	26 - 123	35.0428	34.70027	0.3425	N/A	
13C12-2,3,4,6,7,8-HxCDF	2000.0	90.0	28 - 136	35.9118	35.57105	0.3408	N/A	
13C12-1,2,3,7,8,9-HxCDF	2000.0	90.0	29 - 147	36.9367	36.6072	0.3295	N/A	
13C12-1,2,3,4,7,8-HxCDD	2000.0	92.1	32 - 141	36.0345	35.69363	0.3409	N/A	
13C12-1,2,3,6,7,8-HxCDD	2000.0	89.1	28 - 130	36.1458	35.8069	0.3389	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	2000.0	93.8	28 - 143	38.786	38.44928	0.3367	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	2000.0	93.9	26 - 138	41.0363	40.65702	0.3793	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	2000.0	87.2	23 - 140	40.29	39.9273	0.3627	N/A	
13C12-OCDD	4000.0	81.2	17 - 157	45.0398	44.55902	0.4808	N/A	
37Cl4-2,3,7,8-TCDD	800.00	102	35 - 197	26.4408	26.10587	0.3349	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	21C0250-04	Calibration:	EC00006
File ID:	21040610	Analyzed:	04/06/21 19:00

Surrogate Compound	Spike Level pg/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	1899.3	110	24 - 169	25.7758	25.4532	0.3226	N/A	
13C12-2,3,7,8-TCDD	1899.3	104	25 - 164	26.4258	26.0882	0.3376	N/A	
13C12-1,2,3,7,8-PeCDF	1899.3	109	24 - 185	29.952	29.59205	0.3600	N/A	
13C12-2,3,4,7,8-PeCDF	1899.3	109	21 - 178	31.3	30.93272	0.3673	N/A	
13C12-1,2,3,7,8-PeCDD	1899.3	99.5	25 - 181	31.5562	31.1852	0.3710	N/A	
13C12-1,2,3,4,7,8-HxCDF	1899.3	96.4	26 - 152	34.9208	34.55915	0.3616	N/A	
13C12-1,2,3,6,7,8-HxCDF	1899.3	99.1	26 - 123	35.0545	34.70027	0.3542	N/A	
13C12-2,3,4,6,7,8-HxCDF	1899.3	98.3	28 - 136	35.9235	35.57105	0.3524	N/A	
13C12-1,2,3,7,8,9-HxCDF	1899.3	97.3	29 - 147	36.9485	36.6072	0.3413	N/A	
13C12-1,2,3,4,7,8-HxCDD	1899.3	98.6	32 - 141	36.046	35.69363	0.3524	N/A	
13C12-1,2,3,6,7,8-HxCDD	1899.3	98.3	28 - 130	36.1575	35.8069	0.3506	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	1899.3	100	28 - 143	38.798	38.44928	0.3487	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	1899.3	97.2	26 - 138	41.0485	40.65702	0.3915	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	1899.3	96.2	23 - 140	40.302	39.9273	0.3747	N/A	
13C12-OCDD	3798.7	84.0	17 - 157	45.0595	44.55902	0.5005	N/A	
37Cl4-2,3,7,8-TCDD	759.73	112	35 - 197	26.441	26.10587	0.3351	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	21C0250-06	Calibration:	EC00006
File ID:	21040612	Analyzed:	04/06/21 20:38

Surrogate Compound	Spike Level pg/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	1899.3	95.4	24 - 169	25.7758	25.4532	0.3226	N/A	
13C12-2,3,7,8-TCDD	1899.3	86.1	25 - 164	26.426	26.0882	0.3378	N/A	
13C12-1,2,3,7,8-PeCDF	1899.3	93.2	24 - 185	29.941	29.59205	0.3489	N/A	
13C12-2,3,4,7,8-PeCDF	1899.3	89.6	21 - 178	31.289	30.93272	0.3563	N/A	
13C12-1,2,3,7,8-PeCDD	1899.3	84.8	25 - 181	31.5452	31.1852	0.3600	N/A	
13C12-1,2,3,4,7,8-HxCDF	1899.3	87.3	26 - 152	34.9098	34.55915	0.3506	N/A	
13C12-1,2,3,6,7,8-HxCDF	1899.3	88.4	26 - 123	35.0547	34.70027	0.3544	N/A	
13C12-2,3,4,6,7,8-HxCDF	1899.3	85.4	28 - 136	35.9127	35.57105	0.3417	N/A	
13C12-1,2,3,7,8,9-HxCDF	1899.3	88.0	29 - 147	36.9487	36.6072	0.3415	N/A	
13C12-1,2,3,4,7,8-HxCDD	1899.3	87.6	32 - 141	36.0352	35.69363	0.3416	N/A	
13C12-1,2,3,6,7,8-HxCDD	1899.3	85.9	28 - 130	36.1578	35.8069	0.3509	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	1899.3	90.0	28 - 143	38.7872	38.44928	0.3379	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	1899.3	95.0	26 - 138	41.0375	40.65702	0.3805	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	1899.3	84.9	23 - 140	40.2912	39.9273	0.3639	N/A	
13C12-OCDD	3798.7	79.4	17 - 157	45.0413	44.55902	0.4823	N/A	
37Cl4-2,3,7,8-TCDD	759.73	95.0	35 - 197	26.4412	26.10587	0.3353	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	21C0250-07	Calibration:	EC00006
File ID:	21040613	Analyzed:	04/06/21 21:27

Surrogate Compound	Spike Level pg/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	1899.3	78.9	24 - 169	25.7758	25.4532	0.3226	N/A	
13C12-2,3,7,8-TCDD	1899.3	78.4	25 - 164	26.4108	26.0882	0.3226	N/A	
13C12-1,2,3,7,8-PeCDF	1899.3	83.8	24 - 185	29.9408	29.59205	0.3487	N/A	
13C12-2,3,4,7,8-PeCDF	1899.3	80.1	21 - 178	31.2888	30.93272	0.3561	N/A	
13C12-1,2,3,7,8-PeCDD	1899.3	74.2	25 - 181	31.545	31.1852	0.3598	N/A	
13C12-1,2,3,4,7,8-HxCDF	1899.3	81.4	26 - 152	34.9095	34.55915	0.3503	N/A	
13C12-1,2,3,6,7,8-HxCDF	1899.3	90.0	26 - 123	35.0545	34.70027	0.3542	N/A	
13C12-2,3,4,6,7,8-HxCDF	1899.3	73.3	28 - 136	35.9122	35.57105	0.3411	N/A	
13C12-1,2,3,7,8,9-HxCDF	1899.3	80.0	29 - 147	36.9483	36.6072	0.3411	N/A	
13C12-1,2,3,4,7,8-HxCDD	1899.3	78.1	32 - 141	36.0348	35.69363	0.3412	N/A	
13C12-1,2,3,6,7,8-HxCDD	1899.3	81.7	28 - 130	36.1573	35.8069	0.3504	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	1899.3	90.5	28 - 143	38.7867	38.44928	0.3374	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	1899.3	90.3	26 - 138	41.037	40.65702	0.3800	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	1899.3	80.1	23 - 140	40.2905	39.9273	0.3632	N/A	
13C12-OCDD	3798.7	85.0	17 - 157	45.0405	44.55902	0.4815	N/A	
37Cl4-2,3,7,8-TCDD	759.73	84.1	35 - 197	26.4412	26.10587	0.3353	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	21C0250-08	Calibration:	EC00006
File ID:	21040614	Analyzed:	04/06/21 22:16

Surrogate Compound	Spike Level pg/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	1886.8	98.9	24 - 169	25.7758	25.4532	0.3226	N/A	
13C12-2,3,7,8-TCDD	1886.8	90.0	25 - 164	26.411	26.0882	0.3228	N/A	
13C12-1,2,3,7,8-PeCDF	1886.8	98.6	24 - 185	29.941	29.59205	0.3489	N/A	
13C12-2,3,4,7,8-PeCDF	1886.8	97.6	21 - 178	31.2778	30.93272	0.3451	N/A	
13C12-1,2,3,7,8-PeCDD	1886.8	88.6	25 - 181	31.5342	31.1852	0.3490	N/A	
13C12-1,2,3,4,7,8-HxCDF	1886.8	88.8	26 - 152	34.9098	34.55915	0.3506	N/A	
13C12-1,2,3,6,7,8-HxCDF	1886.8	95.9	26 - 123	35.0437	34.70027	0.3434	N/A	
13C12-2,3,4,6,7,8-HxCDF	1886.8	89.8	28 - 136	35.9127	35.57105	0.3417	N/A	
13C12-1,2,3,7,8,9-HxCDF	1886.8	91.6	29 - 147	36.9377	36.6072	0.3305	N/A	
13C12-1,2,3,4,7,8-HxCDD	1886.8	90.0	32 - 141	36.0352	35.69363	0.3416	N/A	
13C12-1,2,3,6,7,8-HxCDD	1886.8	88.1	28 - 130	36.1467	35.8069	0.3398	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	1886.8	96.2	28 - 143	38.776	38.44928	0.3267	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	1886.8	95.2	26 - 138	41.0377	40.65702	0.3807	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	1886.8	91.6	23 - 140	40.2912	39.9273	0.3639	N/A	
13C12-OCDD	3773.6	78.5	17 - 157	45.0322	44.55902	0.4732	N/A	
37Cl4-2,3,7,8-TCDD	754.72	95.9	35 - 197	26.426	26.10587	0.3201	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	SJC0474-CCV1	Calibration:	EC00006
File ID:	21040615	Analyzed:	04/06/21 23:06

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	100.00	109	71 - 129	25.7607	25.4532	0.3075	N/A	
13C12-2,3,7,8-TCDD	100.00	95.5	82 - 118	26.4108	26.0882	0.3226	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	109	76 - 124	29.9298	29.59205	0.3378	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	104	77 - 123	31.2778	30.93272	0.3451	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	94.5	62 - 138	31.534	31.1852	0.3488	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	97.3	76 - 124	34.8985	34.55915	0.3393	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	109	70 - 130	35.0435	34.70027	0.3432	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	103	73 - 127	35.9012	35.57105	0.3302	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	98.1	74 - 126	36.9373	36.6072	0.3301	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	99.9	85 - 115	36.0238	35.69363	0.3302	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	101	85 - 115	36.1463	35.8069	0.3394	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	111	78 - 122	38.7757	38.44928	0.3264	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	104	77 - 123	41.026	40.65702	0.3690	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	99.1	82 - 118	40.2797	39.9273	0.3524	N/A	
13C12-OCDD	200.00	95.8	48 - 152	45.0317	44.55902	0.4727	N/A	
37Cl4-2,3,7,8-TCDD	10.000	102	79 - 121	26.426	26.10587	0.3201	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	21C0250-10	Calibration:	EC00006
File ID:	21040617	Analyzed:	04/07/21 00:49

Surrogate Compound	Spike Level pg/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	1895.7	96.1	24 - 169	25.7607	25.4532	0.3075	N/A	
13C12-2,3,7,8-TCDD	1895.7	86.7	25 - 164	26.3957	26.0882	0.3075	N/A	
13C12-1,2,3,7,8-PeCDF	1895.7	94.4	24 - 185	29.9187	29.59205	0.3267	N/A	
13C12-2,3,4,7,8-PeCDF	1895.7	91.1	21 - 178	31.2667	30.93272	0.3340	N/A	
13C12-1,2,3,7,8-PeCDD	1895.7	82.6	25 - 181	31.523	31.1852	0.3378	N/A	
13C12-1,2,3,4,7,8-HxCDF	1895.7	89.4	26 - 152	34.8875	34.55915	0.3284	N/A	
13C12-1,2,3,6,7,8-HxCDF	1895.7	94.8	26 - 123	35.0323	34.70027	0.3320	N/A	
13C12-2,3,4,6,7,8-HxCDF	1895.7	91.4	28 - 136	35.9013	35.57105	0.3302	N/A	
13C12-1,2,3,7,8,9-HxCDF	1895.7	97.4	29 - 147	36.9262	36.6072	0.3190	N/A	
13C12-1,2,3,4,7,8-HxCDD	1895.7	90.7	32 - 141	36.024	35.69363	0.3304	N/A	
13C12-1,2,3,6,7,8-HxCDD	1895.7	92.9	28 - 130	36.1353	35.8069	0.3284	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	1895.7	96.0	28 - 143	38.7645	38.44928	0.3152	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	1895.7	93.8	26 - 138	41.015	40.65702	0.3580	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	1895.7	89.3	23 - 140	40.2687	39.9273	0.3414	N/A	
13C12-OCDD	3791.5	75.2	17 - 157	45.0228	44.55902	0.4638	N/A	
37Cl4-2,3,7,8-TCDD	758.29	90.7	35 - 197	26.426	26.10587	0.3201	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	21C0250-11	Calibration:	EC00006
File ID:	21040618	Analyzed:	04/07/21 01:38

Surrogate Compound	Spike Level pg/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	1899.3	102	24 - 169	25.7607	25.4532	0.3075	N/A	
13C12-2,3,7,8-TCDD	1899.3	94.0	25 - 164	26.3957	26.0882	0.3075	N/A	
13C12-1,2,3,7,8-PeCDF	1899.3	102	24 - 185	29.9187	29.59205	0.3267	N/A	
13C12-2,3,4,7,8-PeCDF	1899.3	99.0	21 - 178	31.2665	30.93272	0.3338	N/A	
13C12-1,2,3,7,8-PeCDD	1899.3	89.3	25 - 181	31.5228	31.1852	0.3376	N/A	
13C12-1,2,3,4,7,8-HxCDF	1899.3	87.1	26 - 152	34.8873	34.55915	0.3282	N/A	
13C12-1,2,3,6,7,8-HxCDF	1899.3	89.9	26 - 123	35.0322	34.70027	0.3319	N/A	
13C12-2,3,4,6,7,8-HxCDF	1899.3	88.1	28 - 136	35.89	35.57105	0.3190	N/A	
13C12-1,2,3,7,8,9-HxCDF	1899.3	88.1	29 - 147	36.9262	36.6072	0.3190	N/A	
13C12-1,2,3,4,7,8-HxCDD	1899.3	91.0	32 - 141	36.0125	35.69363	0.3189	N/A	
13C12-1,2,3,6,7,8-HxCDD	1899.3	89.4	28 - 130	36.135	35.8069	0.3281	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	1899.3	92.2	28 - 143	38.7643	38.44928	0.3150	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	1899.3	100	26 - 138	41.0148	40.65702	0.3578	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	1899.3	88.5	23 - 140	40.2795	39.9273	0.3522	N/A	
13C12-OCDD	3798.7	71.9	17 - 157	45.0225	44.55902	0.4635	N/A	
37Cl4-2,3,7,8-TCDD	759.73	99.1	35 - 197	26.426	26.10587	0.3201	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	21C0250-12	Calibration:	EC00006
File ID:	21040619	Analyzed:	04/07/21 02:27

Surrogate Compound	Spike Level pg/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	1886.8	107	24 - 169	25.7607	25.4532	0.3075	N/A	
13C12-2,3,7,8-TCDD	1886.8	95.7	25 - 164	26.4108	26.0882	0.3226	N/A	
13C12-1,2,3,7,8-PeCDF	1886.8	103	24 - 185	29.9297	29.59205	0.3377	N/A	
13C12-2,3,4,7,8-PeCDF	1886.8	97.9	21 - 178	31.2665	30.93272	0.3338	N/A	
13C12-1,2,3,7,8-PeCDD	1886.8	89.7	25 - 181	31.5228	31.1852	0.3376	N/A	
13C12-1,2,3,4,7,8-HxCDF	1886.8	89.0	26 - 152	34.8985	34.55915	0.3393	N/A	
13C12-1,2,3,6,7,8-HxCDF	1886.8	94.3	26 - 123	35.0322	34.70027	0.3319	N/A	
13C12-2,3,4,6,7,8-HxCDF	1886.8	93.6	28 - 136	35.9012	35.57105	0.3302	N/A	
13C12-1,2,3,7,8,9-HxCDF	1886.8	90.3	29 - 147	36.9262	36.6072	0.3190	N/A	
13C12-1,2,3,4,7,8-HxCDD	1886.8	93.0	32 - 141	36.0237	35.69363	0.3301	N/A	
13C12-1,2,3,6,7,8-HxCDD	1886.8	95.0	28 - 130	36.1352	35.8069	0.3283	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	1886.8	95.8	28 - 143	38.7757	38.44928	0.3264	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	1886.8	97.1	26 - 138	41.026	40.65702	0.3690	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	1886.8	90.8	23 - 140	40.2795	39.9273	0.3522	N/A	
13C12-OCDD	3773.6	79.0	17 - 157	45.0222	44.55902	0.4632	N/A	
37Cl4-2,3,7,8-TCDD	754.72	99.4	35 - 197	26.4258	26.10587	0.3199	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	21C0250-13	Calibration:	EC00006
File ID:	21040620	Analyzed:	04/07/21 03:16

Surrogate Compound	Spike Level pg/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	1886.8	99.0	24 - 169	25.7605	25.4532	0.3073	N/A	
13C12-2,3,7,8-TCDD	1886.8	86.7	25 - 164	26.3955	26.0882	0.3073	N/A	
13C12-1,2,3,7,8-PeCDF	1886.8	96.4	24 - 185	29.9183	29.59205	0.3262	N/A	
13C12-2,3,4,7,8-PeCDF	1886.8	94.6	21 - 178	31.2663	30.93272	0.3336	N/A	
13C12-1,2,3,7,8-PeCDD	1886.8	85.8	25 - 181	31.5225	31.1852	0.3373	N/A	
13C12-1,2,3,4,7,8-HxCDF	1886.8	86.5	26 - 152	34.887	34.55915	0.3278	N/A	
13C12-1,2,3,6,7,8-HxCDF	1886.8	91.3	26 - 123	35.0318	34.70027	0.3315	N/A	
13C12-2,3,4,6,7,8-HxCDF	1886.8	89.5	28 - 136	35.8897	35.57105	0.3186	N/A	
13C12-1,2,3,7,8,9-HxCDF	1886.8	90.2	29 - 147	36.9258	36.6072	0.3186	N/A	
13C12-1,2,3,4,7,8-HxCDD	1886.8	87.6	32 - 141	36.0122	35.69363	0.3186	N/A	
13C12-1,2,3,6,7,8-HxCDD	1886.8	90.0	28 - 130	36.1348	35.8069	0.3279	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	1886.8	95.3	28 - 143	38.7642	38.44928	0.3149	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	1886.8	105	26 - 138	41.0147	40.65702	0.3577	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	1886.8	94.2	23 - 140	40.2682	39.9273	0.3409	N/A	
13C12-OCDD	3773.6	80.1	17 - 157	45.013	44.55902	0.4540	N/A	
37Cl4-2,3,7,8-TCDD	754.72	93.8	35 - 197	26.4107	26.10587	0.3048	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	21C0250-14	Calibration:	EC00006
File ID:	21040621	Analyzed:	04/07/21 04:05

Surrogate Compound	Spike Level pg/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	1886.8	110	24 - 169	25.7607	25.4532	0.3075	N/A	
13C12-2,3,7,8-TCDD	1886.8	98.0	25 - 164	26.3957	26.0882	0.3075	N/A	
13C12-1,2,3,7,8-PeCDF	1886.8	110	24 - 185	29.9185	29.59205	0.3265	N/A	
13C12-2,3,4,7,8-PeCDF	1886.8	107	21 - 178	31.2665	30.93272	0.3338	N/A	
13C12-1,2,3,7,8-PeCDD	1886.8	98.8	25 - 181	31.5227	31.1852	0.3375	N/A	
13C12-1,2,3,4,7,8-HxCDF	1886.8	95.2	26 - 152	34.8983	34.55915	0.3391	N/A	
13C12-1,2,3,6,7,8-HxCDF	1886.8	106	26 - 123	35.032	34.70027	0.3317	N/A	
13C12-2,3,4,6,7,8-HxCDF	1886.8	97.5	28 - 136	35.901	35.57105	0.3300	N/A	
13C12-1,2,3,7,8,9-HxCDF	1886.8	104	29 - 147	36.926	36.6072	0.3188	N/A	
13C12-1,2,3,4,7,8-HxCDD	1886.8	96.1	32 - 141	36.0235	35.69363	0.3299	N/A	
13C12-1,2,3,6,7,8-HxCDD	1886.8	94.7	28 - 130	36.135	35.8069	0.3281	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	1886.8	109	28 - 143	38.7753	38.44928	0.3260	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	1886.8	109	26 - 138	41.0147	40.65702	0.3577	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	1886.8	100	23 - 140	40.2793	39.9273	0.3520	N/A	
13C12-OCDD	3773.6	91.1	17 - 157	45.0222	44.55902	0.4632	N/A	
37Cl4-2,3,7,8-TCDD	754.72	103	35 - 197	26.4258	26.10587	0.3199	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	21C0250-15	Calibration:	EC00006
File ID:	21040622	Analyzed:	04/07/21 04:54

Surrogate Compound	Spike Level pg/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	1895.7	93.7	24 - 169	25.7607	25.4532	0.3075	N/A	
13C12-2,3,7,8-TCDD	1895.7	83.5	25 - 164	26.4108	26.0882	0.3226	N/A	
13C12-1,2,3,7,8-PeCDF	1895.7	92.8	24 - 185	29.9298	29.59205	0.3378	N/A	
13C12-2,3,4,7,8-PeCDF	1895.7	90.9	21 - 178	31.2668	30.93272	0.3341	N/A	
13C12-1,2,3,7,8-PeCDD	1895.7	80.9	25 - 181	31.5232	31.1852	0.3380	N/A	
13C12-1,2,3,4,7,8-HxCDF	1895.7	85.2	26 - 152	34.899	34.55915	0.3398	N/A	
13C12-1,2,3,6,7,8-HxCDF	1895.7	90.7	26 - 123	35.0327	34.70027	0.3324	N/A	
13C12-2,3,4,6,7,8-HxCDF	1895.7	85.4	28 - 136	35.9017	35.57105	0.3306	N/A	
13C12-1,2,3,7,8,9-HxCDF	1895.7	85.5	29 - 147	36.9267	36.6072	0.3195	N/A	
13C12-1,2,3,4,7,8-HxCDD	1895.7	88.4	32 - 141	36.0242	35.69363	0.3306	N/A	
13C12-1,2,3,6,7,8-HxCDD	1895.7	87.9	28 - 130	36.1357	35.8069	0.3288	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	1895.7	97.2	28 - 143	38.7762	38.44928	0.3269	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	1895.7	91.9	26 - 138	41.0267	40.65702	0.3697	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	1895.7	87.1	23 - 140	40.2803	39.9273	0.3530	N/A	
13C12-OCDD	3791.5	73.3	17 - 157	45.0233	44.55902	0.4643	N/A	
37Cl4-2,3,7,8-TCDD	758.29	88.3	35 - 197	26.4258	26.10587	0.3199	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	SJC0474-CCV2	Calibration:	EC00006
File ID:	21040625	Analyzed:	04/07/21 07:21

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	100.00	111	71 - 129	25.7607	25.4532	0.3075	N/A	
13C12-2,3,7,8-TCDD	100.00	94.8	82 - 118	26.3957	26.0882	0.3075	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	109	76 - 124	29.9187	29.59205	0.3267	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	103	77 - 123	31.2668	30.93272	0.3341	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	93.0	62 - 138	31.523	31.1852	0.3378	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	97.4	76 - 124	34.8987	34.55915	0.3395	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	108	70 - 130	35.0323	34.70027	0.3320	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	99.0	73 - 127	35.9013	35.57105	0.3302	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	101	74 - 126	36.9262	36.6072	0.3190	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	96.8	85 - 115	36.024	35.69363	0.3304	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	96.6	85 - 115	36.1353	35.8069	0.3284	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	123	78 - 129	38.7757	38.44928	0.3264	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	116	77 - 123	41.015	40.65702	0.3580	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	109	82 - 118	40.2797	39.9273	0.3524	N/A	
13C12-OCDD	200.00	111	48 - 152	45.0227	44.55902	0.4637	N/A	
37Cl4-2,3,7,8-TCDD	10.000	99.5	79 - 121	26.4258	26.10587	0.3199	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	BJC0519-BLK1	Calibration:	EC00006
File ID:	21040633	Analyzed:	04/07/21 13:59

Surrogate Compound	Spike Level pg/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	2000.0	84.5	24 - 169	25.7607	25.4532	0.3075	N/A	
13C12-2,3,7,8-TCDD	2000.0	83.0	25 - 164	26.4108	26.0882	0.3226	N/A	
13C12-1,2,3,7,8-PeCDF	2000.0	84.1	24 - 185	29.9297	29.59205	0.3377	N/A	
13C12-2,3,4,7,8-PeCDF	2000.0	79.7	21 - 178	31.2777	30.93272	0.3450	N/A	
13C12-1,2,3,7,8-PeCDD	2000.0	77.4	25 - 181	31.534	31.1852	0.3488	N/A	
13C12-1,2,3,4,7,8-HxCDF	2000.0	77.8	26 - 152	34.8987	34.55915	0.3395	N/A	
13C12-1,2,3,6,7,8-HxCDF	2000.0	76.1	26 - 123	35.0323	34.70027	0.3320	N/A	
13C12-2,3,4,6,7,8-HxCDF	2000.0	76.7	28 - 136	35.9013	35.57105	0.3302	N/A	
13C12-1,2,3,7,8,9-HxCDF	2000.0	77.8	29 - 147	36.9263	36.6072	0.3191	N/A	
13C12-1,2,3,4,7,8-HxCDD	2000.0	83.2	32 - 141	36.024	35.69363	0.3304	N/A	
13C12-1,2,3,6,7,8-HxCDD	2000.0	76.3	28 - 130	36.1353	35.8069	0.3284	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	2000.0	73.3	28 - 143	38.7758	38.44928	0.3265	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	2000.0	74.9	26 - 138	41.0263	40.65702	0.3693	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	2000.0	75.4	23 - 140	40.28	39.9273	0.3527	N/A	
13C12-OCDD	4000.0	59.4	17 - 157	45.0228	44.55902	0.4638	N/A	
37Cl4-2,3,7,8-TCDD	800.00	91.5	35 - 197	26.4258	26.10587	0.3199	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	BJC0519-BS1	Calibration:	EC00006
File ID:	21040634	Analyzed:	04/07/21 14:48

Surrogate Compound	Spike Level pg/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	2000.0	86.3	24 - 169	25.7757	25.4532	0.3225	N/A	
13C12-2,3,7,8-TCDD	2000.0	82.7	25 - 164	26.4107	26.0882	0.3225	N/A	
13C12-1,2,3,7,8-PeCDF	2000.0	85.8	24 - 185	29.9297	29.59205	0.3377	N/A	
13C12-2,3,4,7,8-PeCDF	2000.0	82.8	21 - 178	31.2777	30.93272	0.3450	N/A	
13C12-1,2,3,7,8-PeCDD	2000.0	80.0	25 - 181	31.5338	31.1852	0.3486	N/A	
13C12-1,2,3,4,7,8-HxCDF	2000.0	79.8	26 - 152	34.8983	34.55915	0.3391	N/A	
13C12-1,2,3,6,7,8-HxCDF	2000.0	77.0	26 - 123	35.0432	34.70027	0.3429	N/A	
13C12-2,3,4,6,7,8-HxCDF	2000.0	77.2	28 - 136	35.901	35.57105	0.3300	N/A	
13C12-1,2,3,7,8,9-HxCDF	2000.0	76.7	29 - 147	36.9372	36.6072	0.3300	N/A	
13C12-1,2,3,4,7,8-HxCDD	2000.0	82.4	32 - 141	36.0237	35.69363	0.3301	N/A	
13C12-1,2,3,6,7,8-HxCDD	2000.0	77.9	28 - 130	36.1462	35.8069	0.3393	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	2000.0	76.2	28 - 143	38.7755	38.44928	0.3262	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	2000.0	77.5	26 - 138	41.0258	40.65702	0.3688	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	2000.0	74.8	23 - 140	40.2795	39.9273	0.3522	N/A	
13C12-OCDD	4000.0	60.0	17 - 157	45.0225	44.55902	0.4635	N/A	
37Cl4-2,3,7,8-TCDD	800.00	92.9	35 - 197	26.4258	26.10587	0.3199	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	BJC0519-BSD1	Calibration:	EC00006
File ID:	21040635	Analyzed:	04/07/21 15:37

Surrogate Compound	Spike Level pg/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	2000.0	89.2	24 - 169	25.7607	25.4532	0.3075	N/A	
13C12-2,3,7,8-TCDD	2000.0	84.9	25 - 164	26.3958	26.0882	0.3076	N/A	
13C12-1,2,3,7,8-PeCDF	2000.0	87.8	24 - 185	29.9188	29.59205	0.3268	N/A	
13C12-2,3,4,7,8-PeCDF	2000.0	83.6	21 - 178	31.267	30.93272	0.3343	N/A	
13C12-1,2,3,7,8-PeCDD	2000.0	81.8	25 - 181	31.5232	31.1852	0.3380	N/A	
13C12-1,2,3,4,7,8-HxCDF	2000.0	77.0	26 - 152	34.888	34.55915	0.3288	N/A	
13C12-1,2,3,6,7,8-HxCDF	2000.0	75.9	26 - 123	35.0217	34.70027	0.3214	N/A	
13C12-2,3,4,6,7,8-HxCDF	2000.0	76.4	28 - 136	35.8907	35.57105	0.3197	N/A	
13C12-1,2,3,7,8,9-HxCDF	2000.0	75.3	29 - 147	36.9268	36.6072	0.3196	N/A	
13C12-1,2,3,4,7,8-HxCDD	2000.0	84.1	32 - 141	36.0132	35.69363	0.3196	N/A	
13C12-1,2,3,6,7,8-HxCDD	2000.0	79.3	28 - 130	36.1247	35.8069	0.3178	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	2000.0	75.1	28 - 143	38.7653	38.44928	0.3160	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	2000.0	78.0	26 - 138	41.0158	40.65702	0.3588	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	2000.0	77.0	23 - 140	40.2695	39.9273	0.3422	N/A	
13C12-OCDD	4000.0	63.9	17 - 157	45.0145	44.55902	0.4555	N/A	
37Cl4-2,3,7,8-TCDD	800.00	96.9	35 - 197	26.4108	26.10587	0.3049	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	21C0250-09	Calibration:	EC00006
File ID:	21040636	Analyzed:	04/07/21 16:26

Surrogate Compound	Spike Level pg/L	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	1976.3	94.2	24 - 169	25.7605	25.4532	0.3073	N/A	
13C12-2,3,7,8-TCDD	1976.3	89.4	25 - 164	26.3955	26.0882	0.3073	N/A	
13C12-1,2,3,7,8-PeCDF	1976.3	94.3	24 - 185	29.9182	29.59205	0.3261	N/A	
13C12-2,3,4,7,8-PeCDF	1976.3	90.0	21 - 178	31.2662	30.93272	0.3335	N/A	
13C12-1,2,3,7,8-PeCDD	1976.3	86.7	25 - 181	31.5223	31.1852	0.3371	N/A	
13C12-1,2,3,4,7,8-HxCDF	1976.3	81.9	26 - 152	34.8867	34.55915	0.3275	N/A	
13C12-1,2,3,6,7,8-HxCDF	1976.3	80.1	26 - 123	35.0315	34.70027	0.3312	N/A	
13C12-2,3,4,6,7,8-HxCDF	1976.3	81.4	28 - 136	35.8895	35.57105	0.3184	N/A	
13C12-1,2,3,7,8,9-HxCDF	1976.3	82.3	29 - 147	36.9255	36.6072	0.3183	N/A	
13C12-1,2,3,4,7,8-HxCDD	1976.3	84.8	32 - 141	36.012	35.69363	0.3184	N/A	
13C12-1,2,3,6,7,8-HxCDD	1976.3	83.8	28 - 130	36.1233	35.8069	0.3164	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	1976.3	83.4	28 - 143	38.7637	38.44928	0.3144	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	1976.3	83.8	26 - 138	41.0142	40.65702	0.3572	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	1976.3	80.8	23 - 140	40.2677	39.9273	0.3404	N/A	
13C12-OCDD	3952.6	71.0	17 - 157	45.0127	44.55902	0.4537	N/A	
37Cl4-2,3,7,8-TCDD	790.51	96.4	35 - 197	26.4107	26.10587	0.3048	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0474	Instrument:	AUTOSPEC01
Sample ID:	SJC0474-CCV3	Calibration:	EC00006
File ID:	21040637	Analyzed:	04/07/21 17:15

Surrogate Compound	Spike Level ng/mL	% Recovery	Recovery Limits	RT	Calibration Mean RT	RT Diff	RT Diff Limit	Q
13C12-2,3,7,8-TCDF	100.00	108	71 - 129	25.7607	25.4532	0.3075	N/A	
13C12-2,3,7,8-TCDD	100.00	94.9	82 - 118	26.3957	26.0882	0.3075	N/A	
13C12-1,2,3,7,8-PeCDF	100.00	105	76 - 124	29.9188	29.59205	0.3268	N/A	
13C12-2,3,4,7,8-PeCDF	100.00	101	77 - 123	31.267	30.93272	0.3343	N/A	
13C12-1,2,3,7,8-PeCDD	100.00	96.9	62 - 138	31.5233	31.1852	0.3381	N/A	
13C12-1,2,3,4,7,8-HxCDF	100.00	95.6	76 - 124	34.888	34.55915	0.3288	N/A	
13C12-1,2,3,6,7,8-HxCDF	100.00	95.1	70 - 130	35.0217	34.70027	0.3214	N/A	
13C12-2,3,4,6,7,8-HxCDF	100.00	94.9	73 - 127	35.8908	35.57105	0.3197	N/A	
13C12-1,2,3,7,8,9-HxCDF	100.00	98.7	74 - 126	36.9268	36.6072	0.3196	N/A	
13C12-1,2,3,4,7,8-HxCDD	100.00	97.8	85 - 115	36.0133	35.69363	0.3197	N/A	
13C12-1,2,3,6,7,8-HxCDD	100.00	93.9	85 - 115	36.1247	35.8069	0.3178	N/A	
13C12-1,2,3,4,6,7,8-HpCDF	100.00	99.5	78 - 122	38.7652	38.44928	0.3159	N/A	
13C12-1,2,3,4,7,8,9-HpCDF	100.00	101	77 - 123	41.0157	40.65702	0.3587	N/A	
13C12-1,2,3,4,6,7,8-HpCDD	100.00	99.6	82 - 118	40.2693	39.9273	0.3420	N/A	
13C12-OCDD	200.00	95.5	48 - 152	45.0143	44.55902	0.4553	N/A	
37Cl4-2,3,7,8-TCDD	10.000	99.9	79 - 121	26.4108	26.10587	0.3049	N/A	

* Values outside of QC limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJD0114	Instrument:	AUTOSPEC01
Sample ID:	SJD0114-ICV1	Calibration:	EC00006
File ID:	21030/ 0/ A	Analyged:	03z0/ z21 16:02

Surrovate Compound	Spike Le%el nvzmL	M Reco%ery	Reco%ery Limits	RT	Calibration f ean RT	RT DiQQ	RT DiQQ Limit	7
14C12-2,4,8,/ -TCDF	100.00	108	81 - 129	25.8155	25.3542	0.2624	NzA	
14C12-2,4,8,/ -TCDD	100.00	96.0	/ 2 - 11/	26.4655	26.0/ / 2	0.2884	NzA	
14C12-1,2,4,8,/ -PeCDF	100.00	104	86 - 123	29./ / 55	29.59205	0.2945	NzA	
14C12-2,4,3,8,/ -PeCDF	100.00	9/ .4	88 - 124	41.2445	40.94282	0.400/	NzA	
14C12-1,2,4,8,/ -PeCDD	100.00	98.6	62 - 14/	41.3/ 98	41.1/ 52	0.4035	NzA	
14C12-1,2,4,3,8,/ -HxCDF	100.00	95.5	86 - 123	43./ 532	43.55915	0.2950	NzA	
14C12-1,2,4,6,8,/ -HxCDF	100.00	108	80 - 140	43.999	43.80028	0.29/ 8	NzA	
14C12-2,4,3,6,8,/ -HxCDF	100.00	94.5	84 - 128	45./ 56/	45.58105	0.2/ 5/	NzA	
14C12-1,2,4,8,/ ,9-HxCDF	100.00	98.5	83 - 126	46./ 92/	46.6082	0.2/ 56	NzA	
14C12-1,2,4,3,8,/ -HxCDD	100.00	99.6	/ 5 - 115	45.9895	45.69464	0.2/ 59	NzA	
14C12-1,2,4,6,8,/ -HxCDD	100.00	9/ .9	/ 5 - 115	46.102	45./ 069	0.2951	NzA	
14C12-1,2,4,3,6,8,/ -HpCDF	100.00	100	8/ - 122	4/ .8414	4/ .3392/	0.2/ 20	NzA	
14C12-1,2,4,3,8,/ ,9-HpCDF	100.00	95.1	88 - 124	30.9/ 1/	30.65802	0.423/	NzA	
14C12-1,2,4,3,6,8,/ -HpCDD	100.00	93.8	82 - 12/	30.2454	49.9284	0.40/ 0	NzA	
14C12-OCDD	200.00	90.6	3/ - 152	33.9884	33.55902	0.31/ 4	NzA	
48Cl3-2,4,8,/ -TCDD	10.000	102	0 - 200	26.4/ 08	26.105/ 8	0.283/	NzA	

* Values outside oQ7 C limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJD0114	Instrument:	AUTOSPEC01
Sample ID:	21C0250-05	Calibration:	EC00006
File ID:	21030/ 10	Analyged:	03z0/ z21 18:38

Surrovate Compound	Spike Le%el pvzL	M Reco%ery	Reco%ery Limits	RT	Calibration f ean RT	RT DiQQ	RT DiQQ Limit	7
14C12-2,4,8,/ -TCDF	1/ / 6./	55./	23 - 169	25.8404	25.3542	0.2881	NzA	
14C12-2,4,8,/ -TCDD	1/ / 6./	56.4	25 - 163	26.4655	26.0/ / 2	0.2884	NzA	
14C12-1,2,4,8,/ -PeCDF	1/ / 6./	54.2	23 - 1/ 5	29./ / 52	29.59205	0.2942	NzA	
14C12-2,4,3,8,/ -PeCDF	1/ / 6./	34.5	21 - 18/	41.2444	40.94282	0.4006	NzA	
14C12-1,2,4,8,/ -PeCDD	1/ / 6./	38.0	25 - 1/ 1	41.3/ 95	41.1/ 52	0.4034	NzA	
14C12-1,2,4,3,8,/ -HxCDF	1/ / 6./	93./	26 - 152	43./ 532	43.55915	0.2950	NzA	
14C12-1,2,4,6,8,/ -HxCDF	1/ / 6./	102	26 - 124	43.999	43.80028	0.29/ 8	NzA	
14C12-2,4,3,6,8,/ -HxCDF	1/ / 6./	36.9	2/ - 146	45./ 56/	45.58105	0.2/ 5/	NzA	
14C12-1,2,4,8,/ ,9-HxCDF	1/ / 6./	33.5	29 - 138	46./ 94	46.6082	0.2/ 5/	NzA	
14C12-1,2,4,3,8,/ -HxCDD	1/ / 6./	91.8	42 - 131	45.9905	45.69464	0.2969	NzA	
14C12-1,2,4,6,8,/ -HxCDD	1/ / 6./	96.1	2/ - 140	46.102	45./ 069	0.2951	NzA	
14C12-1,2,4,3,6,8,/ -HpCDF	1/ / 6./	85./	2/ - 134	4/ .8412	4/ .3392/	0.2/ 19	NzA	
14C12-1,2,4,3,8,/ ,9-HpCDF	1/ / 6./	39.3	26 - 14/	30.9/ 1/	30.65802	0.423/	NzA	
14C12-1,2,4,3,6,8,/ -HpCDD	1/ / 6./	39.6	24 - 130	30.2454	49.9284	0.40/ 0	NzA	
14C12-OCDD	4884.6	25.4	18 - 158	33.9882	33.55902	0.31/ 2	NzA	
48Cl3-2,4,8,/ -TCDD	853.82	61.2	45 - 198	26.4/ 05	26.105/ 8	0.2836	NzA	

* Values outside oQ7 C limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJD0114	Instrument:	AUTOSPEC01
Sample ID:	SJD0114-CCV1	Calibration:	EC00006
File ID:	21030/ 1/	Analyged:	03z09z21 00:19

Surrovate Compound	Spike Le%el nvzmL	M Reco%ery	Reco%ery Limits	RT	Calibration f ean RT	RT DiQQ	RT DiQQ Limit	7
14C12-2,4,8,/ -TCDF	100.00	111	81 - 129	25.8154	25.3542	0.2621	NzA	
14C12-2,4,8,/ -TCDD	100.00	96.3	/ 2 - 11/	26.4655	26.0/ / 2	0.2884	NzA	
14C12-1,2,4,8,/ -PeCDF	100.00	106	86 - 123	29./ / 54	29.59205	0.2944	NzA	
14C12-2,4,3,8,/ -PeCDF	100.00	103	88 - 124	41.2224	40.94282	0.2/ 96	NzA	
14C12-1,2,4,8,/ -PeCDD	100.00	96.6	62 - 14/	41.38/ 5	41.1/ 52	0.2944	NzA	
14C12-1,2,4,3,8,/ -HxCDF	100.00	99.5	86 - 123	43./ 534	43.55915	0.2952	NzA	
14C12-1,2,4,6,8,/ -HxCDF	100.00	9/ .5	80 - 140	43.9/ / 2	43.80028	0.2/ 89	NzA	
14C12-2,4,3,6,8,/ -HxCDF	100.00	101	84 - 128	45./ 582	45.58105	0.2/ 61	NzA	
14C12-1,2,4,8,/ ,9-HxCDF	100.00	9/ .2	83 - 126	46./ 942	46.6082	0.2/ 60	NzA	
14C12-1,2,4,3,8,/ -HxCDD	100.00	9/ .2	/ 5 - 115	45.9898	45.69464	0.2/ 61	NzA	
14C12-1,2,4,6,8,/ -HxCDD	100.00	95.2	/ 5 - 115	46.091	45./ 069	0.2/ 31	NzA	
14C12-1,2,4,3,6,8,/ -HpCDF	100.00	109	8/ - 122	4/ .8415	4/ .3392/	0.2/ 22	NzA	
14C12-1,2,4,3,8,/ ,9-HpCDF	100.00	103	88 - 124	30.9/ 2	30.65802	0.4250	NzA	
14C12-1,2,4,3,6,8,/ -HpCDD	100.00	99.6	82 - 12/	30.2455	49.9284	0.40/ 2	NzA	
14C12-OCDD	200.00	94.6	3/ - 152	33.96/ 4	33.55902	0.3094	NzA	
48Cl3-2,4,8,/ -TCDD	10.000	101	0 - 200	26.4/ 08	26.105/ 8	0.283/	NzA	

* Values outside oQ7 C limits

SURROGATE RECOVERY AND RT SUMMARY

EPA 1613B

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJD0114	Instrument:	AUTOSPEC01
Sample ID:	SJD0114-CCV2	Calibration:	EC00006
File ID:	21030/ 28	Analyged:	03z09z21 08:36

Surrovate Compound	Spike Le%el nvzmL	M Reco%ery	Reco%ery Limits	RT	Calibration f ean RT	RT DiQQ	RT DiQQ Limit	7
14C12-2,4,8,/ -TCDF	100.00	114	81 - 129	25.8405	25.3542	0.2884	NzA	
14C12-2,4,8,/ -TCDD	100.00	9/ .2	/ 2 - 11/	26.4655	26.0/ / 2	0.2884	NzA	
14C12-1,2,4,8,/ -PeCDF	100.00	109	86 - 123	29./ / 52	29.59205	0.2942	NzA	
14C12-2,4,3,8,/ -PeCDF	100.00	105	88 - 124	41.2444	40.94282	0.4006	NzA	
14C12-1,2,4,8,/ -PeCDD	100.00	99.4	62 - 14/	41.3/ 95	41.1/ 52	0.4034	NzA	
14C12-1,2,4,3,8,/ -HxCDF	100.00	99.4	86 - 123	43./ 652	43.55915	0.4060	NzA	
14C12-1,2,4,6,8,/ -HxCDF	100.00	96.6	80 - 140	43.99/ /	43.80028	0.29/ 5	NzA	
14C12-2,4,3,6,8,/ -HxCDF	100.00	96./	84 - 128	45./ 6/	45.58105	0.2980	NzA	
14C12-1,2,4,8,/ ,9-HxCDF	100.00	96./	83 - 126	46./ 92/	46.6082	0.2/ 56	NzA	
14C12-1,2,4,3,8,/ -HxCDD	100.00	9/ .9	/ 5 - 115	45.9894	45.69464	0.2/ 58	NzA	
14C12-1,2,4,6,8,/ -HxCDD	100.00	93.0	/ 5 - 115	46.102	45./ 069	0.2951	NzA	
14C12-1,2,4,3,6,8,/ -HpCDF	100.00	105	8/ - 122	4/ .8324	4/ .3392/	0.2940	NzA	
14C12-1,2,4,3,8,/ ,9-HpCDF	100.00	102	88 - 124	30.9/ 1/	30.65802	0.423/	NzA	
14C12-1,2,4,3,6,8,/ -HpCDD	100.00	95.8	82 - 12/	30.2454	49.9284	0.40/ 0	NzA	
14C12-OCDD	200.00	/ 9.4	3/ - 152	33.9882	33.55902	0.31/ 2	NzA	
48Cl3-2,4,8,/ -TCDD	10.000	104	0 - 200	26.4/ 08	26.105/ 8	0.283/	NzA	

* Values outside oQ7 C limits

HOLDING TIME SUMMARY

Analysis: EPA 1613B

Laboratory: Analytical Resources, Inc. SDG: 21C0250

Client: Floyd - Snider Project: Lora Lake

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
MW-VB3-031621 21C0250-04	03/16/21 12:00	03/17/21 14:37	03/25/21 08:20	8	365	04/06/21 19:00	12	365	
HCOO-B312-031621 21C0250-05	03/16/21 12:55	03/17/21 14:37	03/25/21 08:20	8	365	04/08/21 17:47	14	365	
MW-CP7-031621 21C0250-06	03/16/21 14:25	03/17/21 14:37	03/25/21 08:20	8	365	04/06/21 20:38	13	365	
MW-CP6-031621 21C0250-07	03/16/21 14:26	03/17/21 14:37	03/25/21 08:20	8	365	04/06/21 21:27	13	365	
MW-CP4-031621 21C0250-08	03/16/21 15:30	03/17/21 14:37	03/25/21 08:20	8	365	04/06/21 22:16	13	365	
MW-CP5-031621 21C0250-09	03/16/21 15:55	03/17/21 14:37	03/29/21 12:30	12	365	04/07/21 16:26	9	365	
MW-CP2-031721 21C0250-10	03/17/21 09:30	03/17/21 14:37	03/25/21 08:20	7	365	04/07/21 00:49	13	365	
MW-CP2-031721-D 21C0250-11	03/17/21 09:40	03/17/21 14:37	03/25/21 08:20	7	365	04/07/21 01:38	13	365	
MW-CP3-031721 21C0250-12	03/17/21 09:40	03/17/21 14:37	03/25/21 08:20	7	365	04/07/21 02:27	13	365	
MW-CP1-031721 21C0250-13	03/17/21 10:50	03/17/21 14:37	03/25/21 08:20	7	365	04/07/21 03:16	13	365	
MW-C1/VB1-031721 21C0250-14	03/17/21 13:00	03/17/21 14:37	03/25/21 08:20	7	365	04/07/21 04:05	13	365	
MW-VB2-031721 21C0250-15	03/17/21 13:25	03/17/21 14:37	03/25/21 08:20	7	365	04/07/21 04:54	13	365	

* Indicates hold time exceedance.

METHOD DETECTION AND REPORTING LIMITS

EPA 1613B

Laboratory: Analytical Resources, Inc. SDG: 21C0250

Client: Floyd - Snider Project: Lora Lake

Matrix: Solid Instrument: AUTOSPEC01

Analyte	MDL	RL	Units
2,3,7,8-TCDF	0.058	1.00	ng/kg
2,3,7,8-TCDD	0.150	1.00	ng/kg
1,2,3,7,8-PeCDF	0.240	1.00	ng/kg
2,3,4,7,8-PeCDF	0.220	1.00	ng/kg
1,2,3,7,8-PeCDD	0.170	1.00	ng/kg
1,2,3,4,7,8-HxCDF	0.280	1.00	ng/kg
1,2,3,6,7,8-HxCDF	0.200	1.00	ng/kg
2,3,4,6,7,8-HxCDF	0.170	1.00	ng/kg
1,2,3,7,8,9-HxCDF	0.190	1.00	ng/kg
1,2,3,4,7,8-HxCDD	0.170	1.00	ng/kg
1,2,3,6,7,8-HxCDD	0.180	1.00	ng/kg
1,2,3,7,8,9-HxCDD	0.220	1.00	ng/kg
1,2,3,4,6,7,8-HpCDF	0.210	1.00	ng/kg
1,2,3,4,7,8,9-HpCDF	0.240	1.00	ng/kg
1,2,3,4,6,7,8-HpCDD	0.560	2.50	ng/kg
OCDF	1.10	2.50	ng/kg
OCDD	4.60	10.0	ng/kg

METHOD DETECTION AND REPORTING LIMITS

EPA 1613B

Laboratory: Analytical Resources, Inc. SDG: 21C0250

Client: Floyd - Snider Project: Lora Lake

Matrix: Water Instrument: AUTOSPEC01

Analyte	MDL	RL	Units
2,3,7,8-TCDF	1.20	10.0	pg/L
2,3,7,8-TCDD	1.30	10.0	pg/L
1,2,3,7,8-PeCDF	4.20	10.0	pg/L
2,3,4,7,8-PeCDF	4.00	10.0	pg/L
1,2,3,7,8-PeCDD	4.00	10.0	pg/L
1,2,3,4,7,8-HxCDF	3.80	10.0	pg/L
1,2,3,6,7,8-HxCDF	3.90	10.0	pg/L
2,3,4,6,7,8-HxCDF	3.50	10.0	pg/L
1,2,3,7,8,9-HxCDF	3.60	10.0	pg/L
1,2,3,4,7,8-HxCDD	4.10	10.0	pg/L
1,2,3,6,7,8-HxCDD	3.80	10.0	pg/L
1,2,3,7,8,9-HxCDD	3.40	10.0	pg/L
1,2,3,4,6,7,8-HpCDF	11.0	20.0	pg/L
1,2,3,4,7,8,9-HpCDF	3.60	10.0	pg/L
1,2,3,4,6,7,8-HpCDD	6.00	10.0	pg/L
OCDF	16.0	20.0	pg/L
OCDD	39.0	50.0	pg/L
Total TCDF		10.0	pg/L
Total TCDD		10.0	pg/L
Total PeCDF		10.0	pg/L
Total PeCDD		10.0	pg/L
Total HxCDF		10.0	pg/L
Total HxCDD		10.0	pg/L
Total HpCDF		10.0	pg/L
Total HpCDD		10.0	pg/L

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

CS3WT

Calibration and Verification Solution (EPA-1613CS3) combined with Window Defining and 2,3,7,8-TCDD Resolution Testing Congeners

G 00136 Recd. 2/13/18

PRODUCT CODE:	CS3WT
LOT NUMBER:	CS3WT0617
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	06/27/2017
LAST TESTED: (mm/dd/yyyy)	06/27/2017
EXPIRY DATE: (mm/dd/yyyy)	06/27/2024
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

CS3WT is a solution/mixture of native and $^{13}C_{12}$-labelled chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components and their concentrations are given in Table A.

CS3WT was designed and prepared to be used as a HRMS calibration standard according to U.S. EPA Method 1613B.

It is to be used for calibration verification in place of EPA-1613CS3 (Lot: 13CS30617). It also contains the PCDD and PCDF window defining congeners for a DB-5 (or equivalent) capillary column as well as the TCDD isomers required to test and confirm the resolution of 2,3,7,8-TCDD.

The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%. The individual native 2,3,7,8-substituted PCDD and PCDF congeners all have chemical purities of >98%; the other congeners (window defining and resolution testing) should only be considered semi-quantitative.

This current lot of CS3WT (CS3WT0617) is to be used with the 1613 calibration solutions having the following lot numbers:

PRODUCT CODE	LOT NUMBER
EPA-1613CS1	13CS10617
EPA-1613CS2	13CS20617
EPA-1613CS3	13CS30617
EPA-1613CS4	13CS40617
EPA-1613CS5	13CS50617
EPA-1613CSL	13CSL0617
EPA-1613CS0.5	13CS0.50617

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519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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

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

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

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

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) has been assigned to the quantitative analytes in this mixture. Conversely, semi-quantitative analytes have been assigned an uncertainty of ±20%.

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**

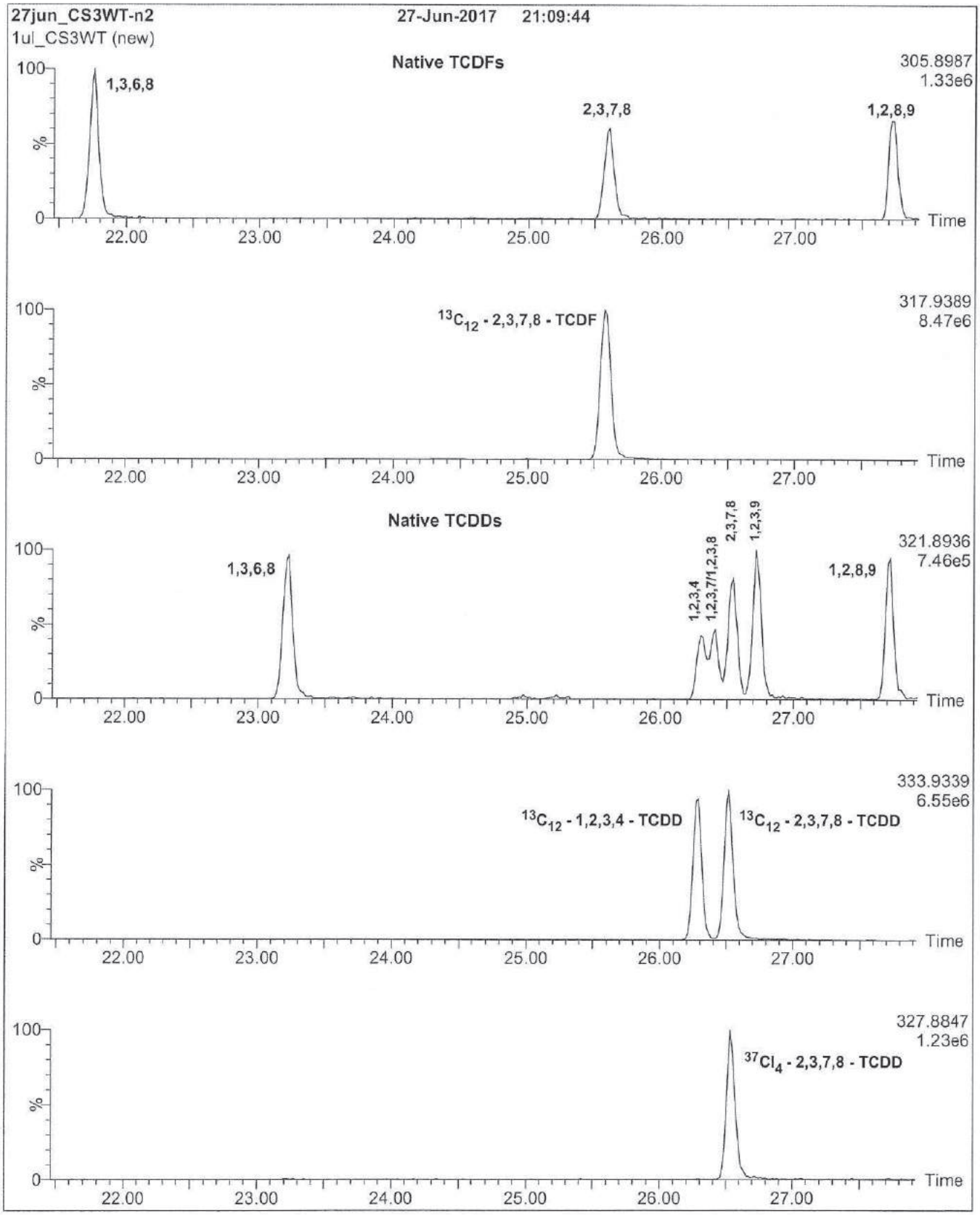


Figure 1: CS3WT; HRGC/HRMS Data (60 m DB-5 Column)

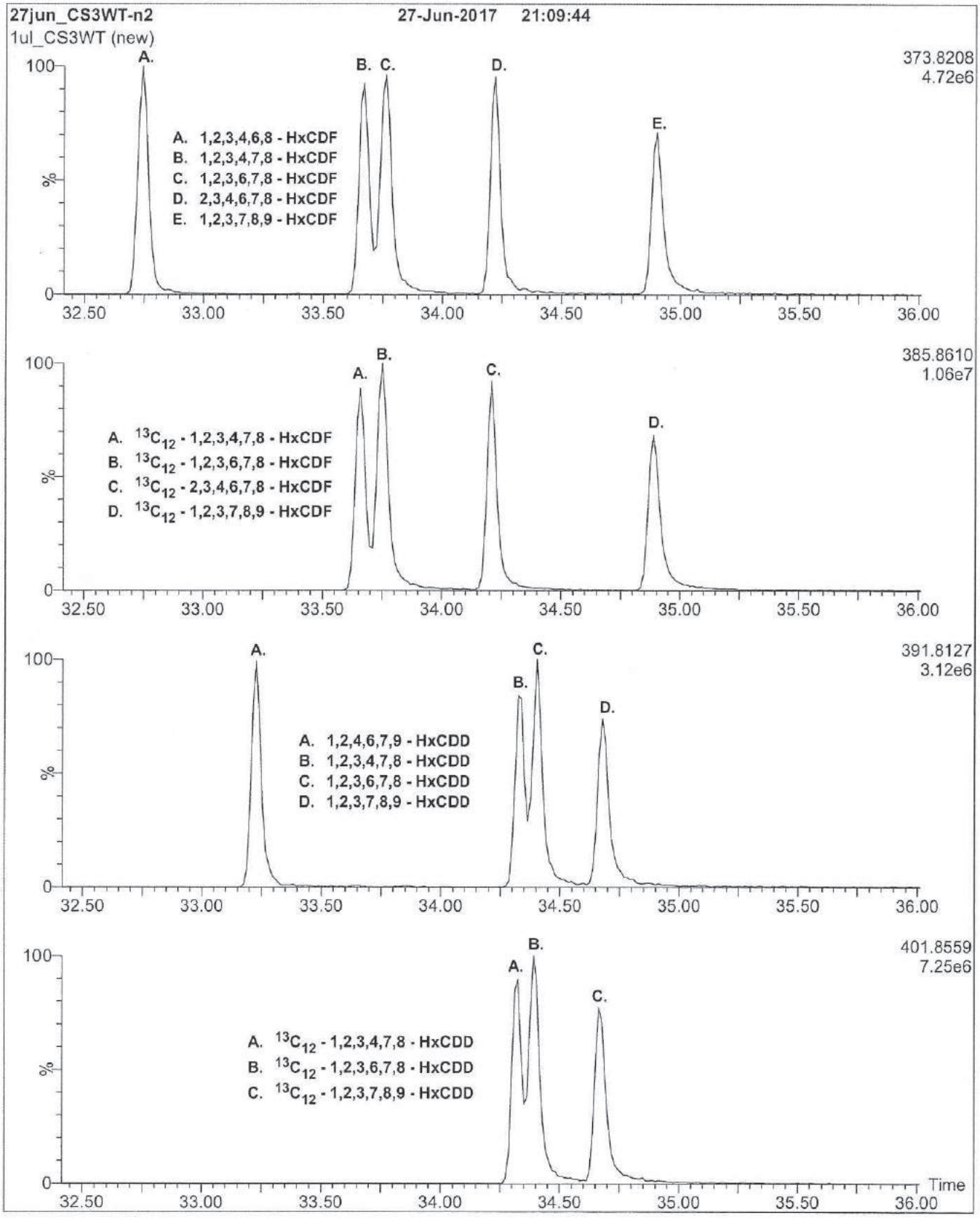
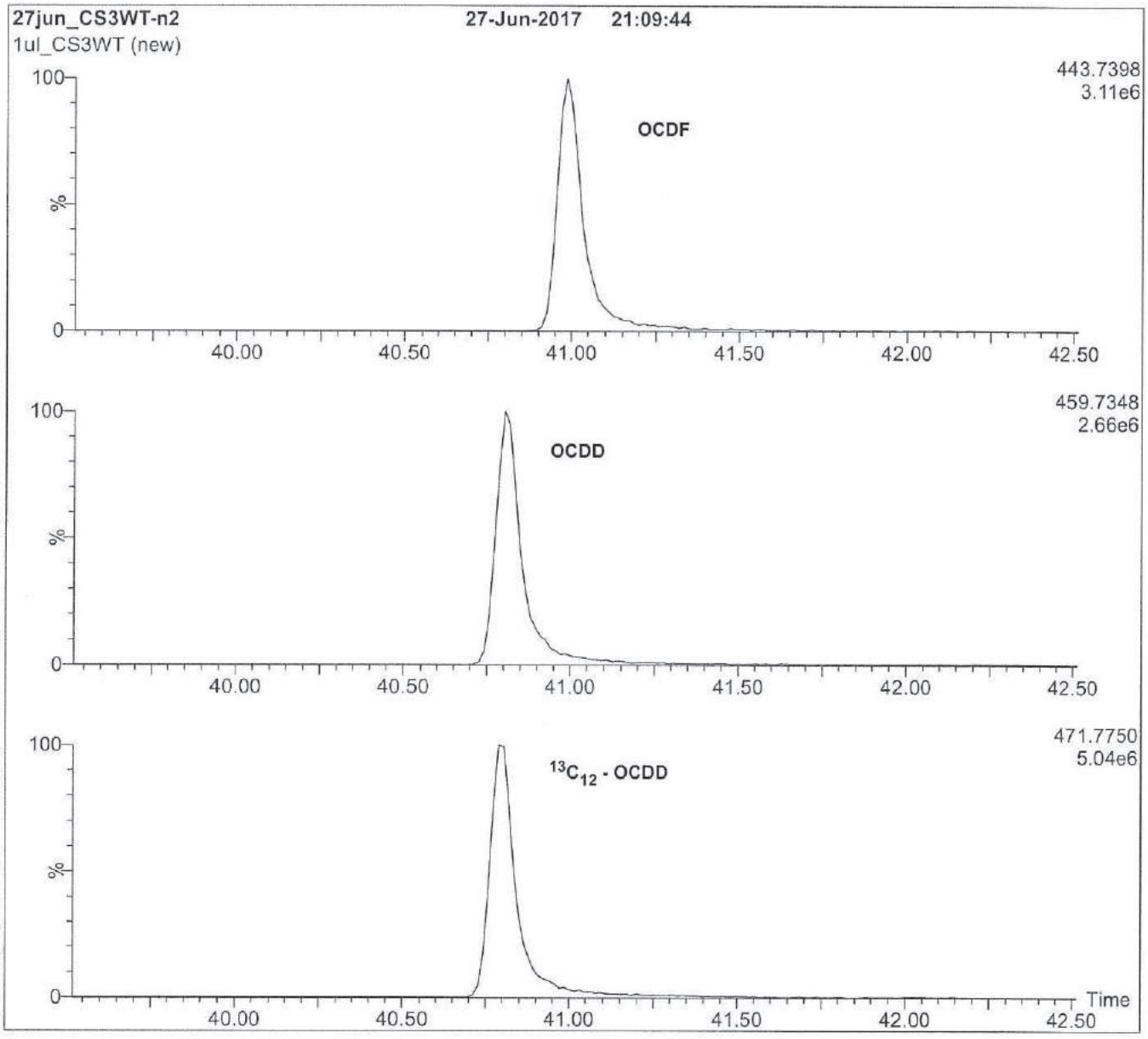


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow: Constant at 1 ml/min
Injector: 280 °C (Splitless Injection)
Ionization: EI+
Detector: 280 °C
SIR at 10,000 mass resolving power

Oven: 150 °C (1 min)
12 °C/min to 200 °C
3 °C/min to 235 °C
235 °C (8 min)
8 °C/min to 310 °C
310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613PAR

U.S. EPA Method 1613 Native PCDD/PCDF Precision and Recovery Stock Solution

PRODUCT CODE:	EPA-1613PAR
LOT NUMBER:	13PAR1019
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/16/2019
LAST TESTED: (mm/dd/yyyy)	10/17/2019
EXPIRY DATE: (mm/dd/yyyy)	10/17/2026
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

I 000197

DESCRIPTION:

EPA-1613PAR is a solution/mixture of all the 2,3,7,8-substituted chlorinated dibenzo-p-dioxins (PCDDs) and 2,3,7,8-substituted dibenzofurans (PCDFs). The components and their concentrations are given in Table A.

EPA-1613PAR was designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B).

The individual PCDDs and PCDFs all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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INTENDED USE:

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

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

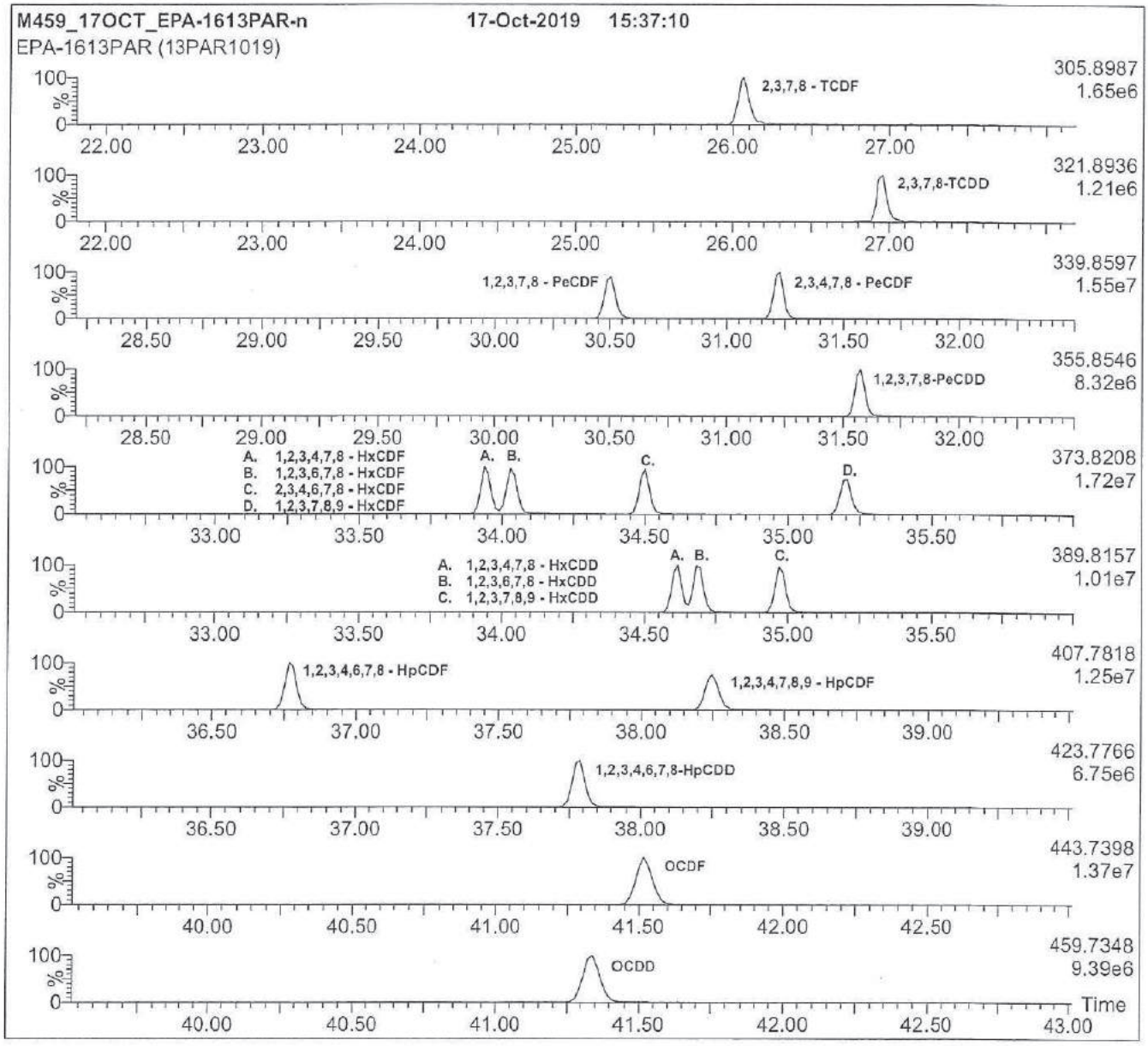
Table A: **EPA-1613PAR; Components and Concentrations (ng/ml, ± 5% in nonane/ 2.4% toluene)**

Component	Concentration (ng/ml)
PCDDs:	
2,3,7,8-Tetrachlorodibenzo-p-dioxin	40
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	200
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	200
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	200
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	200
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	200
Octachlorodibenzo-p-dioxin	400
PCDFs:	
2,3,7,8-Tetrachlorodibenzofuran	40
1,2,3,7,8-Pentachlorodibenzofuran	200
2,3,4,7,8-Pentachlorodibenzofuran	200
1,2,3,4,7,8-Hexachlorodibenzofuran	200
1,2,3,6,7,8-Hexachlorodibenzofuran	200
1,2,3,7,8,9-Hexachlorodibenzofuran	200
2,3,4,6,7,8-Hexachlorodibenzofuran	200
1,2,3,4,6,7,8-Heptachlorodibenzofuran	200
1,2,3,4,7,8,9-Heptachlorodibenzofuran	200
Octachlorodibenzofuran	400

Certified By: _____ **Date:** 11/07/2019
(mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: **EPA-1613PAR; HRGC/HRMS Data (60 m DB-5 Column)**



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 ml/min	Oven:	150 °C (1 min)
Injector:	280 °C (Splitless Injection)		12 °C/min to 200 °C
Ionization:	EI+		3 °C/min to 235 °C
Detector:	280 °C		235 °C (8 min)
	SIR at 10,000 mass resolving power		8 °C/min to 310 °C
			310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

CS3WT

Calibration and Verification Solution (EPA-1613CS3) combined with Window Defining and 2,3,7,8-TCDD Resolution Testing Congeners

PRODUCT CODE:	CS3WT
LOT NUMBER:	CS3WT1019
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/30/2019
LAST TESTED: (mm/dd/yyyy)	10/31/2019
EXPIRY DATE: (mm/dd/yyyy)	10/31/2026
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

I005452

DESCRIPTION:

CS3WT is a solution/mixture of native and $^{13}C_{12}$-labelled chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components and their concentrations are given in Table A.

CS3WT was designed and prepared to be used as a HRMS calibration standard according to U.S. EPA Method 1613B.

It is to be used for calibration verification in place of EPA-1613CS3 (Lot: 13CS31019). It also contains the PCDD and PCDF window defining congeners for a DB-5 (or equivalent) capillary column as well as the TCDD isomers required to test and confirm the resolution of 2,3,7,8-TCDD.

The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%. The individual native 2,3,7,8-substituted PCDD and PCDF congeners all have chemical purities of >98%; the other congeners (window defining and resolution testing) should only be considered semi-quantitative.

This current lot of CS3WT is to be used with the 1613 calibration solutions having the following lot numbers:

PRODUCT CODE	LOT NUMBER
EPA-1613CS1	13CS11019
EPA-1613CS2	13CS21019
EPA-1613CS3	13CS31019
EPA-1613CS4	13CS41019
EPA-1613CS5	13CS51019
EPA-1613CSL	13CSL1019
EPA-1613CS0.5	13CS0.51019

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DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 3 for further details.
- Only the 2,3,7,8-substituted PCDDs and PCDFs should be used for quantitation. The other congeners (window defining and 2378-TCDD resolution testing) should be considered semi-quantitative (within ±20% of their design value). Impurities have been identified where possible.

INTENDED USE:

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

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

Table A: **CS3WT; Components and Concentrations (ng/ml, in nonane/4.5% toluene)**

QUANTITATIVE ANALYTES (ng/ml, ±5%)	
Native PCDDs & PCDFs:	
2,3,7,8-TCDD	10
2,3,7,8-TCDF	10
1,2,3,7,8-PeCDD	50
1,2,3,7,8-PeCDF	50
2,3,4,7,8-PeCDF	50
1,2,3,4,7,8-HxCDD	50
1,2,3,6,7,8-HxCDD	50
1,2,3,7,8,9-HxCDD	50
1,2,3,4,7,8-HxCDF	50
1,2,3,6,7,8-HxCDF	50
1,2,3,7,8,9-HxCDF	50
2,3,4,6,7,8-HxCDF	50
1,2,3,4,6,7,8-HpCDD *(WD)*	50
1,2,3,4,6,7,8-HpCDF *(WD)*	50
1,2,3,4,7,8,9-HpCDF *(WD)*	50
OCDD	100
OCDF	100
Labelled PCDDs & PCDFs:	
$^{13}C_{12}$-2,3,7,8-TCDD	100
$^{13}C_{12}$-2,3,7,8-TCDF	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100
$^{13}C_{12}$-OCDD	200
Cleanup Standard:	
$^{37}Cl_4$-2,3,7,8-TCDD	10
Internal Standards:	
$^{13}C_{12}$-1,2,3,4-TCDD	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100

SEMI-QUANTITATIVE ANALYTES (ng/ml, ±20%)	
Window Definers:*	
1,3,6,8-TCDD	10
1,2,8,9-TCDD	10
1,3,6,8-TCDF	10
1,2,8,9-TCDF	10
1,2,4,6,8/1,2,4,7,9-PeCDD	50
1,2,3,8,9-PeCDD	50
1,3,4,6,8-PeCDF	50
1,2,3,8,9-PeCDF	50
1,2,4,6,7,9-HxCDD	50
1,2,3,4,6,8-HxCDF	50
1,2,3,4,6,7,9-HpCDD	50
2378-TCDD Resolution Testing Isomers:	
1,2,3,4-TCDD	5
1,2,3,7/1,2,3,8-TCDD	5
1,2,3,9-TCDD	10

WD – Window Definer

* *1,2,3,4,6,7-HxCDD (last eluting HxCDD) not included; coelutes with 1,2,3,7,8,9-HxCDD. Use 1,2,3,4,6,7,9-HpCDD to set window.*

* *1,2,3,4,8,9-HxCDF (last eluting HxCDF) not included; can interfere with 1,2,3,7,8,9-HxCDF. Use 1,2,3,4,6,7,8-HpCDF to set window.*

Certified By: _____ **Date:** 11/07/2019 (mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: CS3WT; HRGC/HRMS Data (60 m DB-5 Column)

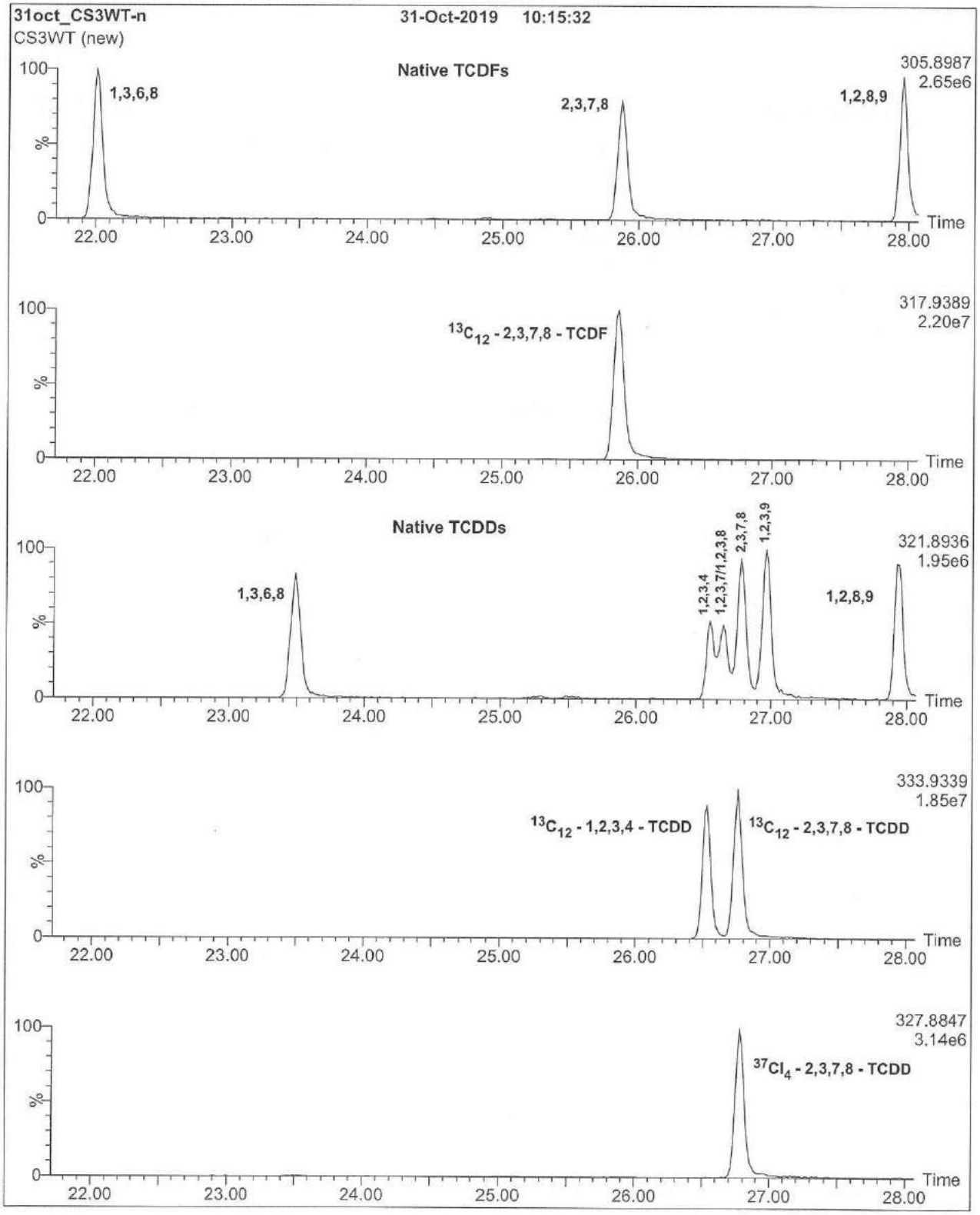


Figure 1: CS3WT; HRGC/HRMS Data (60 m DB-5 Column)

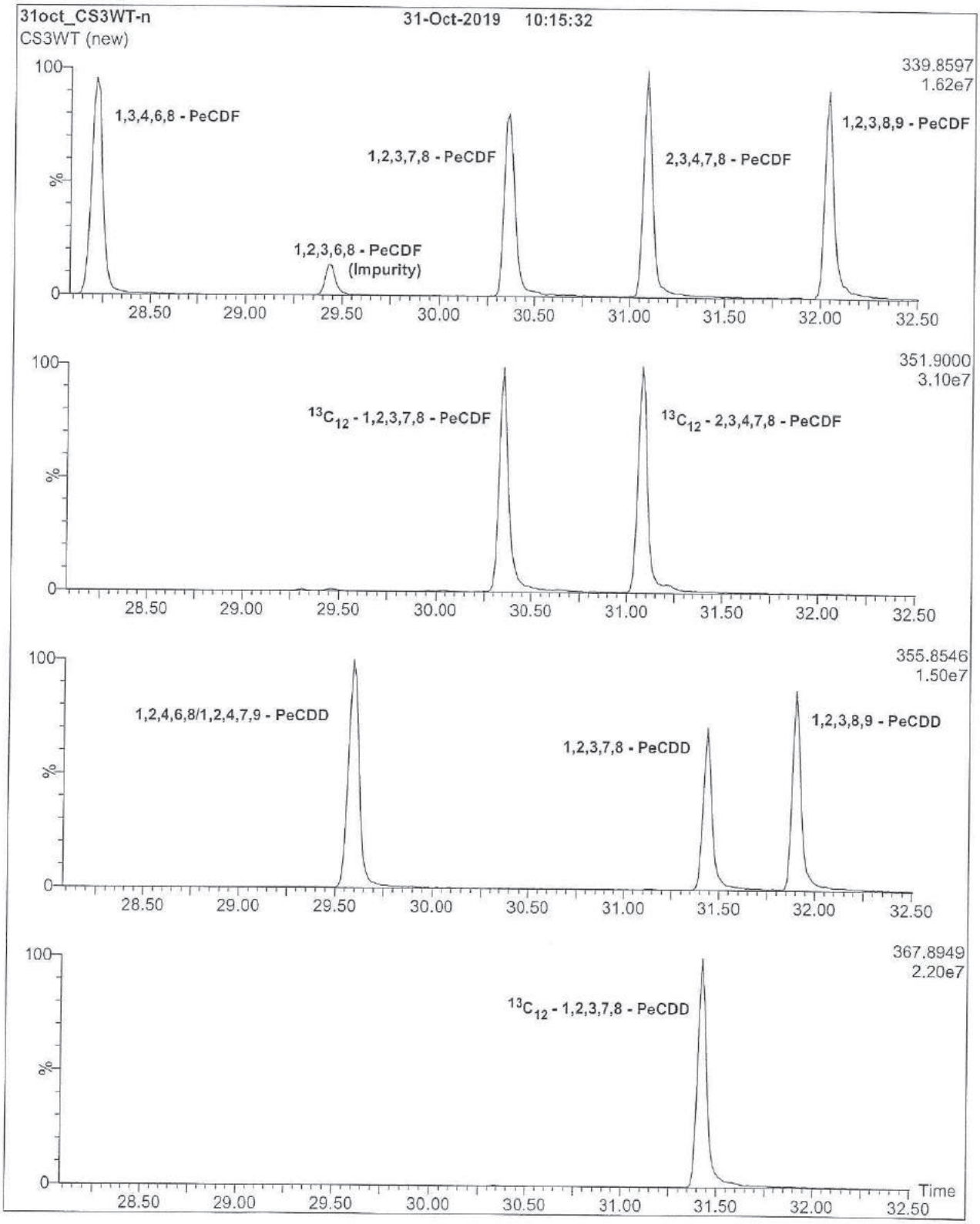


Figure 1: CS3WT; HRGC/HRMS Data (60 m DB-5 Column)

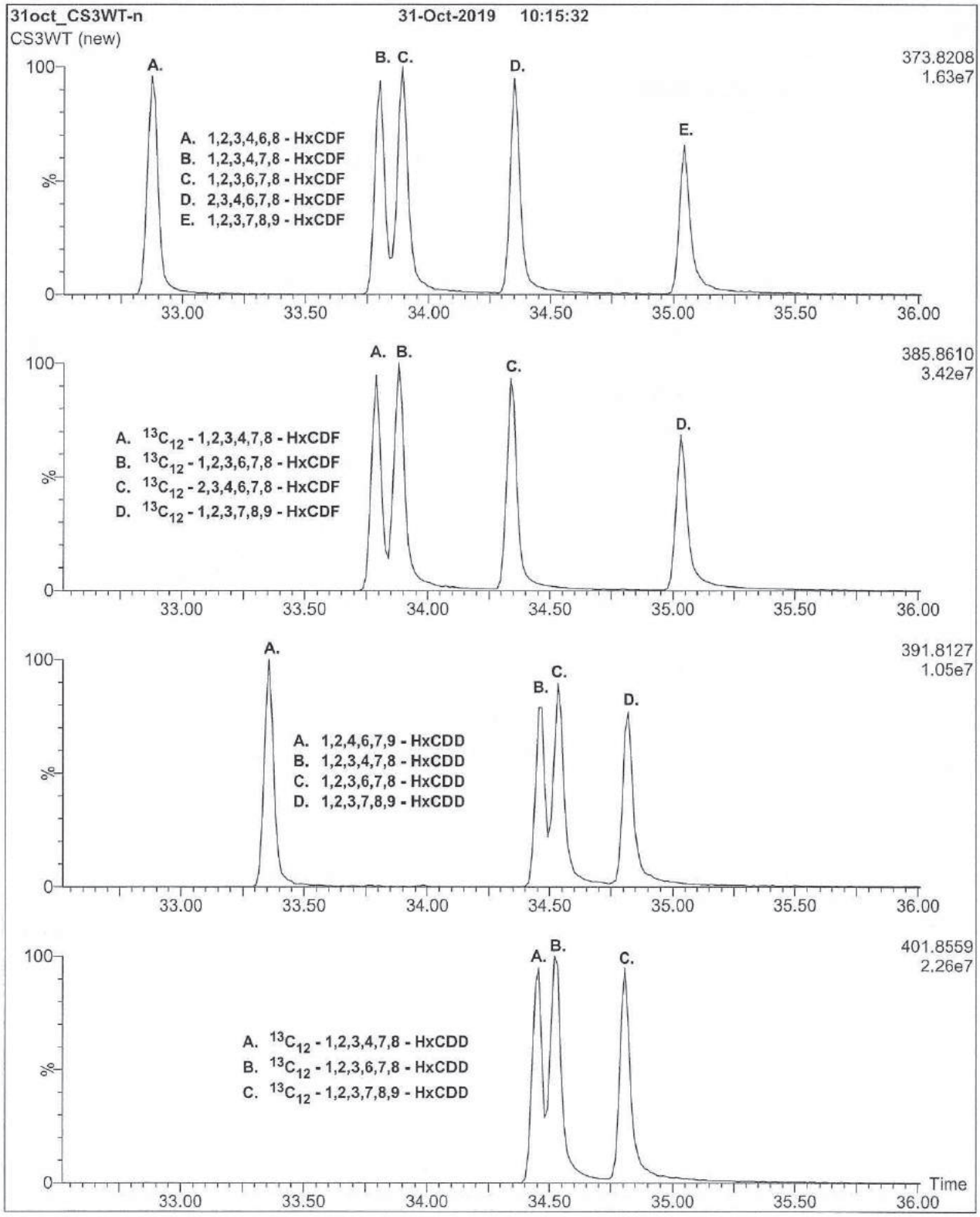


Figure 1: CS3WT; HRGC/HRMS Data (60 m DB-5 Column)

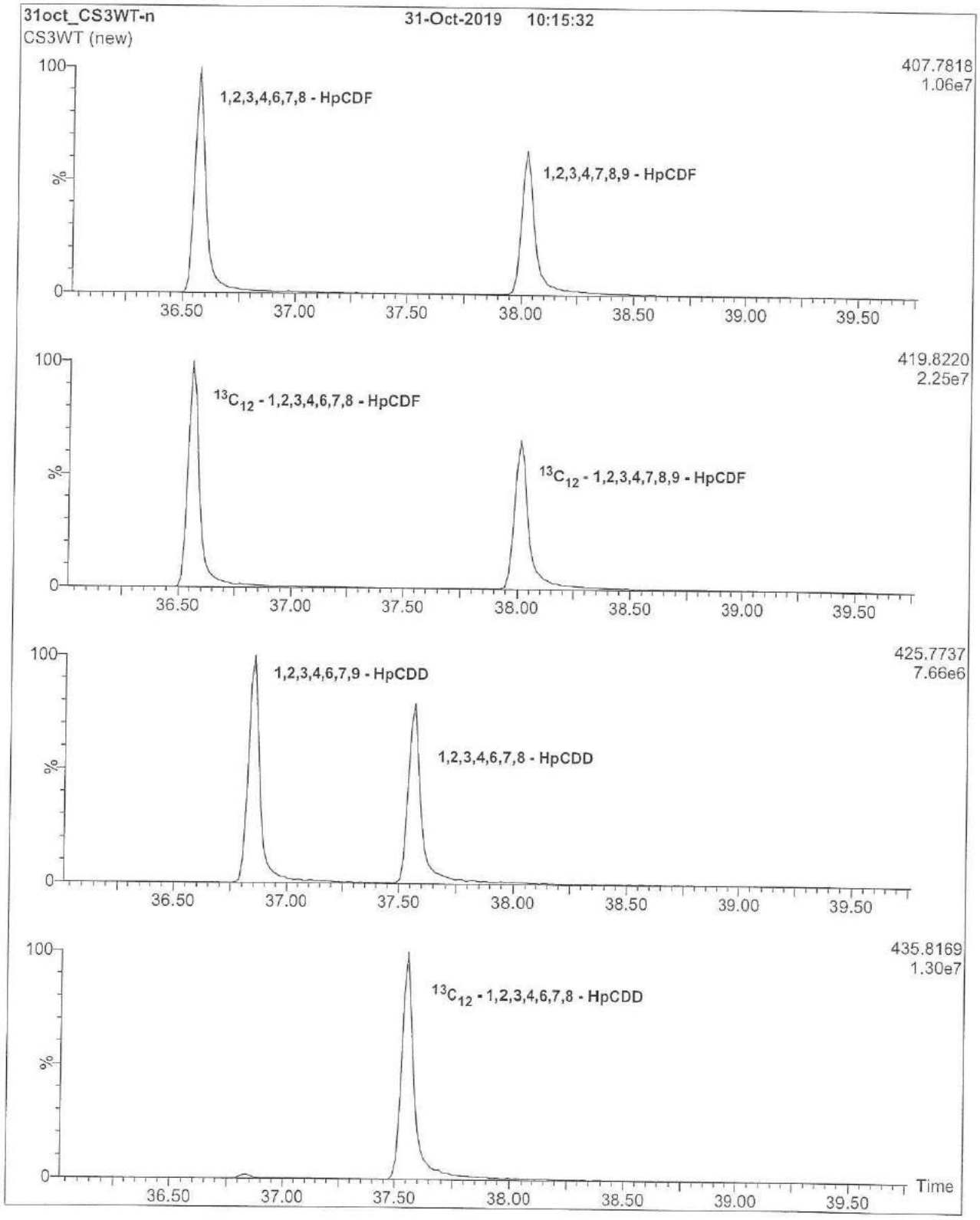
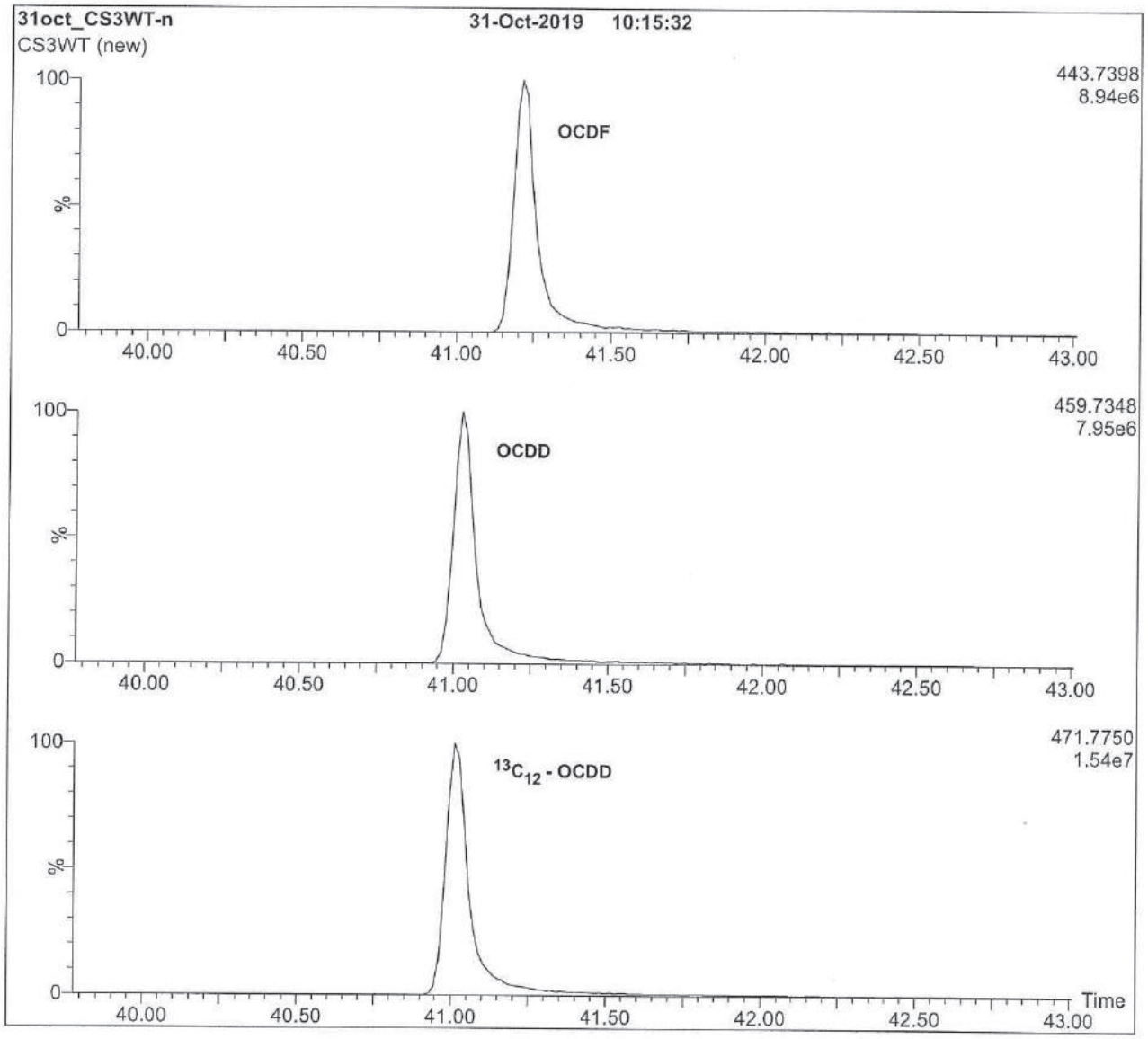


Figure 1: **CS3WT; HRGC/HRMS Data (60 m DB-5 Column)**



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow: Constant at 1 ml/min
Injector: 280 °C (Splitless Injection)
Ionization: EI+
Detector: 280 °C
SIR at 10,000 mass resolving power

Oven: 150 °C (1 min)
12 °C/min to 200 °C
3 °C/min to 235 °C
235 °C (8 min)
8 °C/min to 310 °C
310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613CVS

U.S. EPA Method 1613 Calibration and Verification Solutions
plus Supplemental Calibration Solutions EPA-1613CSL & EPA-1613CS0.5

PRODUCT CODES:	EPA-1613CVS	**LOT NUMBERS:**	(see below)
	EPA-1613CS1		13CS11019 I005456
	EPA-1613CS2		13CS21019 I005457
	EPA-1613CS3		13CS31019
	EPA-1613CS4		13CS41019 I005458
	EPA-1613CS5		13CS51019 I005459

Note: EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to this calibration set that must be ordered separately.

EPA-1613CS0.5	13CS0.51019
EPA-1613CSL	13CSL1019

SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/22/2019
LAST TESTED: (mm/dd/yyyy)	10/24/2019
EXPIRY DATE: (mm/dd/yyyy)	10/24/2026 I005460
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

DESCRIPTION:

EPA-1613CVS is a series of 5 calibration solutions containing native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$ and $^{37}Cl_4$) chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components of each solution, and their concentrations, are given in Table A.

They were designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B). They are to be used as received.

EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to EPA-1613CVS. Neither is required by the method, but either or both can be used to extend the calibration to lower levels.

The individual native PCDDs and PCDFs all have chemical purities of >98%. The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-Tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Table B: 5-point HRGC/HRMS Calibration and RRF Summary
Table C: 7-point HRGC/HRMS Calibration and RRF Summary
Figure 1: HRGC/HRMS Data for EPA-1613CS3 (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 3 for further details.

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a series of standards for the identification and quantification of specific chemical compounds.

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned values, and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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Table A: EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); Components and Concentrations (ng/ml, ± 5% in nonane/toluene)

Compound	Concentration (ng/ml)						
Native PCDDs and PCDFs:	CS1	CS2	CS3	CS4	CS5	CSL	CS0.5
2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
2,3,7,8-TCDF	0.5	2	10	40	200	0.1	0.25
1,2,3,7,8-PeCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8,9-HpCDF	2.5	10	50	200	1000	0.5	1.25
OCDD	5.0	20	100	400	2000	1.0	2.5
OCDF	5.0	20	100	400	2000	1.0	2.5
Labelled PCDDs and PCDFs:							
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	200
Cleanup Standard:							
$^{37}Cl_4$-2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
Internal Standards:							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	100
Percent toluene (v/v)	3.6%	3.7%	4.2%	6.1%	16.2%	3.6%	3.6%

Certified By: _____ Date: 10/25/2019 (mm/dd/yyyy)

B.G. Chittim, General Manager

Table B: **EPA-1613CVS; 5-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard				
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5
2,3,7,8-TCDF	0.93	0.013	1.4	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.015	1.6	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.04	0.019	1.8	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.035	3.7	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.93	0.013	1.4	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.96	0.022	2.3	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.89	0.021	2.4	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.91	0.011	1.2	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.010	1.1	0.90	0.90	0.92	0.91	0.92
OCDF	1.19	0.056	4.7	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.05	0.023	2.2	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.97	0.018	1.9	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	1.00	0.019	1.9	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.98	0.032	3.2	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.97	0.016	1.6	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.025	2.5	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.013	1.3	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.57	0.047	3.0	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.21	0.078	6.5	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.17	0.081	6.9	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.020	1.5	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.51	0.034	2.2	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.38	0.012	0.9	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.014	1.2	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.033	2.5	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.08	0.046	4.3	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.13	0.036	3.2	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.79	0.047	5.9	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.027	3.1	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.04	0.010	1.0	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.017	2.1	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.74	0.055	7.4	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.026	2.6	0.95	0.94	0.99	0.99	0.99

Table C: EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); 7-point HRGC/HRMS Calibration and RRF Summary

Calibration RRF Summary				Calibration Standard						
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CSL	CS0.5	CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5	RRF#6	RRF#7
2,3,7,8-TCDF	0.92	0.045	4.8	0.96	0.83	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.013	1.4	0.94	0.92	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.02	0.058	5.7	0.90	1.00	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.029	3.0	0.96	0.97	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.92	0.030	3.3	0.90	0.86	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.94	0.047	5.0	0.87	0.89	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.88	0.029	3.3	0.83	0.88	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.90	0.033	3.7	0.83	0.93	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.018	1.9	0.89	0.94	0.90	0.90	0.92	0.91	0.92
OCDF	1.18	0.052	4.4	1.15	1.14	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.03	0.051	5.0	1.03	0.92	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.95	0.042	4.4	0.87	0.98	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	0.97	0.066	6.8	0.83	0.98	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.96	0.044	4.5	0.90	0.92	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.94	0.054	5.7	0.83	0.92	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.033	3.3	0.95	1.03	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.023	2.3	0.95	1.00	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.56	0.042	2.7	1.52	1.54	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.20	0.066	5.5	1.18	1.17	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.16	0.071	6.1	1.12	1.13	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.018	1.4	1.32	1.35	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.53	0.045	3.0	1.60	1.56	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.39	0.019	1.4	1.39	1.42	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.012	1.0	1.19	1.19	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.028	2.2	1.30	1.33	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.07	0.045	4.2	1.02	1.08	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.12	0.033	3.0	1.09	1.11	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.78	0.040	5.1	0.75	0.78	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.025	2.9	0.86	0.90	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.05	0.015	1.5	1.08	1.06	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.016	2.0	0.79	0.81	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.73	0.046	6.3	0.71	0.72	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.053	5.4	0.90	1.07	0.95	0.94	0.99	0.99	0.99

Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

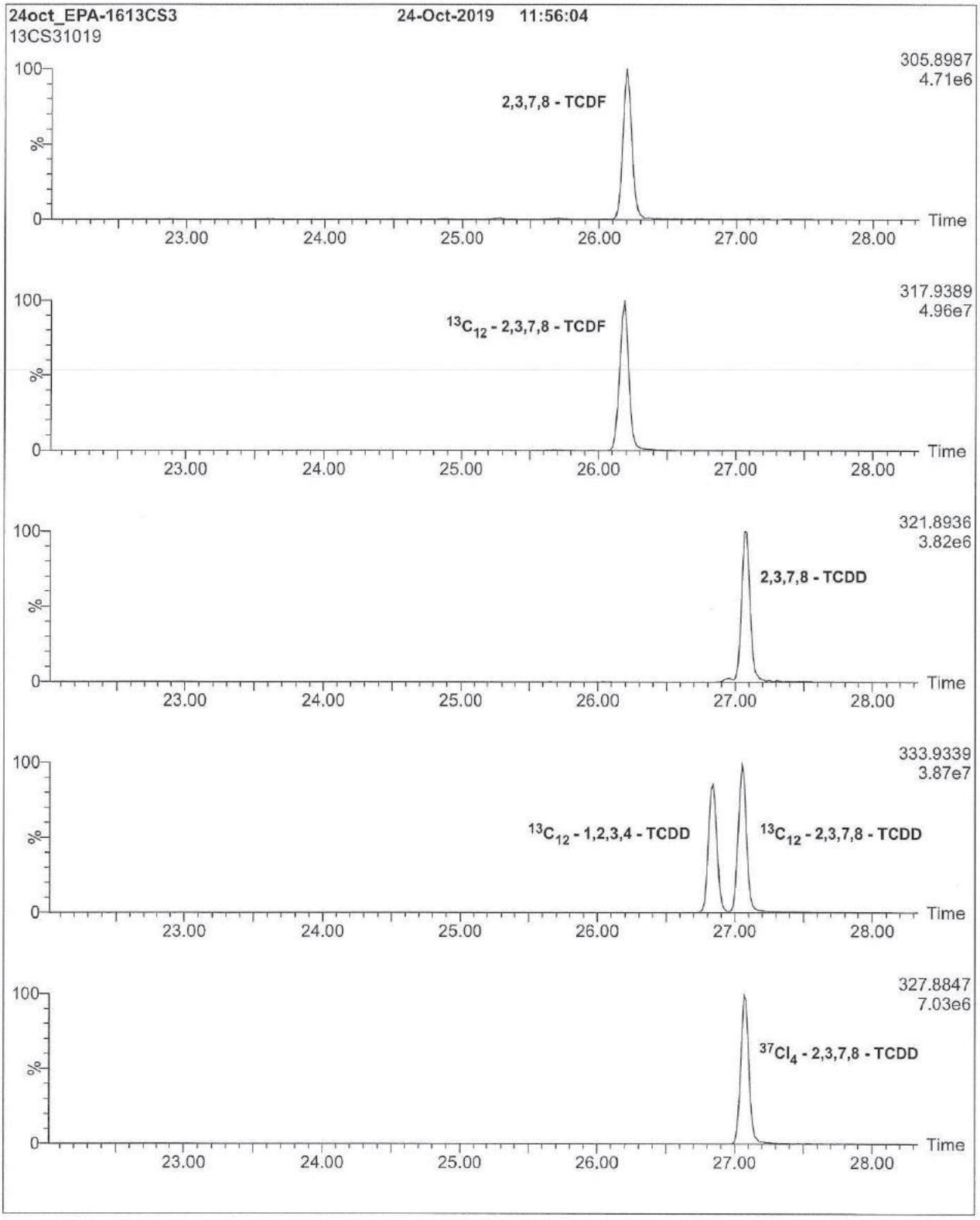


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

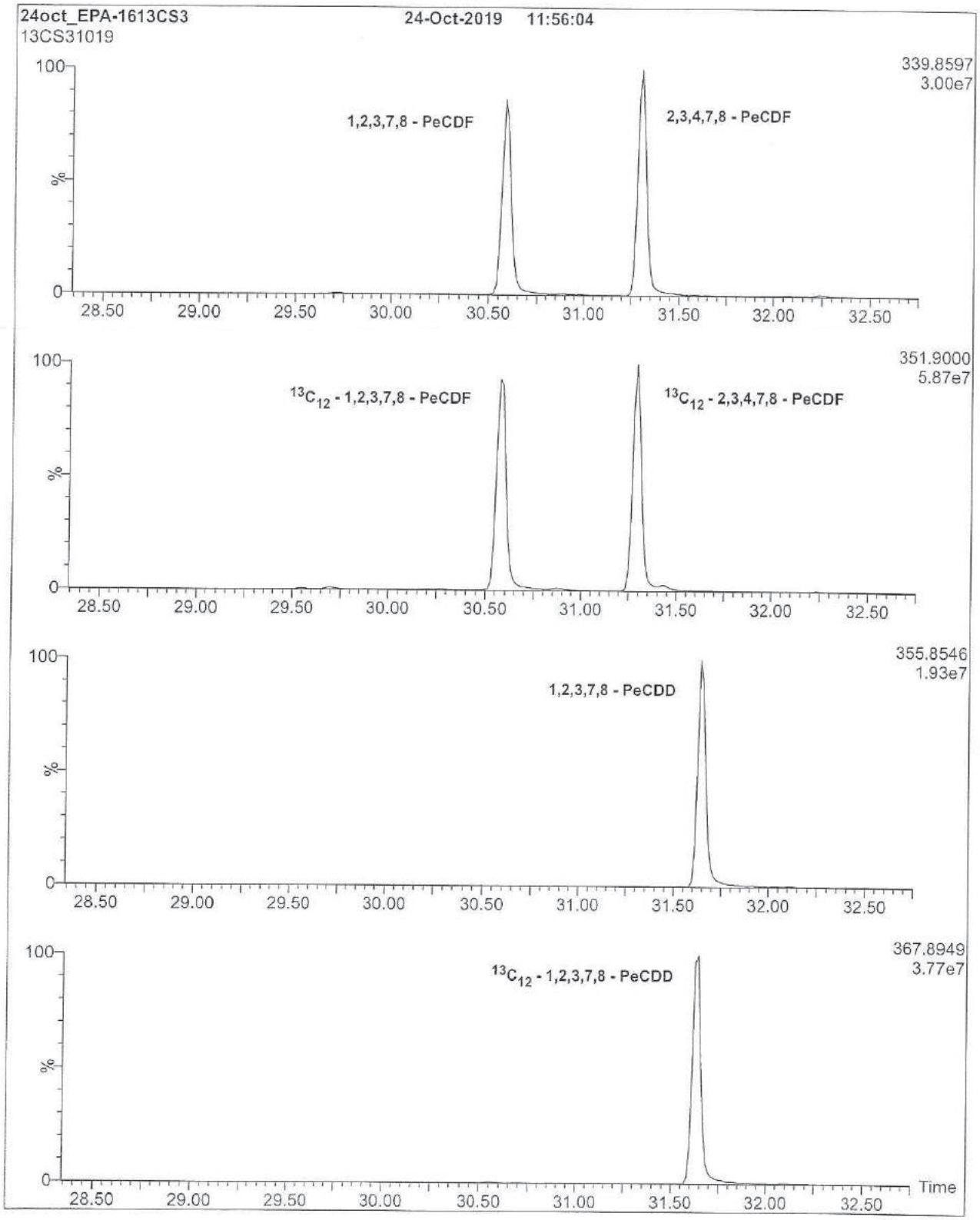


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

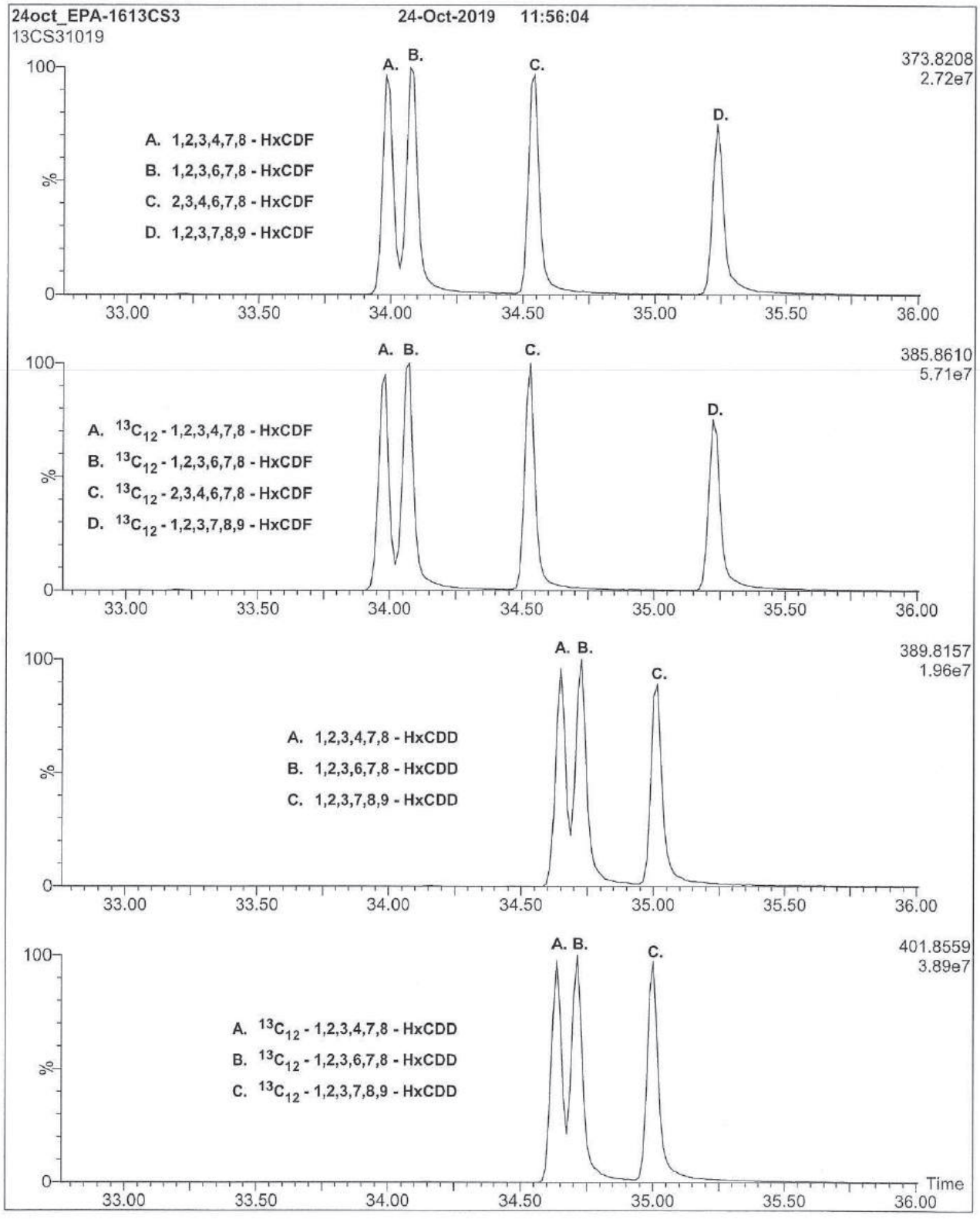


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

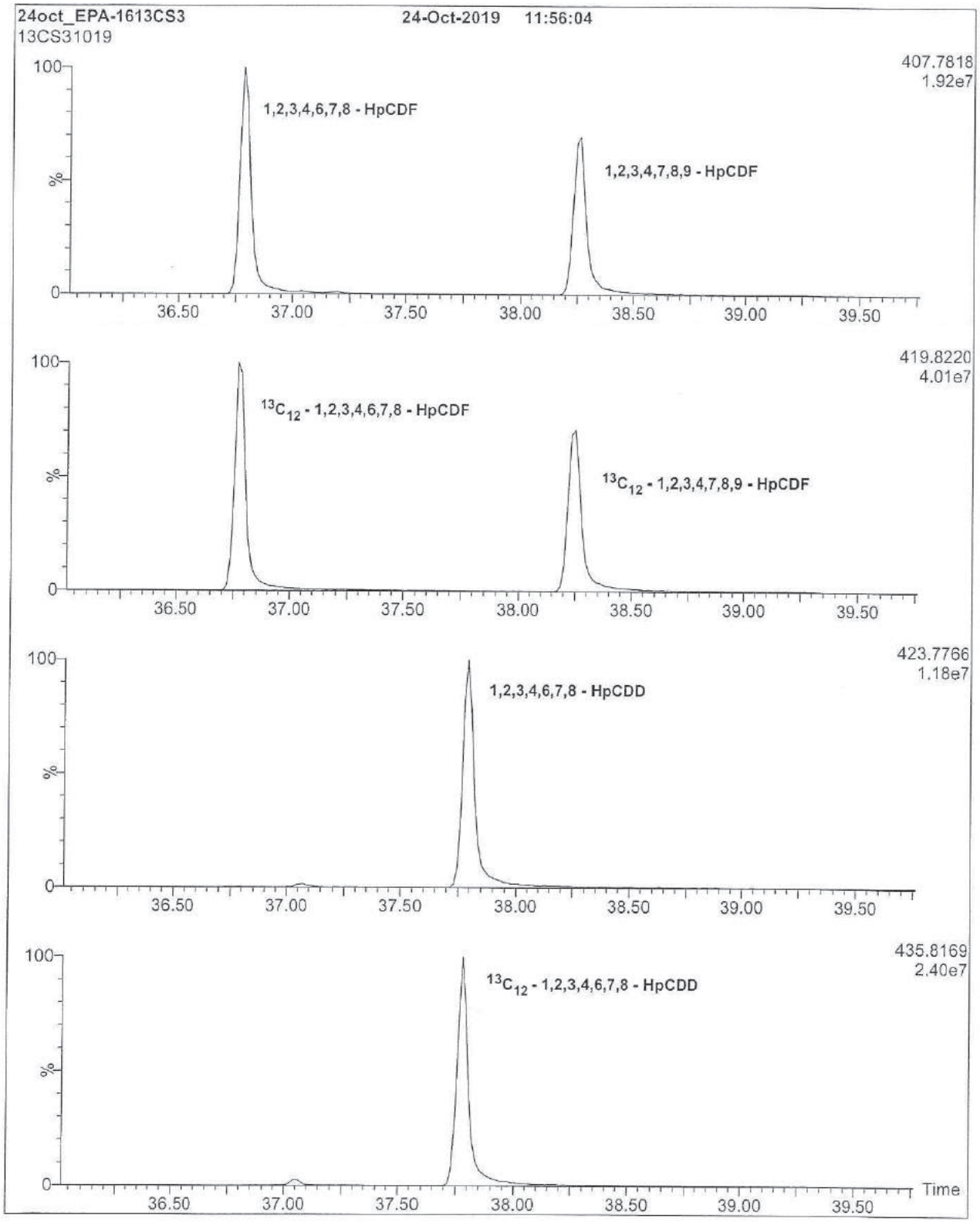
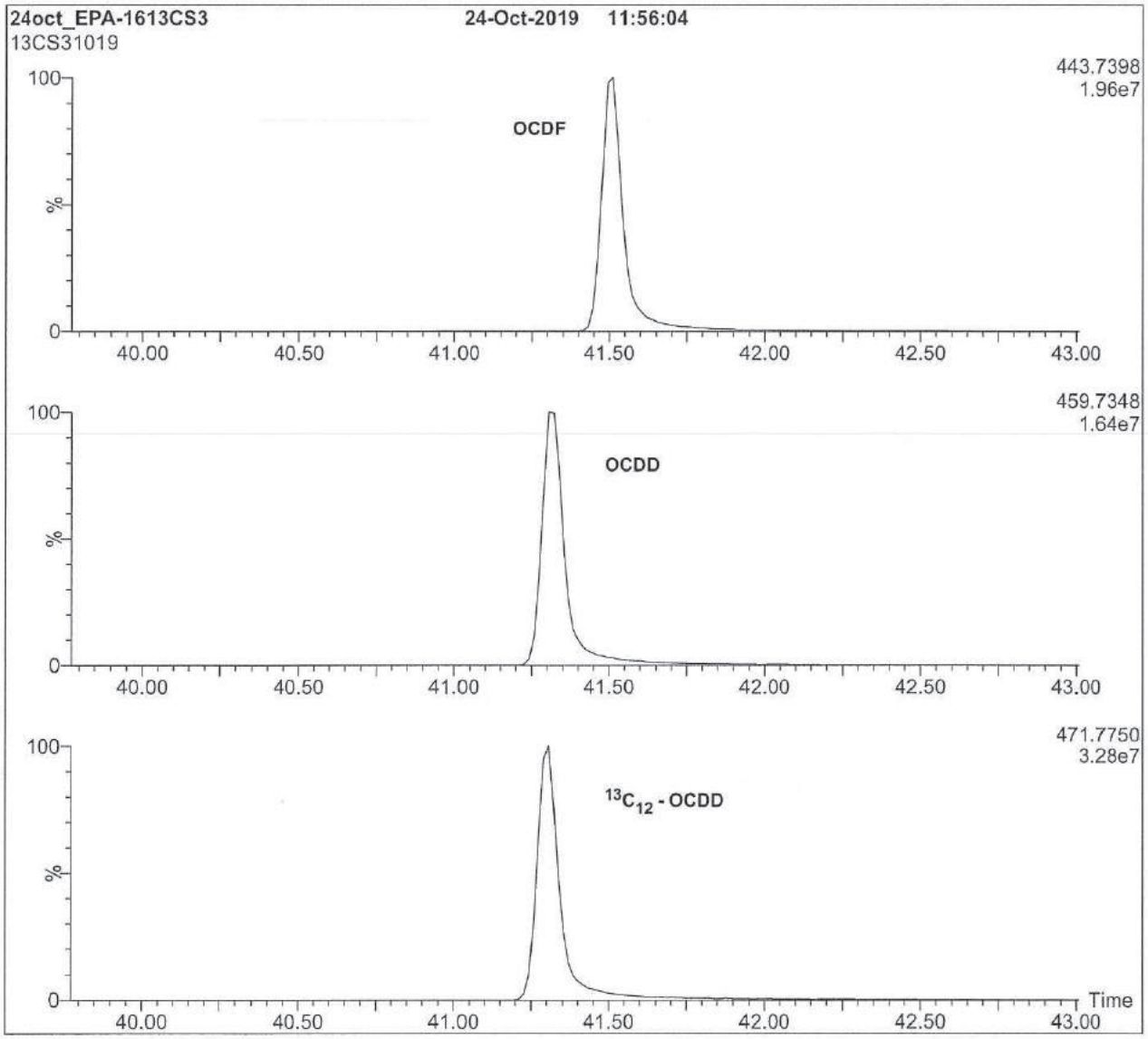


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow: Constant at 1 ml/min
Injector: 280 °C (Splitless Injection)
Ionization: EI+
Detector: 280 °C
SIR at 10,000 mass resolving power

Oven: 150 °C (1 min)
12 °C/min to 200 °C
3 °C/min to 235 °C
235 °C (8 min)
8 °C/min to 310 °C
310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613CVS

U.S. EPA Method 1613 Calibration and Verification Solutions
plus Supplemental Calibration Solutions EPA-1613CSL & EPA-1613CS0.5

PRODUCT CODES:	EPA-1613CVS	**LOT NUMBERS:**	(see below)
	EPA-1613CS1		13CS11019 I005456
	EPA-1613CS2		13CS21019 I005457
	EPA-1613CS3		13CS31019
	EPA-1613CS4		13CS41019 I005458
	EPA-1613CS5		13CS51019 I005459

Note: EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to this calibration set that must be ordered separately.

EPA-1613CS0.5	13CS0.51019
EPA-1613CSL	13CSL1019

SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/22/2019
LAST TESTED: (mm/dd/yyyy)	10/24/2019
EXPIRY DATE: (mm/dd/yyyy)	10/24/2026 I005460
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

DESCRIPTION:

EPA-1613CVS is a series of 5 calibration solutions containing native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$ and $^{37}Cl_4$) chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components of each solution, and their concentrations, are given in Table A.

They were designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B). They are to be used as received.

EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to EPA-1613CVS. Neither is required by the method, but either or both can be used to extend the calibration to lower levels.

The individual native PCDDs and PCDFs all have chemical purities of >98%. The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-Tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Table B: 5-point HRGC/HRMS Calibration and RRF Summary
Table C: 7-point HRGC/HRMS Calibration and RRF Summary
Figure 1: HRGC/HRMS Data for EPA-1613CS3 (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 3 for further details.

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a series of standards for the identification and quantification of specific chemical compounds.

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned values, and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

Table A: EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); Components and Concentrations (ng/ml, ± 5% in nonane/toluene)

Compound	Concentration (ng/ml)						
Native PCDDs and PCDFs:	**CS1**	**CS2**	**CS3**	**CS4**	**CS5**	**CSL**	**CS0.5**
2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
2,3,7,8-TCDF	0.5	2	10	40	200	0.1	0.25
1,2,3,7,8-PeCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8,9-HpCDF	2.5	10	50	200	1000	0.5	1.25
OCDD	5.0	20	100	400	2000	1.0	2.5
OCDF	5.0	20	100	400	2000	1.0	2.5
Labelled PCDDs and PCDFs:							
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	200
Cleanup Standard:							
$^{37}Cl_4$-2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
Internal Standards:							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	100
Percent toluene (v/v)	3.6%	3.7%	4.2%	6.1%	16.2%	3.6%	3.6%

Certified By: _____ Date: 10/25/2019 (mm/dd/yyyy)

B.G. Chittim, General Manager

Table B: **EPA-1613CVS; 5-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard				
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5
2,3,7,8-TCDF	0.93	0.013	1.4	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.015	1.6	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.04	0.019	1.8	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.035	3.7	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.93	0.013	1.4	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.96	0.022	2.3	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.89	0.021	2.4	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.91	0.011	1.2	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.010	1.1	0.90	0.90	0.92	0.91	0.92
OCDF	1.19	0.056	4.7	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.05	0.023	2.2	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.97	0.018	1.9	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	1.00	0.019	1.9	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.98	0.032	3.2	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.97	0.016	1.6	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.025	2.5	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.013	1.3	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.57	0.047	3.0	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.21	0.078	6.5	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.17	0.081	6.9	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.020	1.5	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.51	0.034	2.2	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.38	0.012	0.9	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.014	1.2	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.033	2.5	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.08	0.046	4.3	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.13	0.036	3.2	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.79	0.047	5.9	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.027	3.1	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.04	0.010	1.0	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.017	2.1	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.74	0.055	7.4	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.026	2.6	0.95	0.94	0.99	0.99	0.99

Table C: EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); 7-point HRGC/HRMS Calibration and RRF Summary

Calibration RRF Summary				Calibration Standard						
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CSL	CS0.5	CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5	RRF#6	RRF#7
2,3,7,8-TCDF	0.92	0.045	4.8	0.96	0.83	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.013	1.4	0.94	0.92	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.02	0.058	5.7	0.90	1.00	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.029	3.0	0.96	0.97	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.92	0.030	3.3	0.90	0.86	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.94	0.047	5.0	0.87	0.89	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.88	0.029	3.3	0.83	0.88	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.90	0.033	3.7	0.83	0.93	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.018	1.9	0.89	0.94	0.90	0.90	0.92	0.91	0.92
OCDF	1.18	0.052	4.4	1.15	1.14	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.03	0.051	5.0	1.03	0.92	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.95	0.042	4.4	0.87	0.98	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	0.97	0.066	6.8	0.83	0.98	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.96	0.044	4.5	0.90	0.92	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.94	0.054	5.7	0.83	0.92	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.033	3.3	0.95	1.03	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.023	2.3	0.95	1.00	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.56	0.042	2.7	1.52	1.54	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.20	0.066	5.5	1.18	1.17	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.16	0.071	6.1	1.12	1.13	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.018	1.4	1.32	1.35	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.53	0.045	3.0	1.60	1.56	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.39	0.019	1.4	1.39	1.42	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.012	1.0	1.19	1.19	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.028	2.2	1.30	1.33	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.07	0.045	4.2	1.02	1.08	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.12	0.033	3.0	1.09	1.11	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.78	0.040	5.1	0.75	0.78	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.025	2.9	0.86	0.90	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.05	0.015	1.5	1.08	1.06	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.016	2.0	0.79	0.81	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.73	0.046	6.3	0.71	0.72	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.053	5.4	0.90	1.07	0.95	0.94	0.99	0.99	0.99

Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

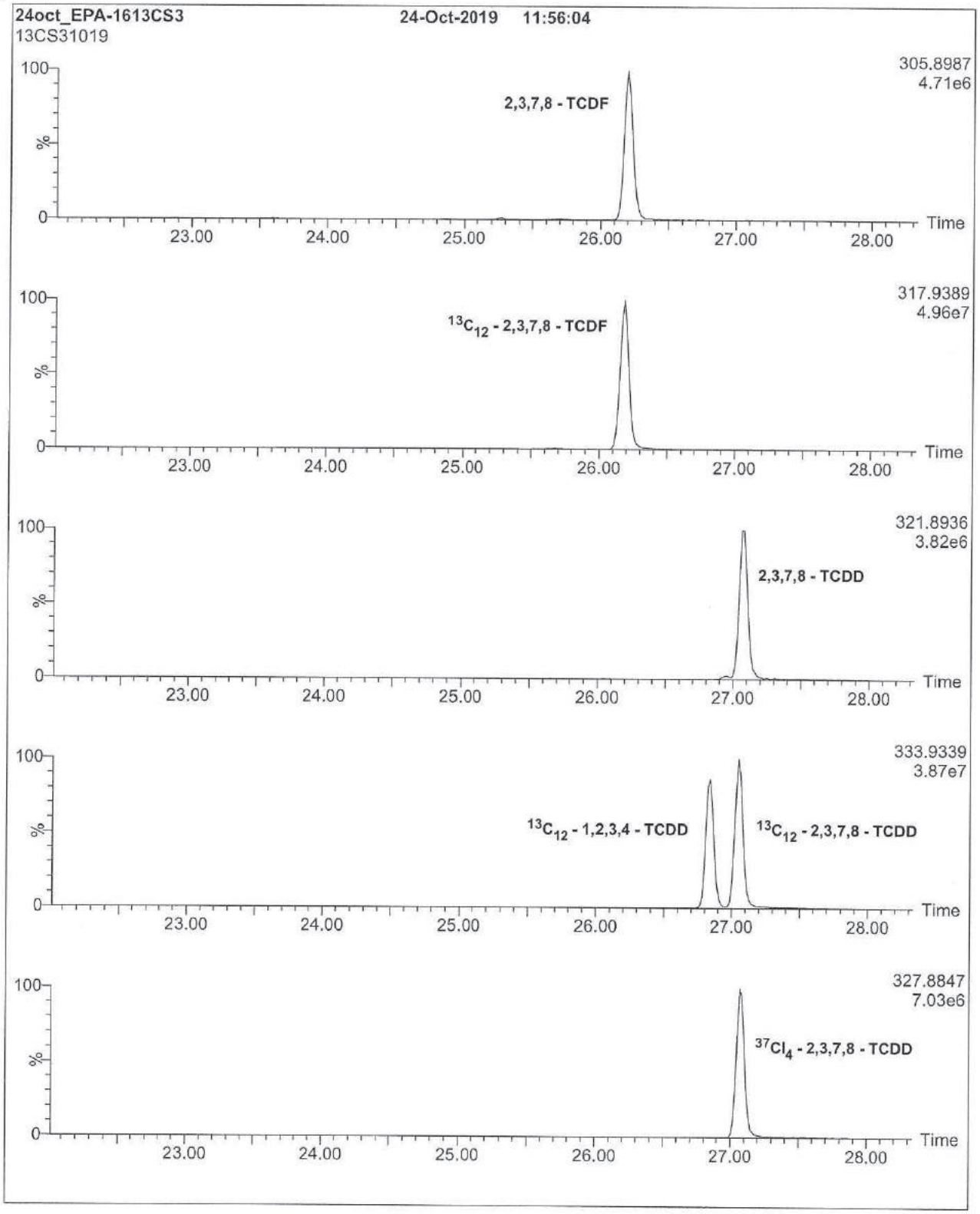


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

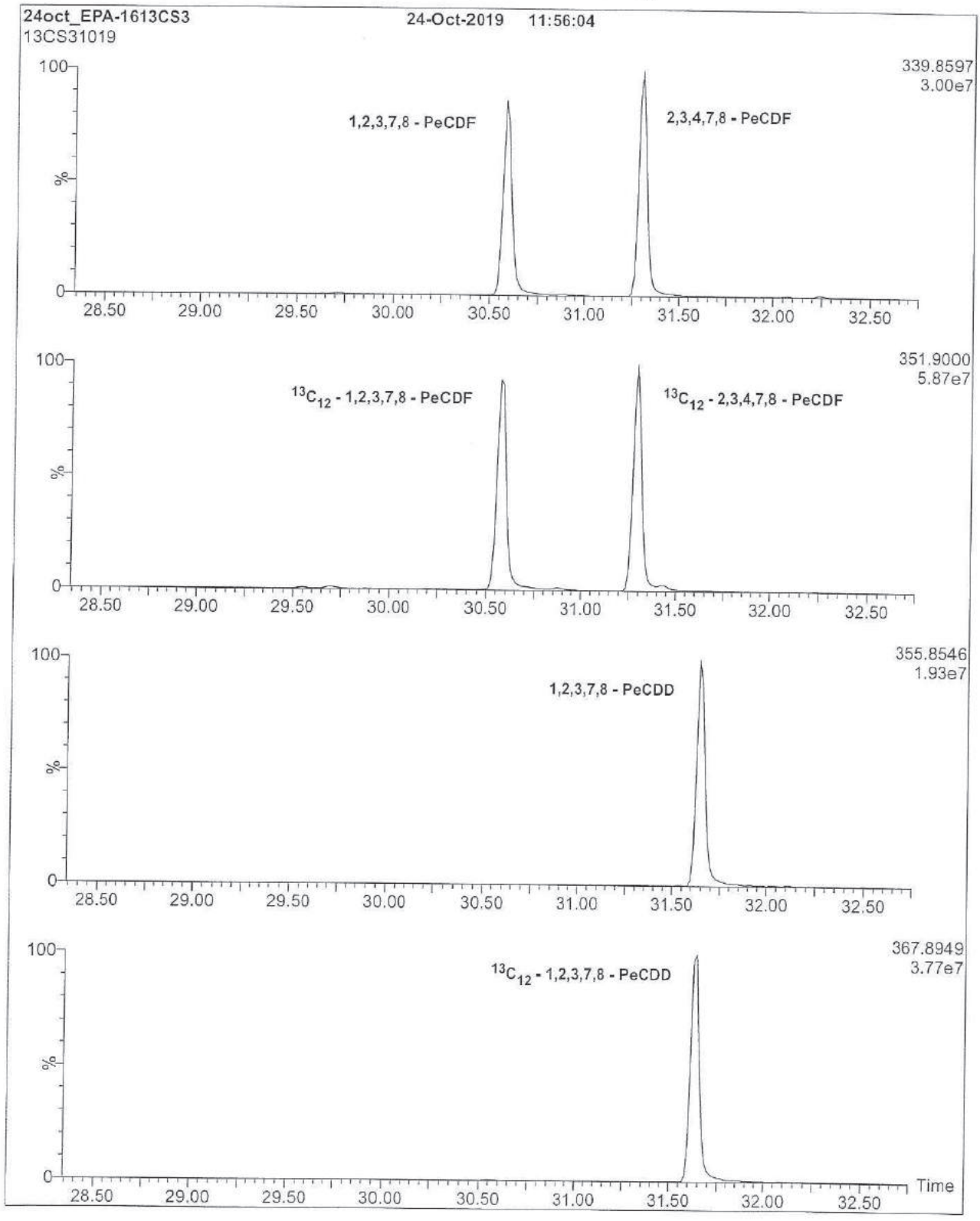


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

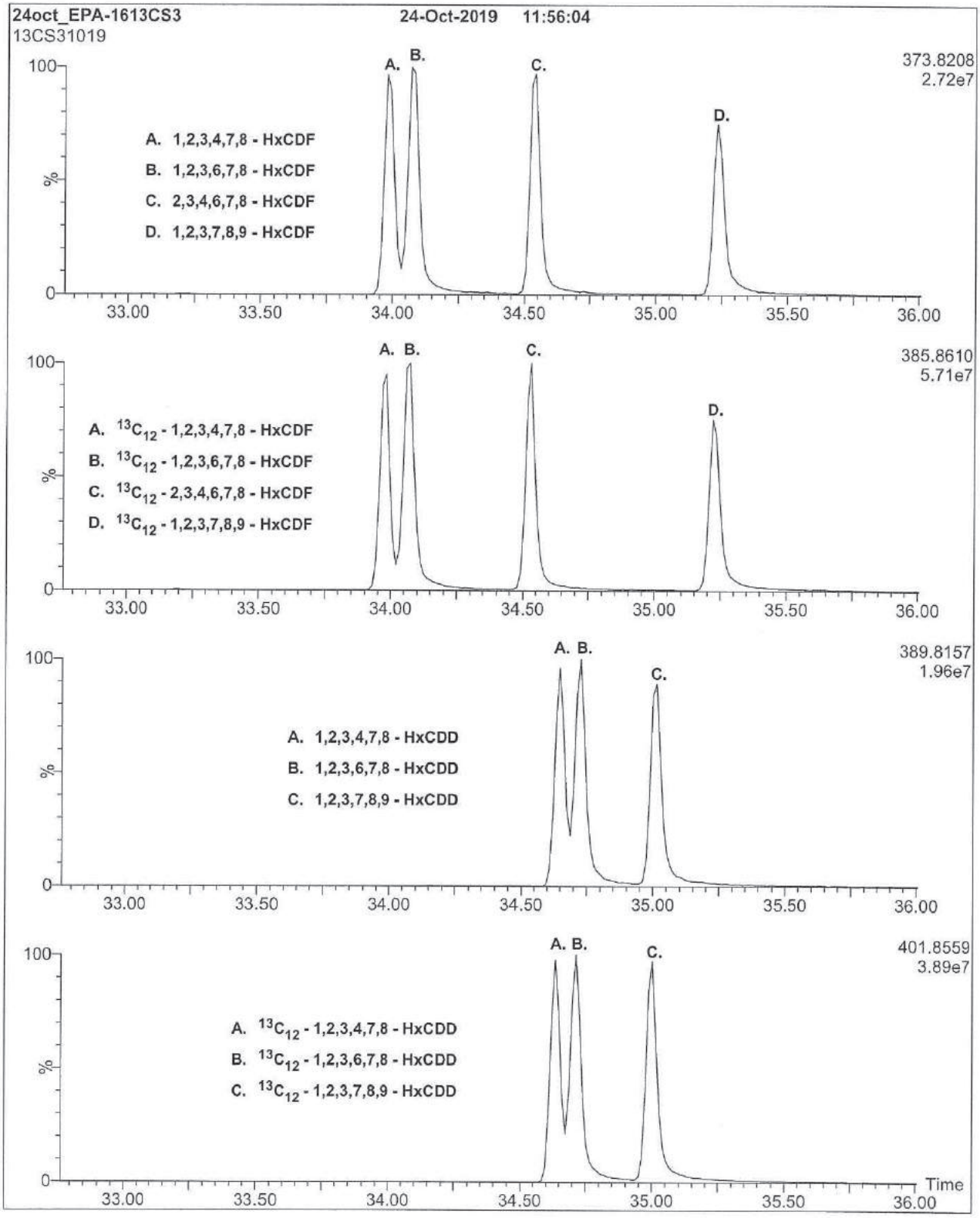


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

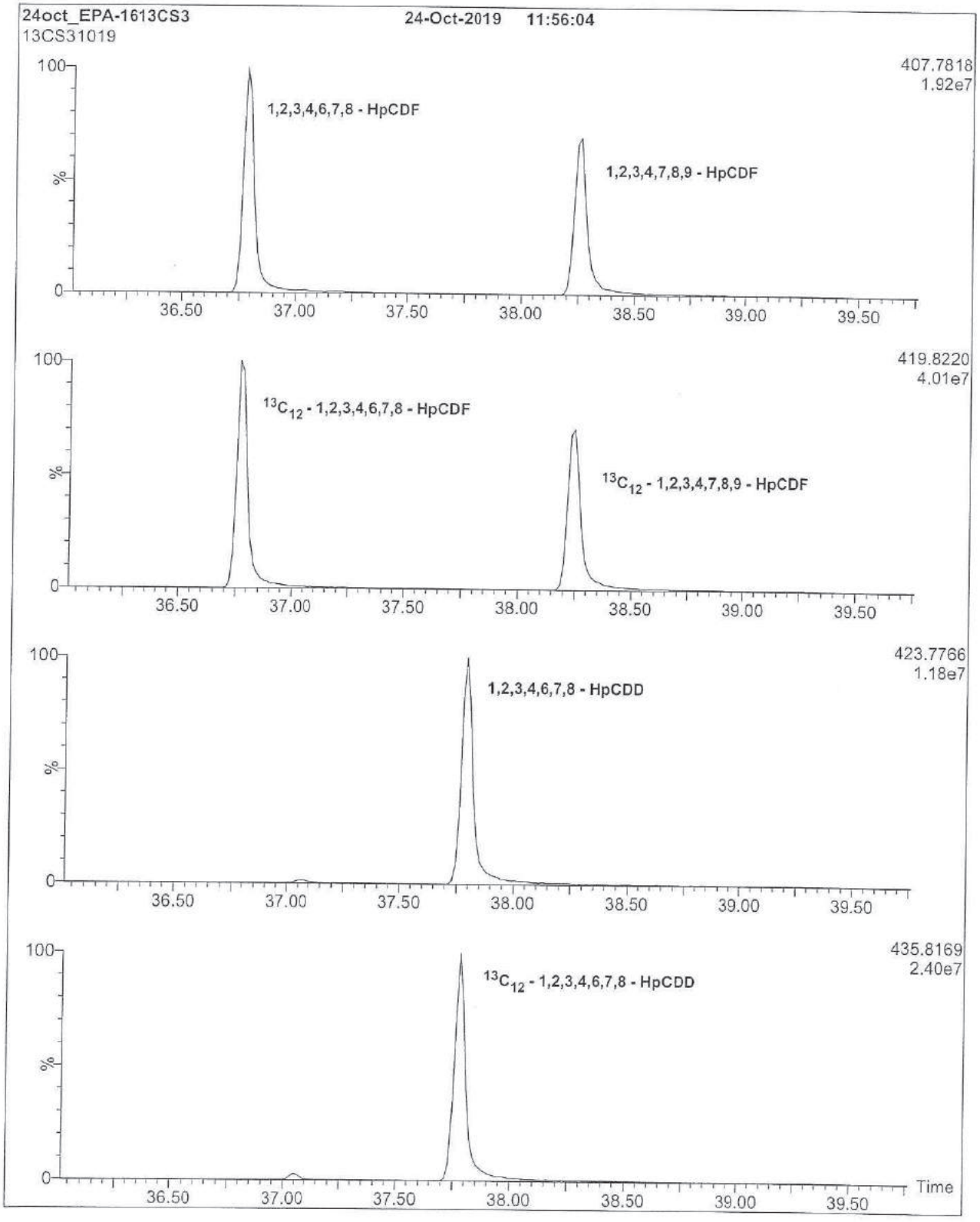
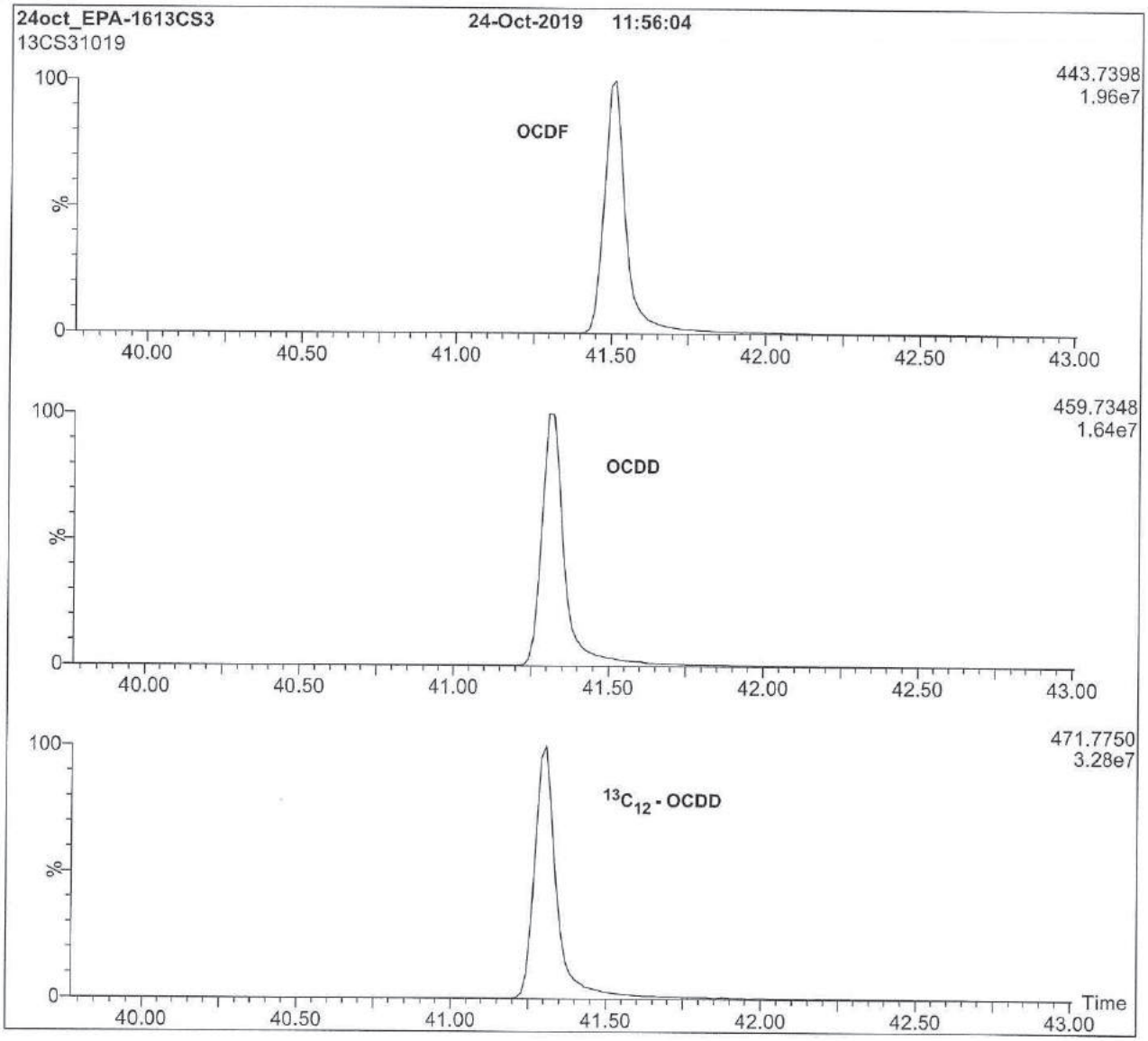


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow: Constant at 1 ml/min
Injector: 280 °C (Splitless Injection)
Ionization: EI+
Detector: 280 °C
SIR at 10,000 mass resolving power

Oven: 150 °C (1 min)
12 °C/min to 200 °C
3 °C/min to 235 °C
235 °C (8 min)
8 °C/min to 310 °C
310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613CVS

U.S. EPA Method 1613 Calibration and Verification Solutions
plus Supplemental Calibration Solutions EPA-1613CSL & EPA-1613CS0.5

PRODUCT CODES:	EPA-1613CVS	**LOT NUMBERS:**	(see below)
	EPA-1613CS1		13CS11019 I005456
	EPA-1613CS2		13CS21019 I005457
	EPA-1613CS3		13CS31019
	EPA-1613CS4		13CS41019 I005458
	EPA-1613CS5		13CS51019 I005459

Note: EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to this calibration set that must be ordered separately.

EPA-1613CS0.5	13CS0.51019
EPA-1613CSL	13CSL1019

SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/22/2019
LAST TESTED: (mm/dd/yyyy)	10/24/2019
EXPIRY DATE: (mm/dd/yyyy)	10/24/2026 I005460
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

DESCRIPTION:

EPA-1613CVS is a series of 5 calibration solutions containing native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$ and $^{37}Cl_4$) chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components of each solution, and their concentrations, are given in Table A.

They were designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B). They are to be used as received.

EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to EPA-1613CVS. Neither is required by the method, but either or both can be used to extend the calibration to lower levels.

The individual native PCDDs and PCDFs all have chemical purities of >98%. The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-Tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Table B: 5-point HRGC/HRMS Calibration and RRF Summary
Table C: 7-point HRGC/HRMS Calibration and RRF Summary
Figure 1: HRGC/HRMS Data for EPA-1613CS3 (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 3 for further details.

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a series of standards for the identification and quantification of specific chemical compounds.

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned values, and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO17034 REFERENCE MATERIAL PRODUCER

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

Table A: EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); Components and Concentrations (ng/ml, ± 5% in nonane/toluene)

Compound	Concentration (ng/ml)						
Native PCDDs and PCDFs:	CS1	CS2	CS3	CS4	CS5	CSL	CS0.5
2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
2,3,7,8-TCDF	0.5	2	10	40	200	0.1	0.25
1,2,3,7,8-PeCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8,9-HpCDF	2.5	10	50	200	1000	0.5	1.25
OCDD	5.0	20	100	400	2000	1.0	2.5
OCDF	5.0	20	100	400	2000	1.0	2.5
Labelled PCDDs and PCDFs:							
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	200
Cleanup Standard:							
$^{37}Cl_4$-2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
Internal Standards:							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	100
Percent toluene (v/v)	3.6%	3.7%	4.2%	6.1%	16.2%	3.6%	3.6%

Certified By: _____ Date: 10/25/2019 (mm/dd/yyyy)

B.G. Chittim, General Manager

Table B: **EPA-1613CVS; 5-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard				
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5
2,3,7,8-TCDF	0.93	0.013	1.4	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.015	1.6	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.04	0.019	1.8	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.035	3.7	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.93	0.013	1.4	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.96	0.022	2.3	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.89	0.021	2.4	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.91	0.011	1.2	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.010	1.1	0.90	0.90	0.92	0.91	0.92
OCDF	1.19	0.056	4.7	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.05	0.023	2.2	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.97	0.018	1.9	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	1.00	0.019	1.9	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.98	0.032	3.2	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.97	0.016	1.6	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.025	2.5	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.013	1.3	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.57	0.047	3.0	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.21	0.078	6.5	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.17	0.081	6.9	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.020	1.5	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.51	0.034	2.2	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.38	0.012	0.9	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.014	1.2	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.033	2.5	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.08	0.046	4.3	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.13	0.036	3.2	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.79	0.047	5.9	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.027	3.1	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.04	0.010	1.0	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.017	2.1	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.74	0.055	7.4	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.026	2.6	0.95	0.94	0.99	0.99	0.99

Table C: **EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); 7-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard						
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CSL	CS0.5	CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5	RRF#6	RRF#7
2,3,7,8-TCDF	0.92	0.045	4.8	0.96	0.83	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.013	1.4	0.94	0.92	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.02	0.058	5.7	0.90	1.00	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.029	3.0	0.96	0.97	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.92	0.030	3.3	0.90	0.86	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.94	0.047	5.0	0.87	0.89	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.88	0.029	3.3	0.83	0.88	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.90	0.033	3.7	0.83	0.93	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.018	1.9	0.89	0.94	0.90	0.90	0.92	0.91	0.92
OCDF	1.18	0.052	4.4	1.15	1.14	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.03	0.051	5.0	1.03	0.92	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.95	0.042	4.4	0.87	0.98	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	0.97	0.066	6.8	0.83	0.98	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.96	0.044	4.5	0.90	0.92	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.94	0.054	5.7	0.83	0.92	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.033	3.3	0.95	1.03	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.023	2.3	0.95	1.00	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.56	0.042	2.7	1.52	1.54	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.20	0.066	5.5	1.18	1.17	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.16	0.071	6.1	1.12	1.13	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.018	1.4	1.32	1.35	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.53	0.045	3.0	1.60	1.56	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.39	0.019	1.4	1.39	1.42	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.012	1.0	1.19	1.19	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.028	2.2	1.30	1.33	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.07	0.045	4.2	1.02	1.08	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.12	0.033	3.0	1.09	1.11	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.78	0.040	5.1	0.75	0.78	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.025	2.9	0.86	0.90	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.05	0.015	1.5	1.08	1.06	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.016	2.0	0.79	0.81	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.73	0.046	6.3	0.71	0.72	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.053	5.4	0.90	1.07	0.95	0.94	0.99	0.99	0.99

Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

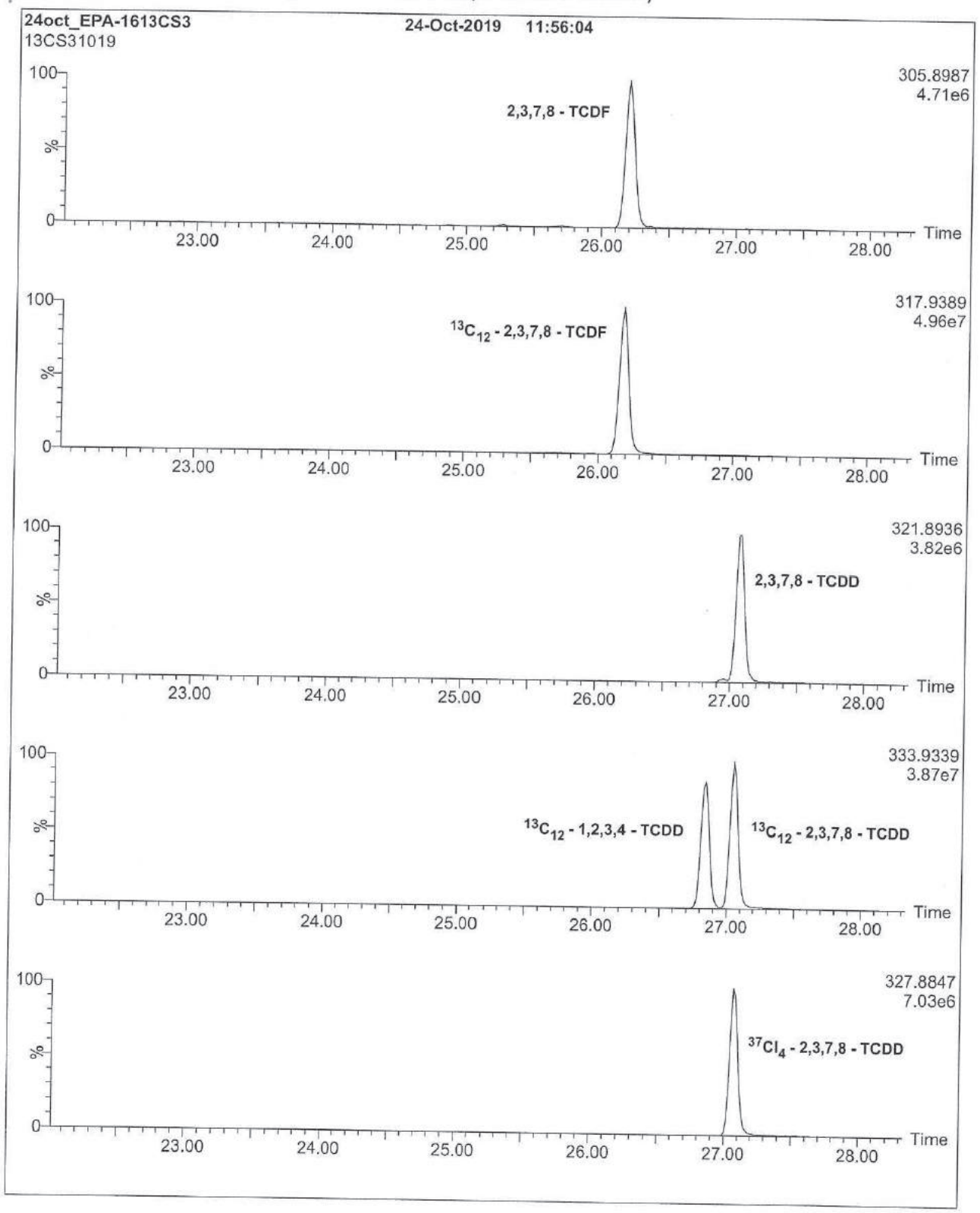


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

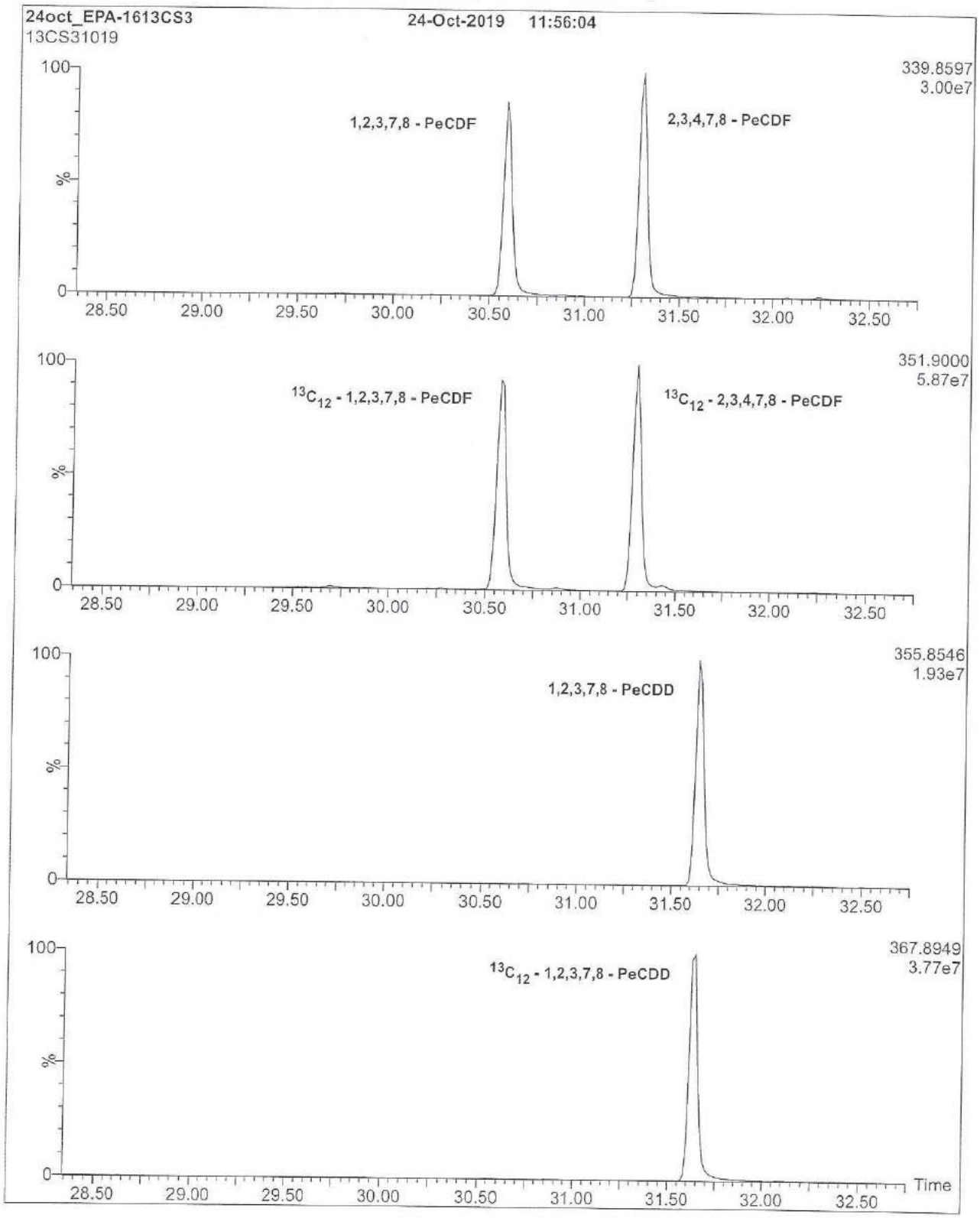


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

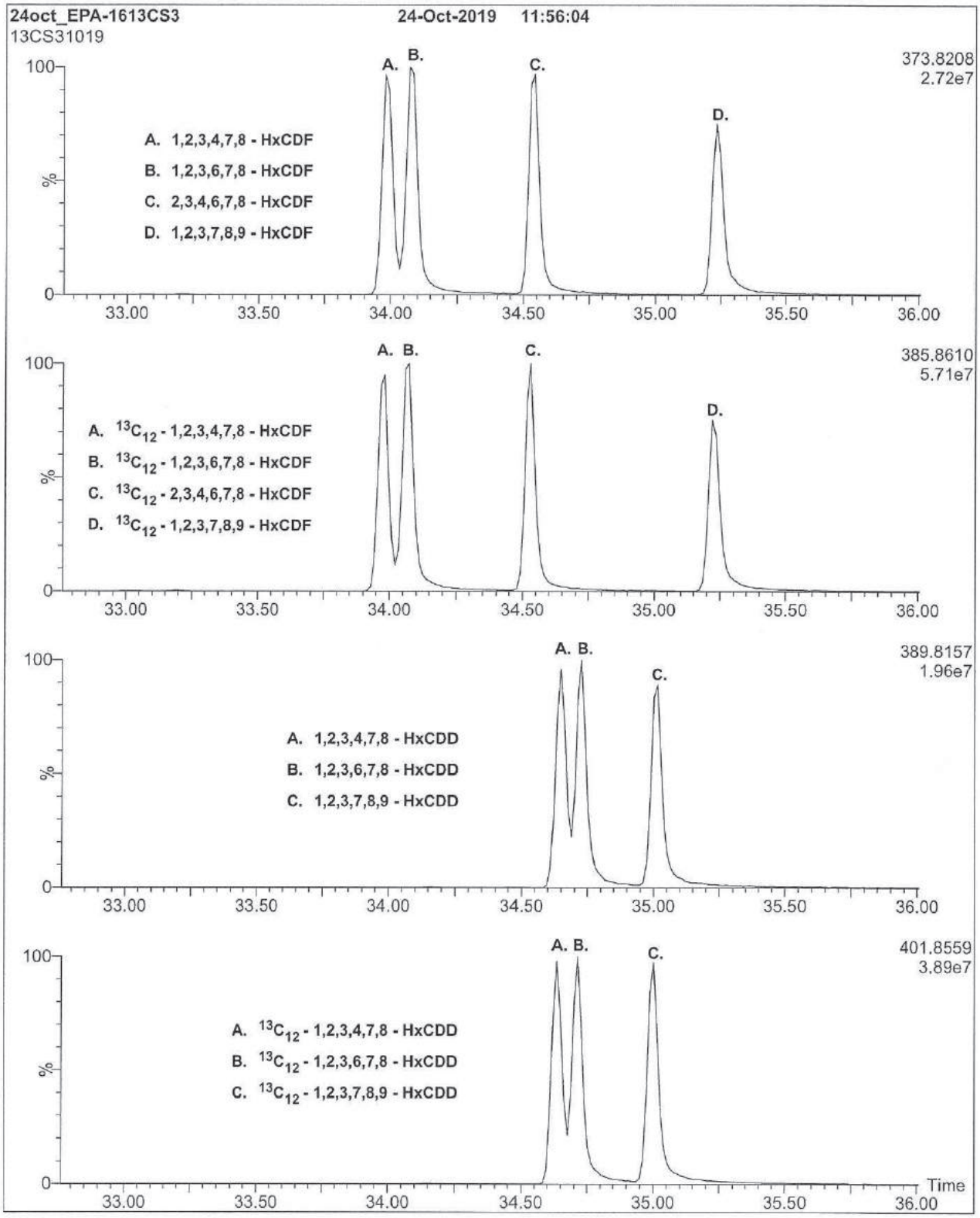


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

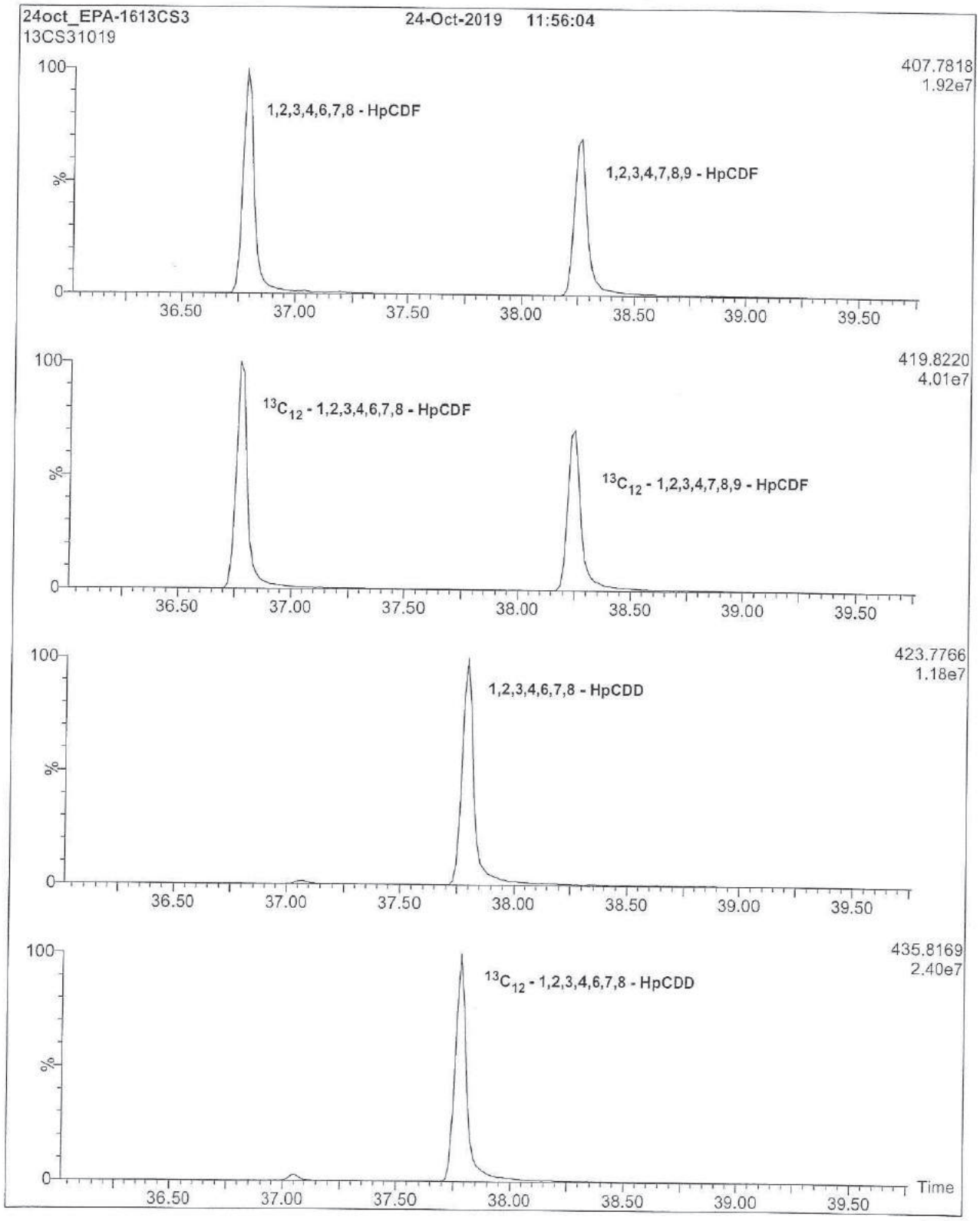
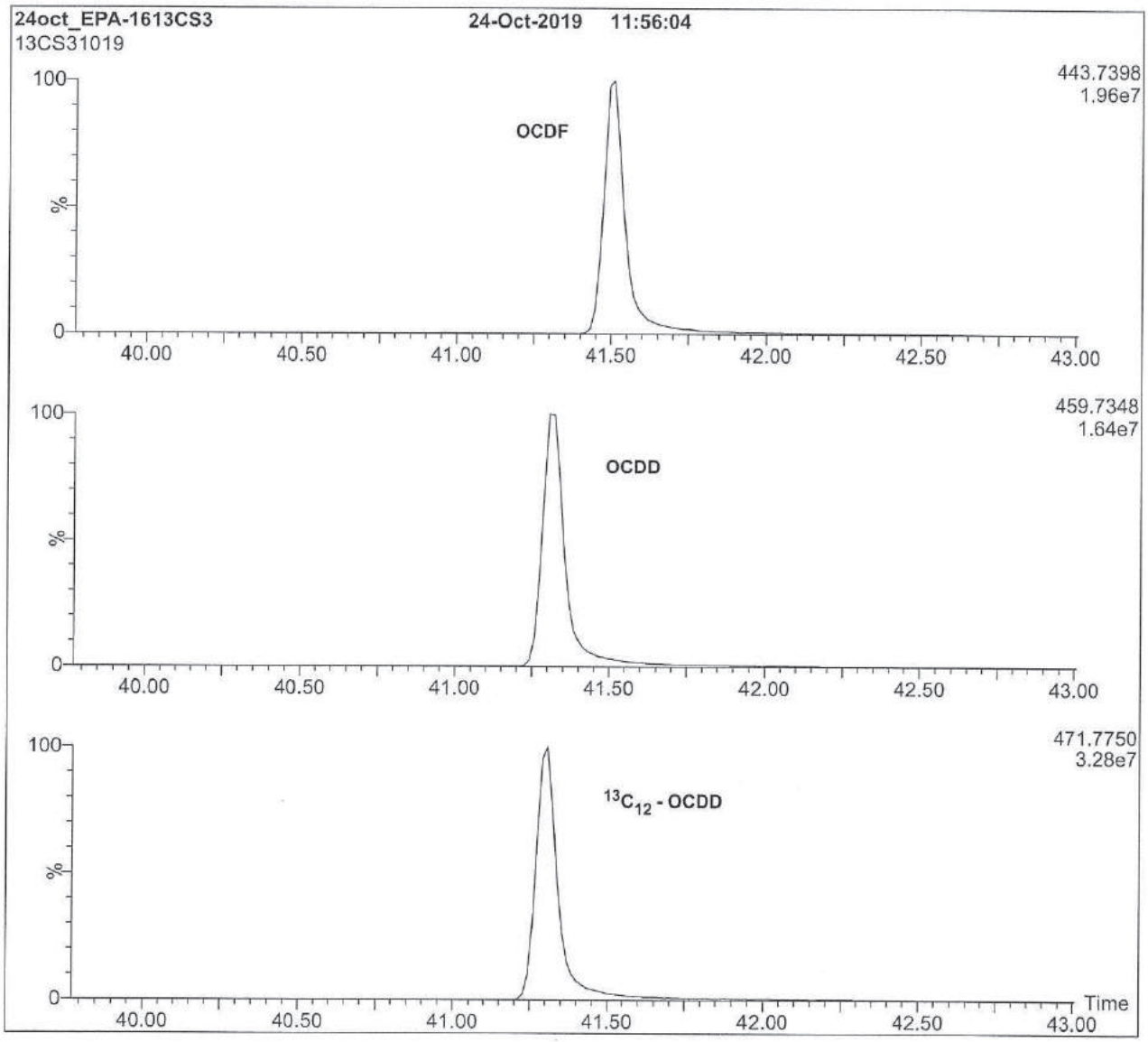


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow: Constant at 1 ml/min
Injector: 280 °C (Splitless Injection)
Ionization: EI+
Detector: 280 °C
SIR at 10,000 mass resolving power

Oven: 150 °C (1 min)
12 °C/min to 200 °C
3 °C/min to 235 °C
235 °C (8 min)
8 °C/min to 310 °C
310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613CVS
U.S. EPA Method 1613 Calibration and Verification Solutions
plus Supplemental Calibration Solutions EPA-1613CSL & EPA-1613CS0.5

PRODUCT CODES:	EPA-1613CVS	**LOT NUMBERS:**	(see below)
	EPA-1613CS1		13CS11019 I005456
	EPA-1613CS2		13CS21019 I005457
	EPA-1613CS3		13CS31019
	EPA-1613CS4		13CS41019 I005458
	EPA-1613CS5		13CS51019 I005459

Note: EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to this calibration set that must be ordered separately.

EPA-1613CS0.5	13CS0.51019
EPA-1613CSL	13CSL1019

SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/22/2019
LAST TESTED: (mm/dd/yyyy)	10/24/2019
EXPIRY DATE: (mm/dd/yyyy)	10/24/2026 I005460
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

DESCRIPTION:

EPA-1613CVS is a series of 5 calibration solutions containing native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$ and $^{37}Cl_4$) chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components of each solution, and their concentrations, are given in Table A.

They were designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B). They are to be used as received.

EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to EPA-1613CVS. Neither is required by the method, but either or both can be used to extend the calibration to lower levels.

The individual native PCDDs and PCDFs all have chemical purities of >98%. The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-Tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Table B: 5-point HRGC/HRMS Calibration and RRF Summary
Table C: 7-point HRGC/HRMS Calibration and RRF Summary
Figure 1: HRGC/HRMS Data for EPA-1613CS3 (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 3 for further details.

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a series of standards for the identification and quantification of specific chemical compounds.

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned values, and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

Table A: EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); Components and Concentrations (ng/ml, ± 5% in nonane/toluene)

Compound	Concentration (ng/ml)						
Native PCDDs and PCDFs:	**CS1**	**CS2**	**CS3**	**CS4**	**CS5**	**CSL**	**CS0.5**
2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
2,3,7,8-TCDF	0.5	2	10	40	200	0.1	0.25
1,2,3,7,8-PeCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8,9-HpCDF	2.5	10	50	200	1000	0.5	1.25
OCDD	5.0	20	100	400	2000	1.0	2.5
OCDF	5.0	20	100	400	2000	1.0	2.5
Labelled PCDDs and PCDFs:							
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	200
Cleanup Standard:							
$^{37}Cl_4$-2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
Internal Standards:							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	100
Percent toluene (v/v)	3.6%	3.7%	4.2%	6.1%	16.2%	3.6%	3.6%

Certified By: _____ Date: 10/25/2019 (mm/dd/yyyy)

B.G. Chittim, General Manager

Table B: **EPA-1613CVS; 5-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard				
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5
2,3,7,8-TCDF	0.93	0.013	1.4	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.015	1.6	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.04	0.019	1.8	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.035	3.7	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.93	0.013	1.4	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.96	0.022	2.3	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.89	0.021	2.4	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.91	0.011	1.2	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.010	1.1	0.90	0.90	0.92	0.91	0.92
OCDF	1.19	0.056	4.7	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.05	0.023	2.2	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.97	0.018	1.9	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	1.00	0.019	1.9	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.98	0.032	3.2	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.97	0.016	1.6	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.025	2.5	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.013	1.3	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.57	0.047	3.0	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.21	0.078	6.5	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.17	0.081	6.9	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.020	1.5	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.51	0.034	2.2	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.38	0.012	0.9	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.014	1.2	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.033	2.5	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.08	0.046	4.3	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.13	0.036	3.2	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.79	0.047	5.9	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.027	3.1	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.04	0.010	1.0	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.017	2.1	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.74	0.055	7.4	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.026	2.6	0.95	0.94	0.99	0.99	0.99

Table C: **EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); 7-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard						
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CSL	CS0.5	CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5	RRF#6	RRF#7
2,3,7,8-TCDF	0.92	0.045	4.8	0.96	0.83	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.013	1.4	0.94	0.92	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.02	0.058	5.7	0.90	1.00	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.029	3.0	0.96	0.97	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.92	0.030	3.3	0.90	0.86	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.94	0.047	5.0	0.87	0.89	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.88	0.029	3.3	0.83	0.88	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.90	0.033	3.7	0.83	0.93	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.018	1.9	0.89	0.94	0.90	0.90	0.92	0.91	0.92
OCDF	1.18	0.052	4.4	1.15	1.14	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.03	0.051	5.0	1.03	0.92	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.95	0.042	4.4	0.87	0.98	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	0.97	0.066	6.8	0.83	0.98	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.96	0.044	4.5	0.90	0.92	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.94	0.054	5.7	0.83	0.92	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.033	3.3	0.95	1.03	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.023	2.3	0.95	1.00	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.56	0.042	2.7	1.52	1.54	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.20	0.066	5.5	1.18	1.17	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.16	0.071	6.1	1.12	1.13	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.018	1.4	1.32	1.35	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.53	0.045	3.0	1.60	1.56	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.39	0.019	1.4	1.39	1.42	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.012	1.0	1.19	1.19	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.028	2.2	1.30	1.33	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.07	0.045	4.2	1.02	1.08	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.12	0.033	3.0	1.09	1.11	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.78	0.040	5.1	0.75	0.78	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.025	2.9	0.86	0.90	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.05	0.015	1.5	1.08	1.06	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.016	2.0	0.79	0.81	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.73	0.046	6.3	0.71	0.72	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.053	5.4	0.90	1.07	0.95	0.94	0.99	0.99	0.99

Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

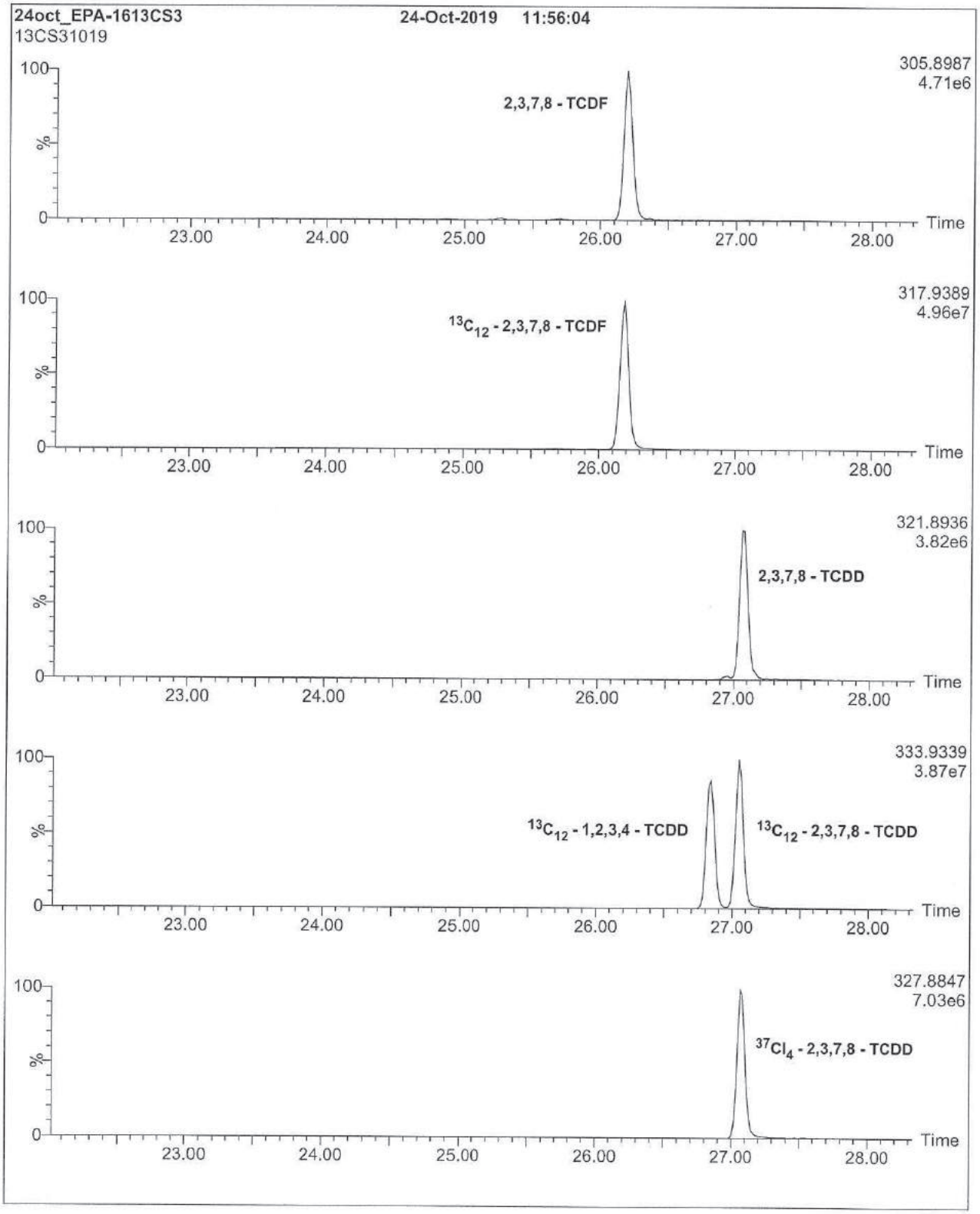


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

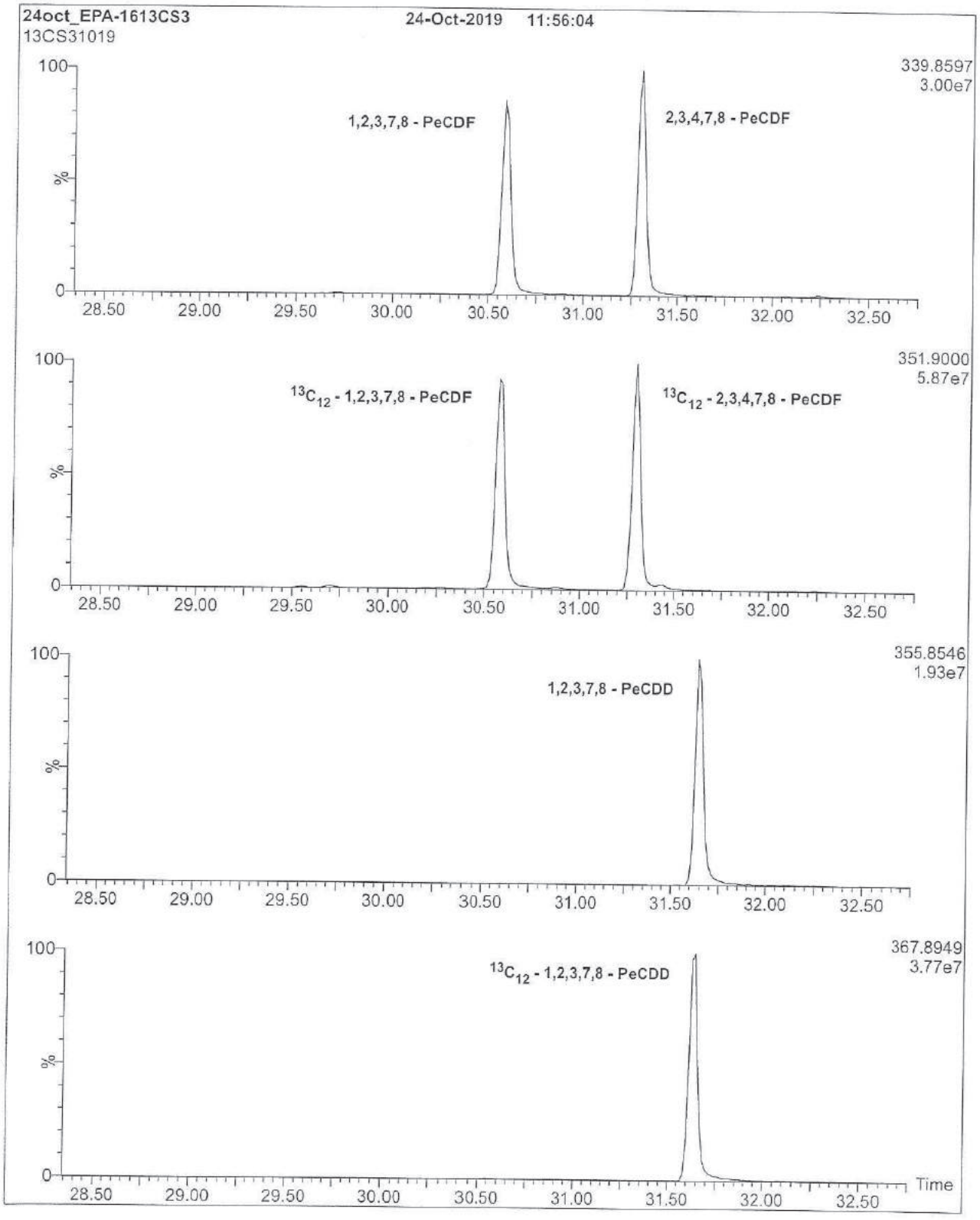


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

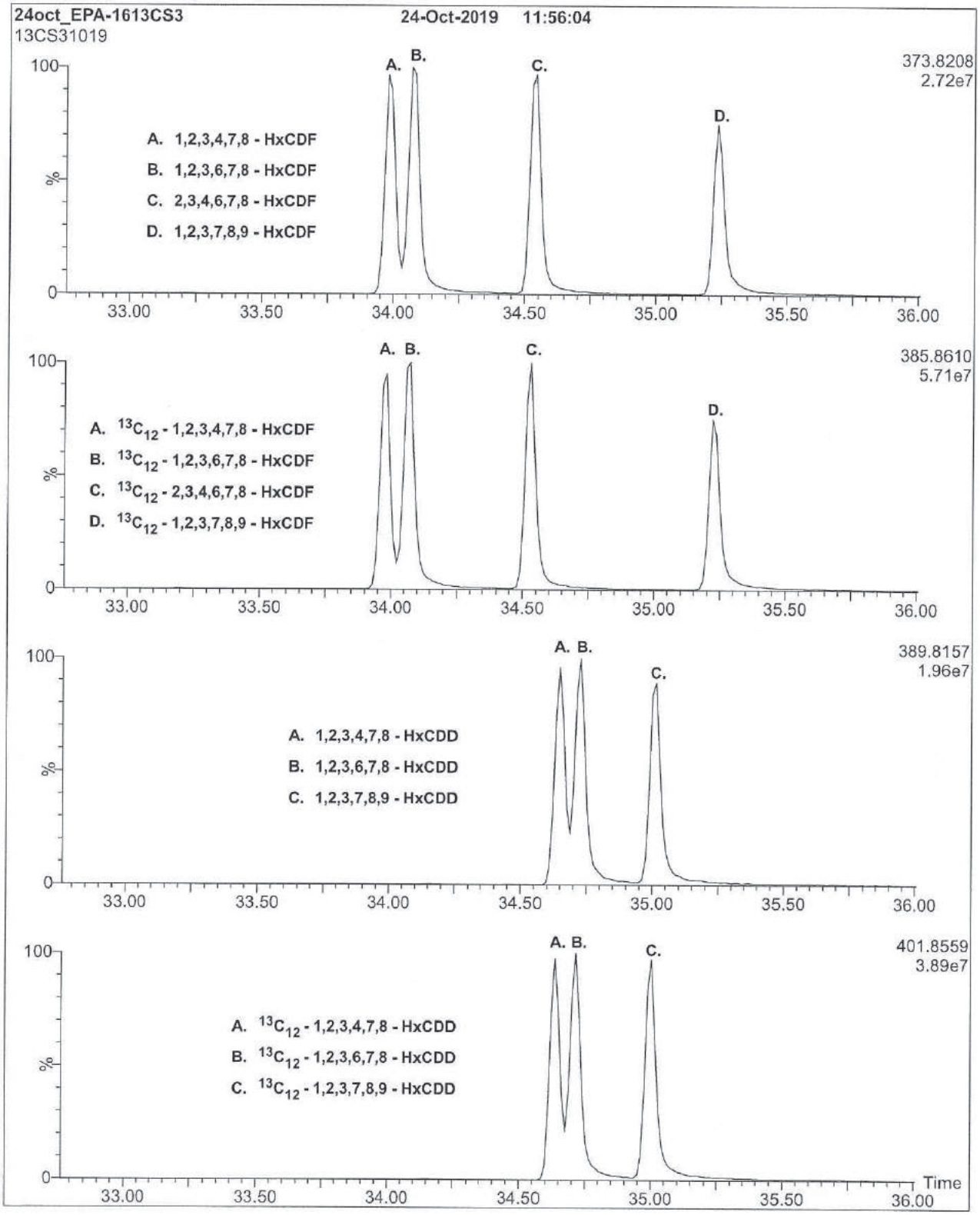


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

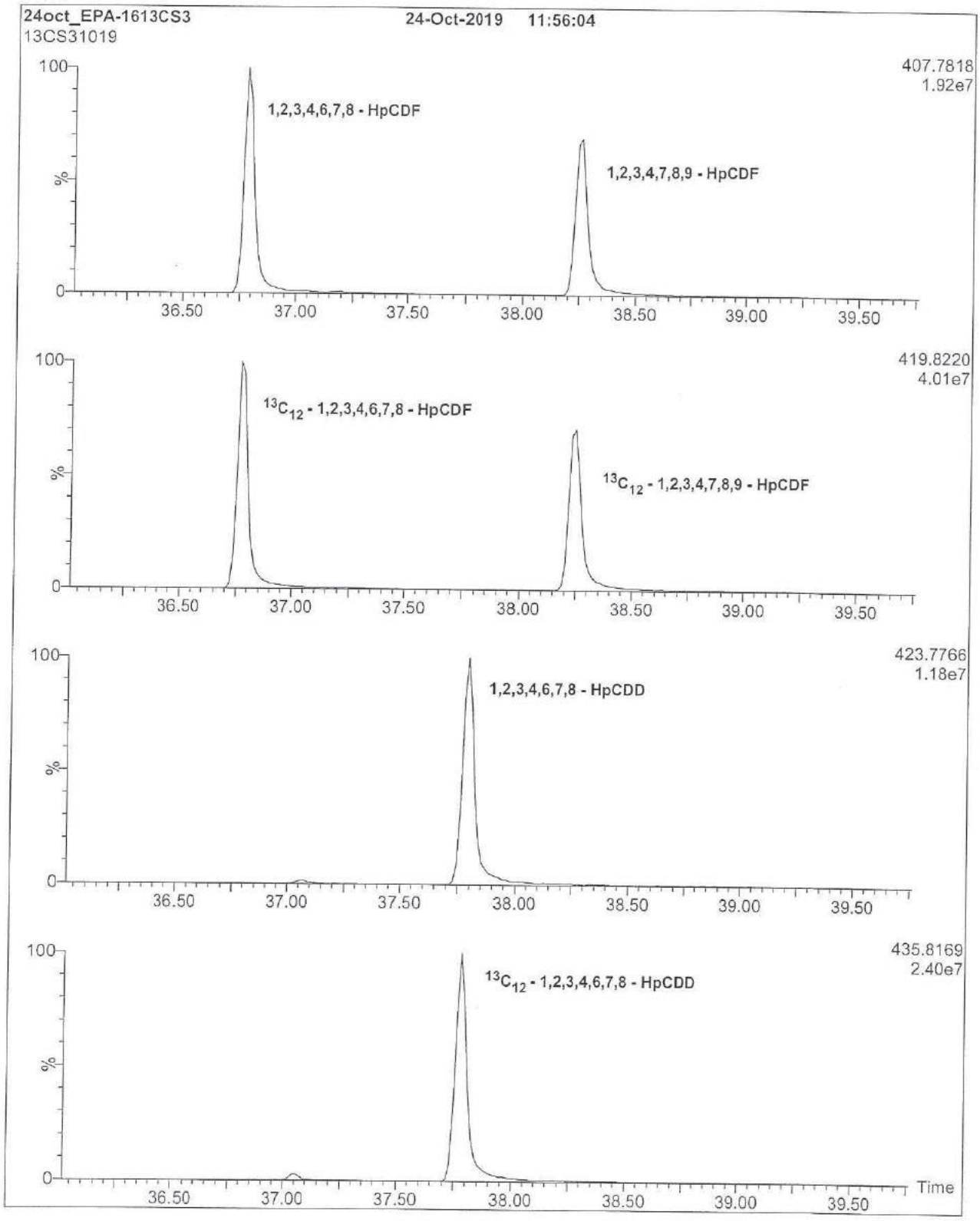
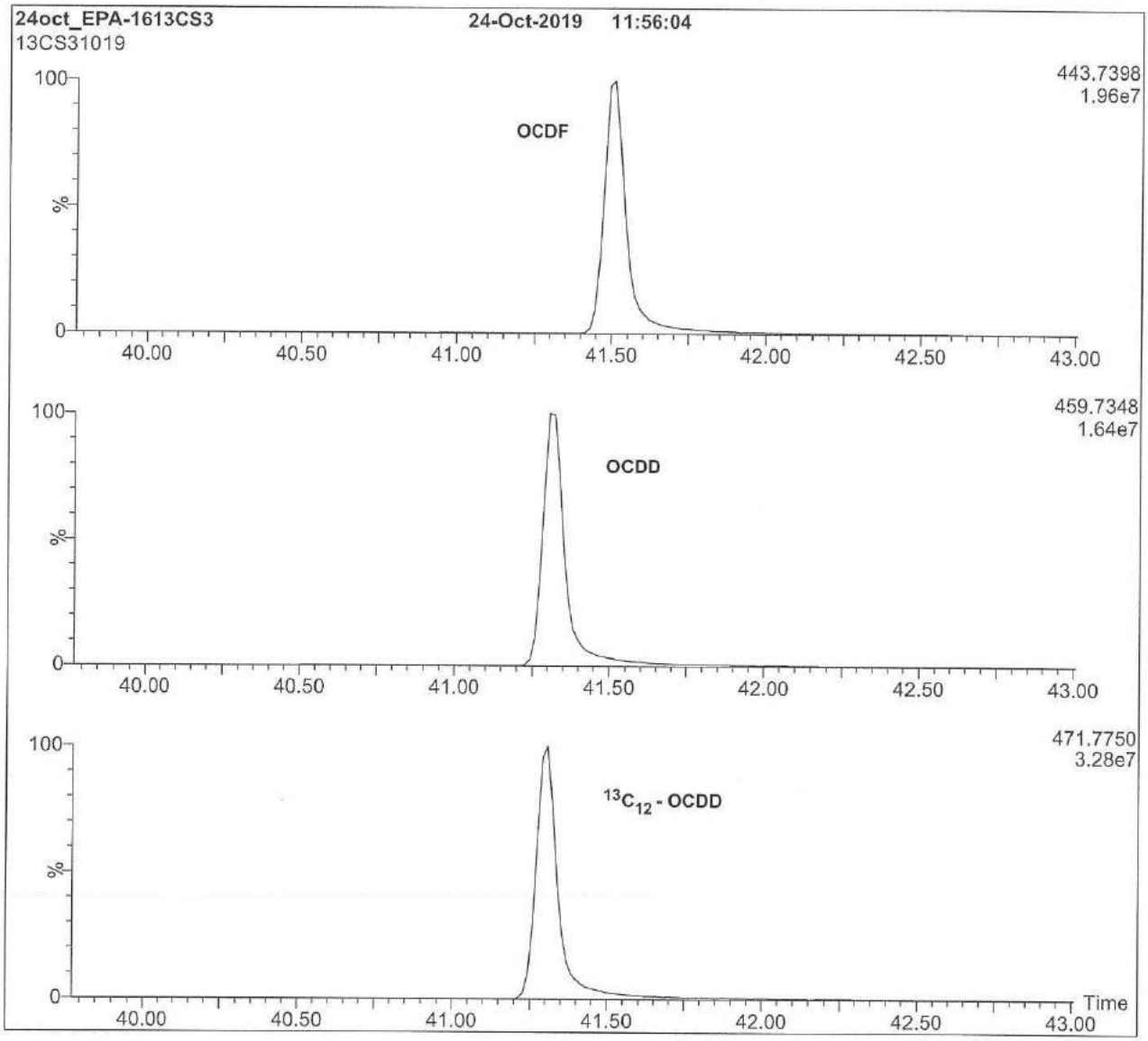


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow: Constant at 1 ml/min
Injector: 280 °C (Splitless Injection)
Ionization: EI+
Detector: 280 °C
SIR at 10,000 mass resolving power

Oven: 150 °C (1 min)
12 °C/min to 200 °C
3 °C/min to 235 °C
235 °C (8 min)
8 °C/min to 310 °C
310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

EPA-1613CVS

U.S. EPA Method 1613 Calibration and Verification Solutions plus Supplemental Calibration Solutions EPA-1613CSL & EPA-1613CS0.5

PRODUCT CODES:	EPA-1613CVS	**LOT NUMBERS:**	(see below)
	EPA-1613CS1		13CS11019 I005456
	EPA-1613CS2		13CS21019 I005457
	EPA-1613CS3		13CS31019
	EPA-1613CS4		13CS41019 I005458
	EPA-1613CS5		13CS51019 I005459

Note: EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to this calibration set that must be ordered separately.

EPA-1613CS0.5	13CS0.51019
EPA-1613CSL	13CSL1019

SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/22/2019
LAST TESTED: (mm/dd/yyyy)	10/24/2019
EXPIRY DATE: (mm/dd/yyyy)	10/24/2026 I005460
RECOMMENDED STORAGE:	Store ampoules in a cool, dark place

DESCRIPTION:

EPA-1613CVS is a series of 5 calibration solutions containing native ($^{12}C_{12}$) and mass-labelled ($^{13}C_{12}$ and $^{37}Cl_4$) chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs). The components of each solution, and their concentrations, are given in Table A.

They were designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B). They are to be used as received.

EPA-1613CSL and EPA-1613CS0.5 are lower level extensions to EPA-1613CVS. Neither is required by the method, but either or both can be used to extend the calibration to lower levels.

The individual native PCDDs and PCDFs all have chemical purities of >98%. The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%. The 2,3,7,8-$^{37}Cl_4$-Tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Table B: 5-point HRGC/HRMS Calibration and RRF Summary
Table C: 7-point HRGC/HRMS Calibration and RRF Summary
Figure 1: HRGC/HRMS Data for EPA-1613CS3 (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 3 for further details.

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a series of standards for the identification and quantification of specific chemical compounds.

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned values, and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

Table A: EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); Components and Concentrations (ng/ml, ± 5% in nonane/toluene)

Compound	Concentration (ng/ml)						
Native PCDDs and PCDFs:	CS1	CS2	CS3	CS4	CS5	CSL	CS0.5
2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
2,3,7,8-TCDF	0.5	2	10	40	200	0.1	0.25
1,2,3,7,8-PeCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,7,8-PeCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,7,8,9-HxCDF	2.5	10	50	200	1000	0.5	1.25
2,3,4,6,7,8-HxCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDD	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,6,7,8-HpCDF	2.5	10	50	200	1000	0.5	1.25
1,2,3,4,7,8,9-HpCDF	2.5	10	50	200	1000	0.5	1.25
OCDD	5.0	20	100	400	2000	1.0	2.5
OCDF	5.0	20	100	400	2000	1.0	2.5
Labelled PCDDs and PCDFs:							
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	100
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	200
Cleanup Standard:							
$^{37}Cl_4$-2,3,7,8-TCDD	0.5	2	10	40	200	0.1	0.25
Internal Standards:							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	100
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	100
Percent toluene (v/v)	3.6%	3.7%	4.2%	6.1%	16.2%	3.6%	3.6%

Certified By: B.G. Chittim, General Manager **Date:** 10/25/2019 (mm/dd/yyyy)

Table B: **EPA-1613CVS; 5-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard				
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5
2,3,7,8-TCDF	0.93	0.013	1.4	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.015	1.6	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.04	0.019	1.8	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.035	3.7	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.93	0.013	1.4	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.96	0.022	2.3	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.89	0.021	2.4	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.91	0.011	1.2	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.010	1.1	0.90	0.90	0.92	0.91	0.92
OCDF	1.19	0.056	4.7	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.05	0.023	2.2	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.97	0.018	1.9	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	1.00	0.019	1.9	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.98	0.032	3.2	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.97	0.016	1.6	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.025	2.5	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.013	1.3	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.57	0.047	3.0	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.21	0.078	6.5	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.17	0.081	6.9	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.020	1.5	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.51	0.034	2.2	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.38	0.012	0.9	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.014	1.2	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.033	2.5	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.08	0.046	4.3	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.13	0.036	3.2	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.79	0.047	5.9	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.027	3.1	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.04	0.010	1.0	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.017	2.1	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.74	0.055	7.4	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.026	2.6	0.95	0.94	0.99	0.99	0.99

Table C: **EPA-1613CVS (with EPA-1613CSL and EPA-1613CS0.5); 7-point HRGC/HRMS Calibration and RRF Summary**

Calibration RRF Summary				Calibration Standard						
Calibration Filename: 24oct_EPA1613CVS-CAL.QLD				CSL	CS0.5	CS1	CS2	CS3	CS4	CS5
Name	Mean	S. D.	%RSD	RRF#1	RRF#2	RRF#3	RRF#4	RRF#5	RRF#6	RRF#7
2,3,7,8-TCDF	0.92	0.045	4.8	0.96	0.83	0.92	0.95	0.93	0.92	0.95
1,2,3,7,8-PeCDF	0.93	0.013	1.4	0.94	0.92	0.92	0.92	0.93	0.93	0.95
2,3,4,7,8-PeCDF	1.02	0.058	5.7	0.90	1.00	1.03	1.02	1.05	1.05	1.07
1,2,3,4,7,8-HxCDF	0.96	0.029	3.0	0.96	0.97	0.94	0.92	0.98	0.99	1.00
1,2,3,6,7,8-HxCDF	0.92	0.030	3.3	0.90	0.86	0.92	0.94	0.94	0.91	0.94
2,3,4,6,7,8-HxCDF	0.94	0.047	5.0	0.87	0.89	0.95	0.94	0.97	0.97	0.99
1,2,3,7,8,9-HxCDF	0.88	0.029	3.3	0.83	0.88	0.87	0.88	0.90	0.90	0.92
1,2,3,4,6,7,8-HpCDF	0.90	0.033	3.7	0.83	0.93	0.90	0.90	0.90	0.92	0.92
1,2,3,4,7,8,9-HpCDF	0.91	0.018	1.9	0.89	0.94	0.90	0.90	0.92	0.91	0.92
OCDF	1.18	0.052	4.4	1.15	1.14	1.11	1.17	1.19	1.23	1.26
2,3,7,8-TCDD	1.03	0.051	5.0	1.03	0.92	1.01	1.06	1.05	1.05	1.07
1,2,3,7,8-PeCDD	0.95	0.042	4.4	0.87	0.98	0.95	0.95	0.98	0.97	0.99
1,2,3,4,7,8-HxCDD	0.97	0.066	6.8	0.83	0.98	1.01	1.00	1.00	0.96	1.01
1,2,3,6,7,8-HxCDD	0.96	0.044	4.5	0.90	0.92	0.93	0.98	0.99	1.01	1.01
1,2,3,7,8,9-HxCDD	0.94	0.054	5.7	0.83	0.92	0.95	0.96	0.98	0.99	0.98
1,2,3,4,6,7,8-HpCDD	1.01	0.033	3.3	0.95	1.03	1.01	0.97	1.02	1.03	1.04
OCDD	1.00	0.023	2.3	0.95	1.00	1.00	0.99	1.02	1.02	1.00
$^{13}C_{12}$-2,3,7,8-TCDF	1.56	0.042	2.7	1.52	1.54	1.52	1.55	1.55	1.57	1.65
$^{13}C_{12}$-1,2,3,7,8-PeCDF	1.20	0.066	5.5	1.18	1.17	1.13	1.20	1.17	1.20	1.34
$^{13}C_{12}$-2,3,4,7,8-PeCDF	1.16	0.071	6.1	1.12	1.13	1.09	1.15	1.13	1.17	1.31
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1.33	0.018	1.4	1.32	1.35	1.35	1.33	1.33	1.32	1.30
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1.53	0.045	3.0	1.60	1.56	1.47	1.48	1.53	1.53	1.54
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	1.39	0.019	1.4	1.39	1.42	1.38	1.38	1.40	1.37	1.36
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1.19	0.012	1.0	1.19	1.19	1.18	1.16	1.20	1.19	1.20
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1.31	0.028	2.2	1.30	1.33	1.31	1.26	1.33	1.31	1.35
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1.07	0.045	4.2	1.02	1.08	1.06	1.03	1.09	1.08	1.15
$^{13}C_{12}$-2,3,7,8-TCDD	1.12	0.033	3.0	1.09	1.11	1.10	1.11	1.11	1.13	1.19
$^{13}C_{12}$-1,2,3,7,8-PeCDD	0.78	0.040	5.1	0.75	0.78	0.74	0.78	0.75	0.79	0.86
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	0.87	0.025	2.9	0.86	0.90	0.85	0.83	0.89	0.88	0.89
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1.05	0.015	1.5	1.08	1.06	1.05	1.05	1.04	1.05	1.03
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	0.81	0.016	2.0	0.79	0.81	0.81	0.80	0.80	0.81	0.84
$^{13}C_{12}$-OCDD	0.73	0.046	6.3	0.71	0.72	0.70	0.70	0.73	0.72	0.83
$^{13}C_{12}$-1,2,3,4-TCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	1.00	0.000	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
$^{37}Cl_4$-2,3,7,8-TCDD	0.97	0.053	5.4	0.90	1.07	0.95	0.94	0.99	0.99	0.99

Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

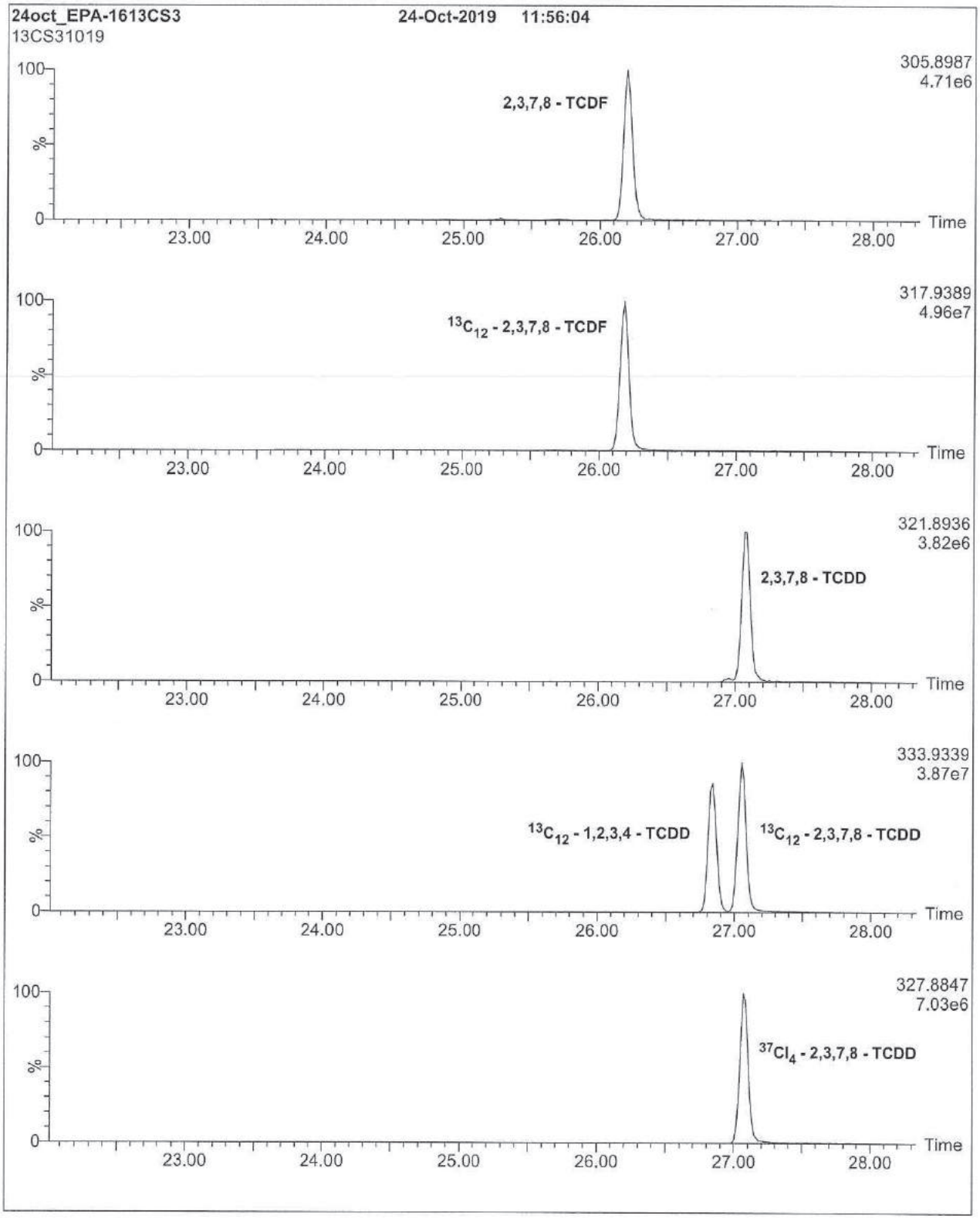


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

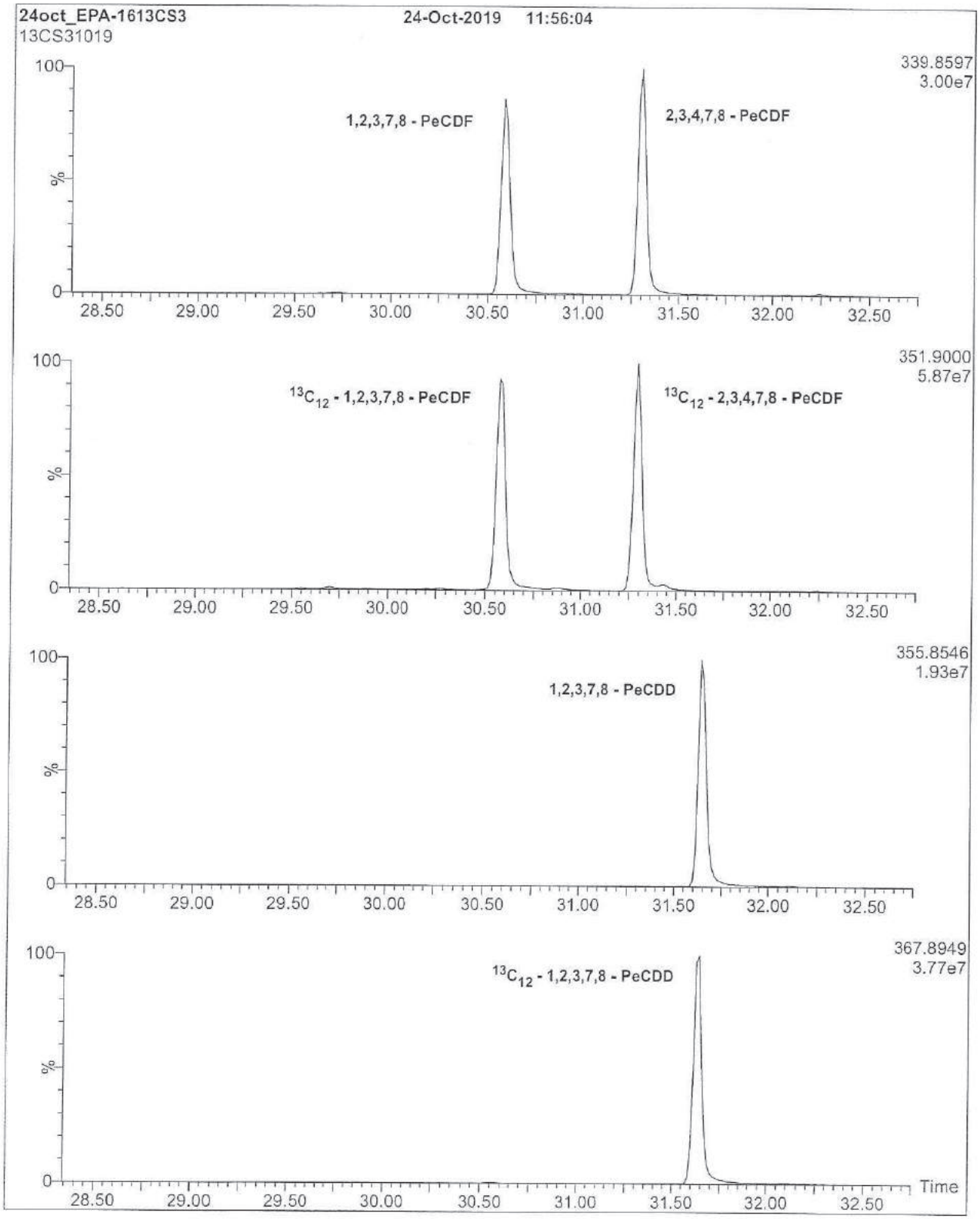


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

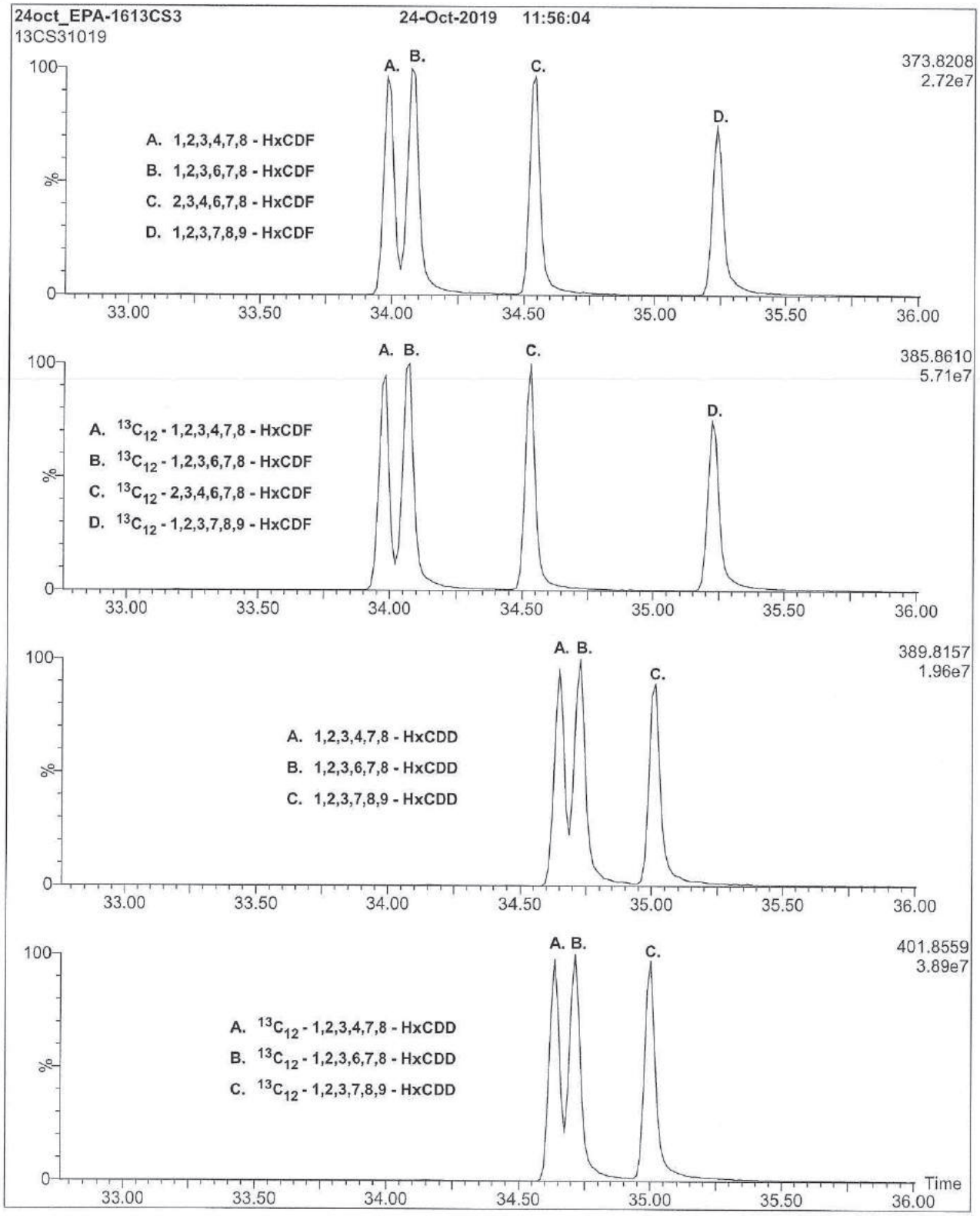


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)

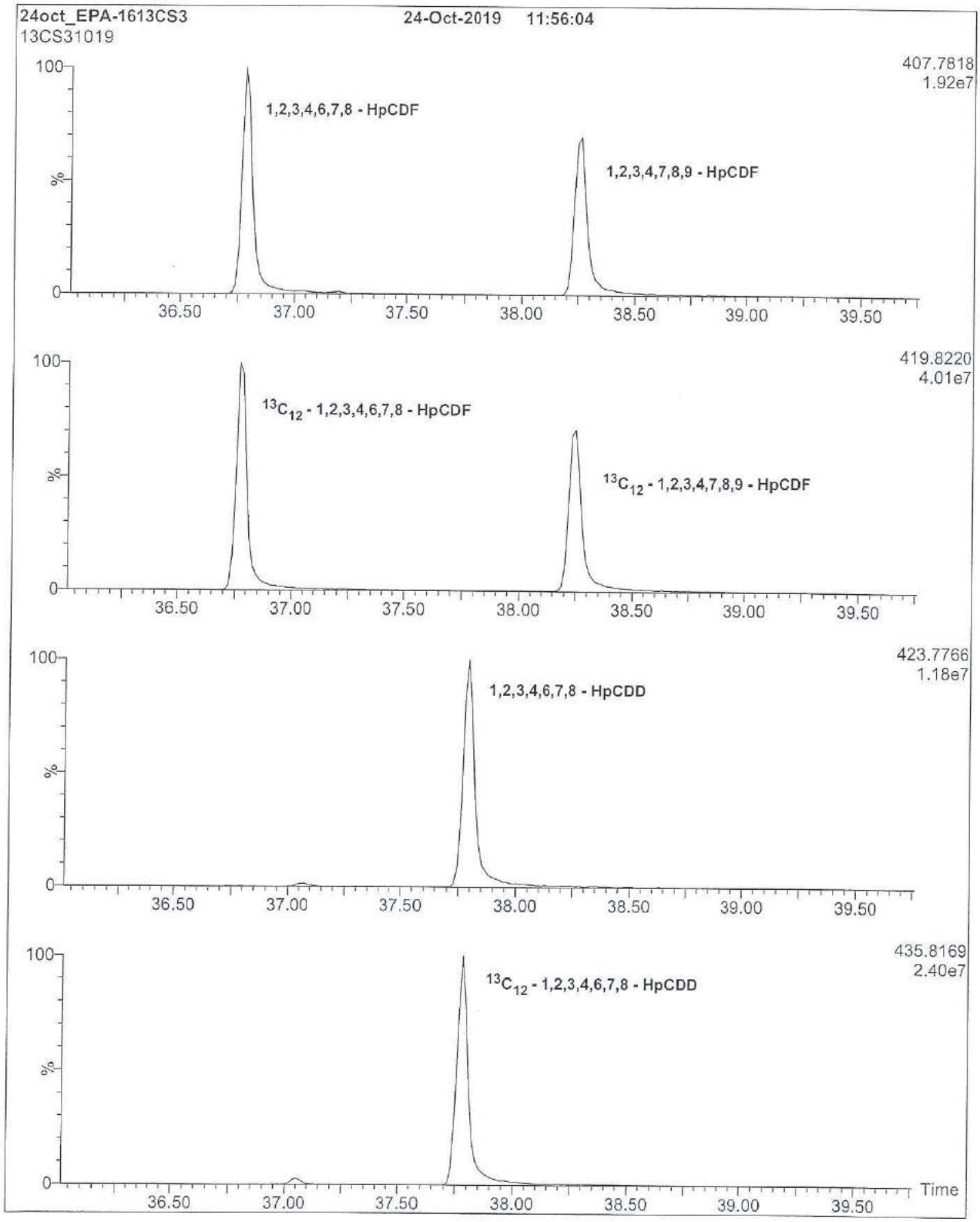
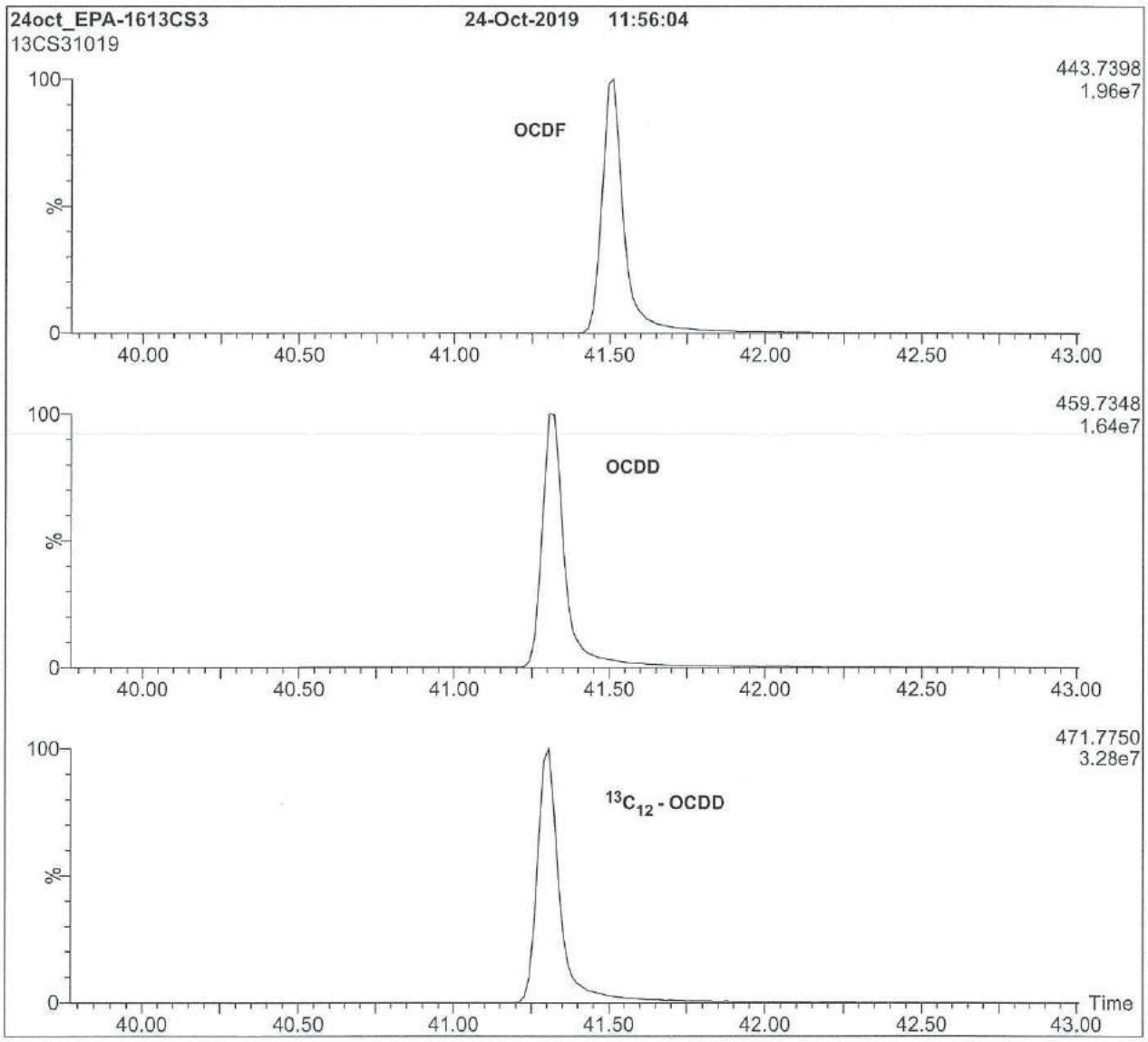


Figure 1: EPA-1613CS3; HRGC/HRMS Data (60 m DB-5 Column)



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow: Constant at 1 ml/min
Injector: 280 °C (Splitless Injection)
Ionization: EI+
Detector: 280 °C
SIR at 10,000 mass resolving power

Oven: 150 °C (1 min)
12 °C/min to 200 °C
3 °C/min to 235 °C
235 °C (8 min)
8 °C/min to 310 °C
310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613CSS

U.S. EPA Method 1613 Cleanup Standard Spiking Solution

PRODUCT CODE:	EPA-1613CSS
LOT NUMBER:	13CSS1019
SOLVENT(S):	Nonane
DATE PREPARED: (mm/dd/yyyy)	10/19/2019
LAST TESTED: (mm/dd/yyyy)	10/19/2019
EXPIRY DATE: (mm/dd/yyyy)	10/19/2026
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

I8323

DESCRIPTION:

EPA-1613CSS contains 2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-p-dioxin at the concentration given in Table A.

EPA-1613CSS was designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B).

2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-p-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 2 for further details.

Table A: **EPA-1613CSS; Components and Concentrations (ng/ml, ± 5% in nonane)**

Compound	Concentration (ng/ml)
2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-p-dioxin	40

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 11/05/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

INTENDED USE:

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

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

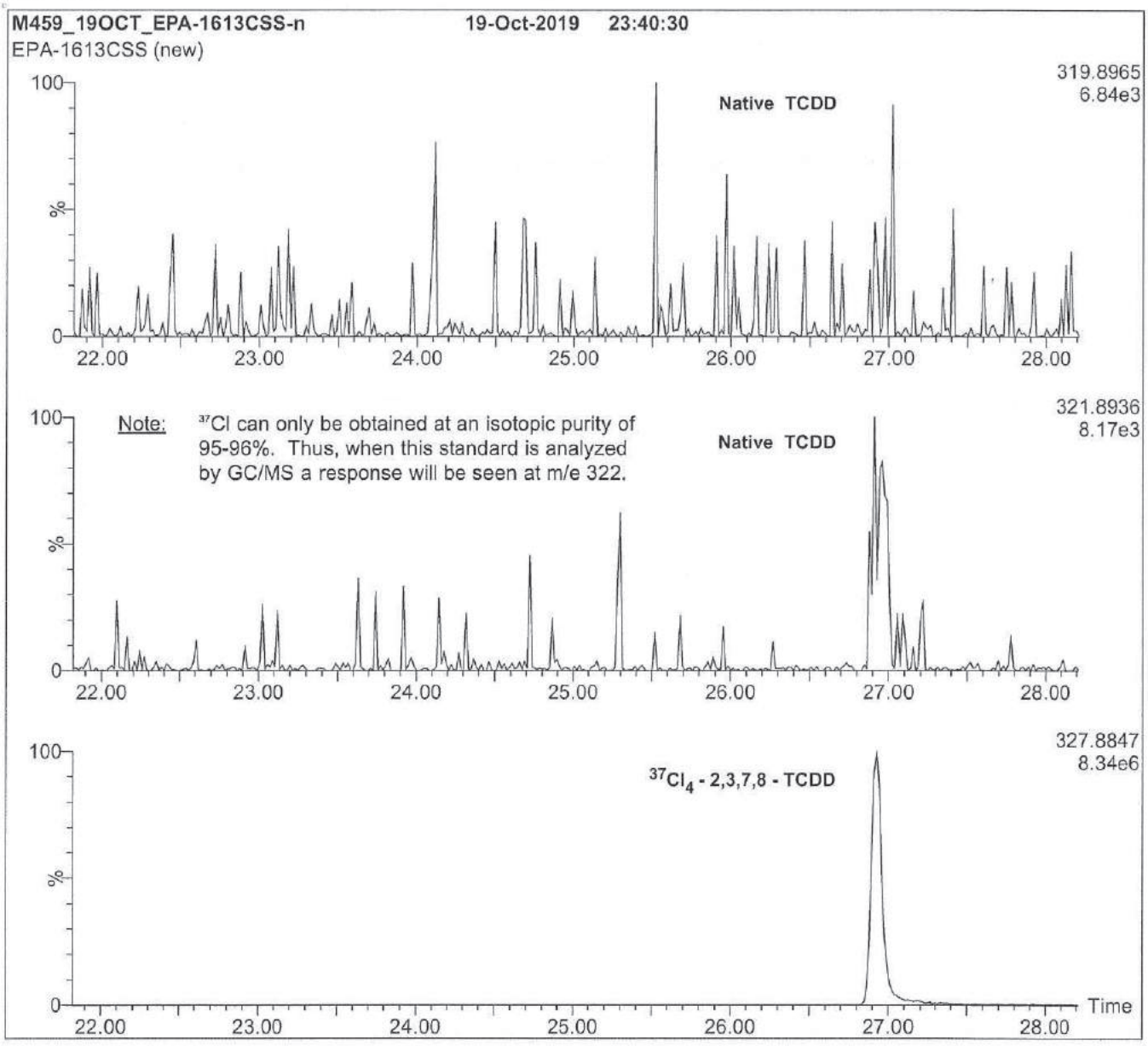
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA
Testing
Accreditation No. A1226

ANAB
ACCREDITED
ISO 17034
REFERENCE MATERIAL PRODUCER

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

Figure 1: **EPA-1613CSS; HRGC/HRMS Data (60 m DB-5 Column)**



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow:	Constant at 1 ml/min	Oven:	150 °C (1 min)
Injector:	280 °C (Splitless Injection)		12 °C/min to 200 °C
Ionization:	EI+		3 °C/min to 235 °C
Detector:	280 °C		235 °C (8 min)
	SIR at 10,000 mass resolving power		8 °C/min to 310 °C
			310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613LCS

U.S. EPA Method 1613
Labelled Compound Stock Solution

PRODUCT CODE:	EPA-1613LCS
LOT NUMBER:	13LCS1019
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/11/2019
LAST TESTED: (mm/dd/yyyy)	10/17/2019
EXPIRY DATE: (mm/dd/yyyy)	10/17/2026
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

I 8324

DESCRIPTION:

EPA-1613LCS is a solution/mixture of $^{13}C_{12}$-labelled chlorinated dibenzo-p-dioxins ($^{13}C_{12}$-PCDDs) and dibenzofurans ($^{13}C_{12}$-PCDFs). The components and their concentrations are given in Table A.

EPA-1613LCS was designed for, and prepared to be used according to, U.S. EPA Method 1613 (Revision B).

The individual $^{13}C_{12}$-PCDDs and $^{13}C_{12}$-PCDFs all have chemical purities of >98% and isotopic purities of ≥99%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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

INTENDED USE:

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

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

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UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

Table A: **EPA-1613LCS; Components and Concentrations (ng/ml, ± 5% in nonane/ 3.2% toluene)**

$^{13}C_{12}$-PCDDs	Concentration (ng/ml)	$^{13}C_{12}$-PCDFs	Concentration (ng/ml)
$^{13}C_{12}$-2,3,7,8-TCDD	100	$^{13}C_{12}$-2,3,7,8-TCDF	100
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	$^{13}C_{12}$-1,2,3,7,8-PeCDF	100
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	$^{13}C_{12}$-2,3,4,7,8-PeCDF	100
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100
$^{13}C_{12}$-OCDD	200	$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100
		$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100
		$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100
		$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100

Certified By: _____ **Date:** 10/22/2019
(mm/dd/yyyy)
B.G. Chittim, General Manager

Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)

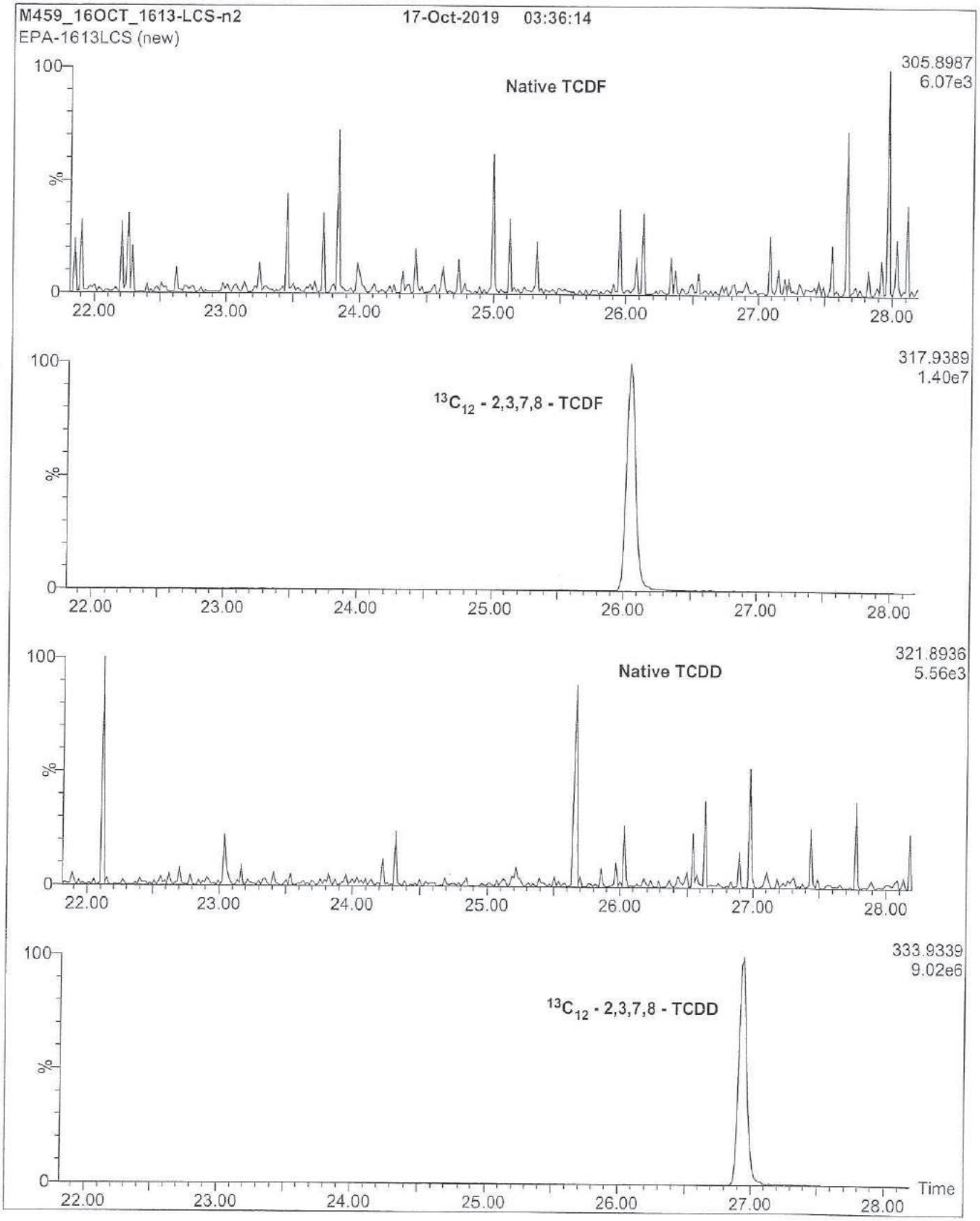


Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)

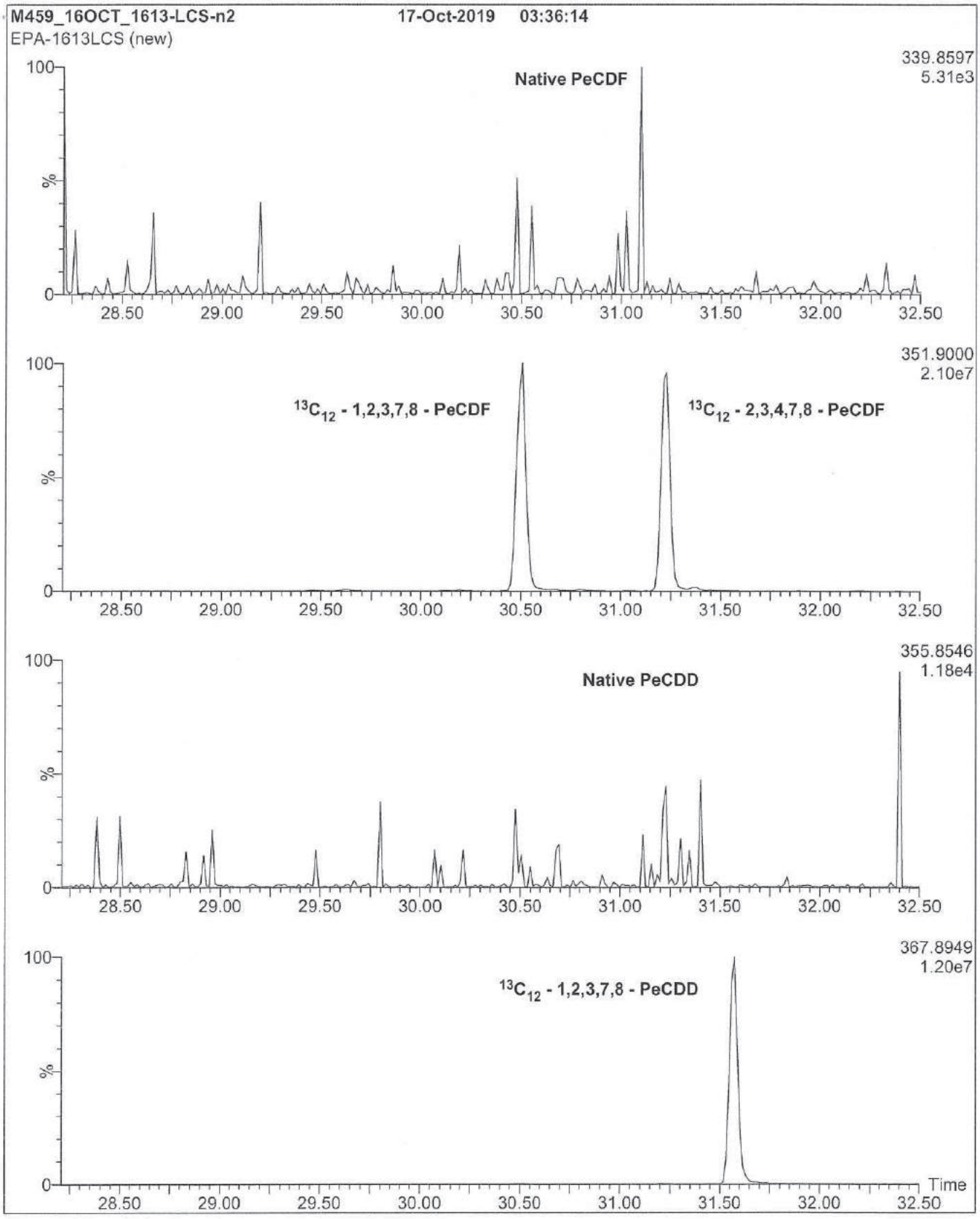


Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)

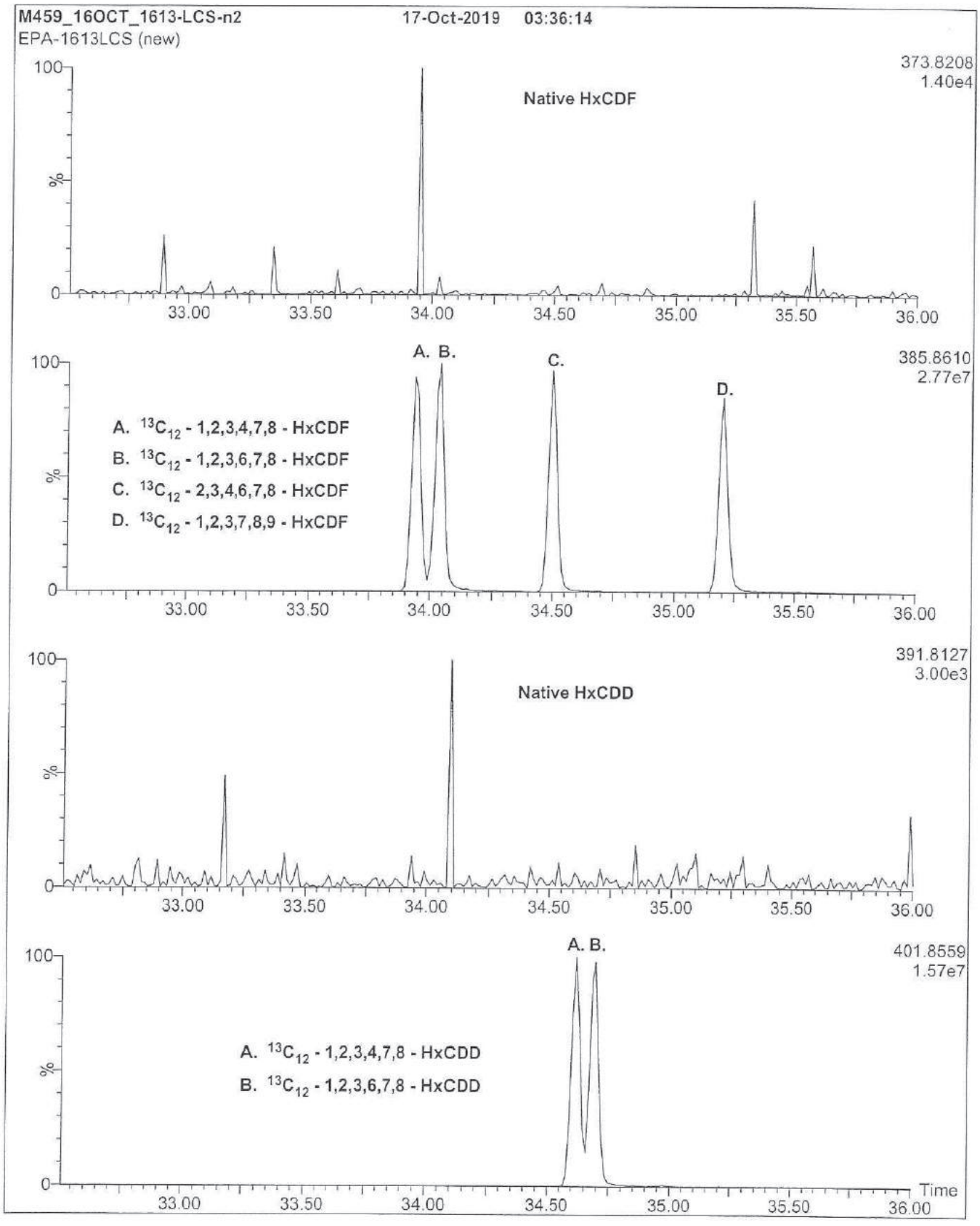


Figure 1: **EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)**

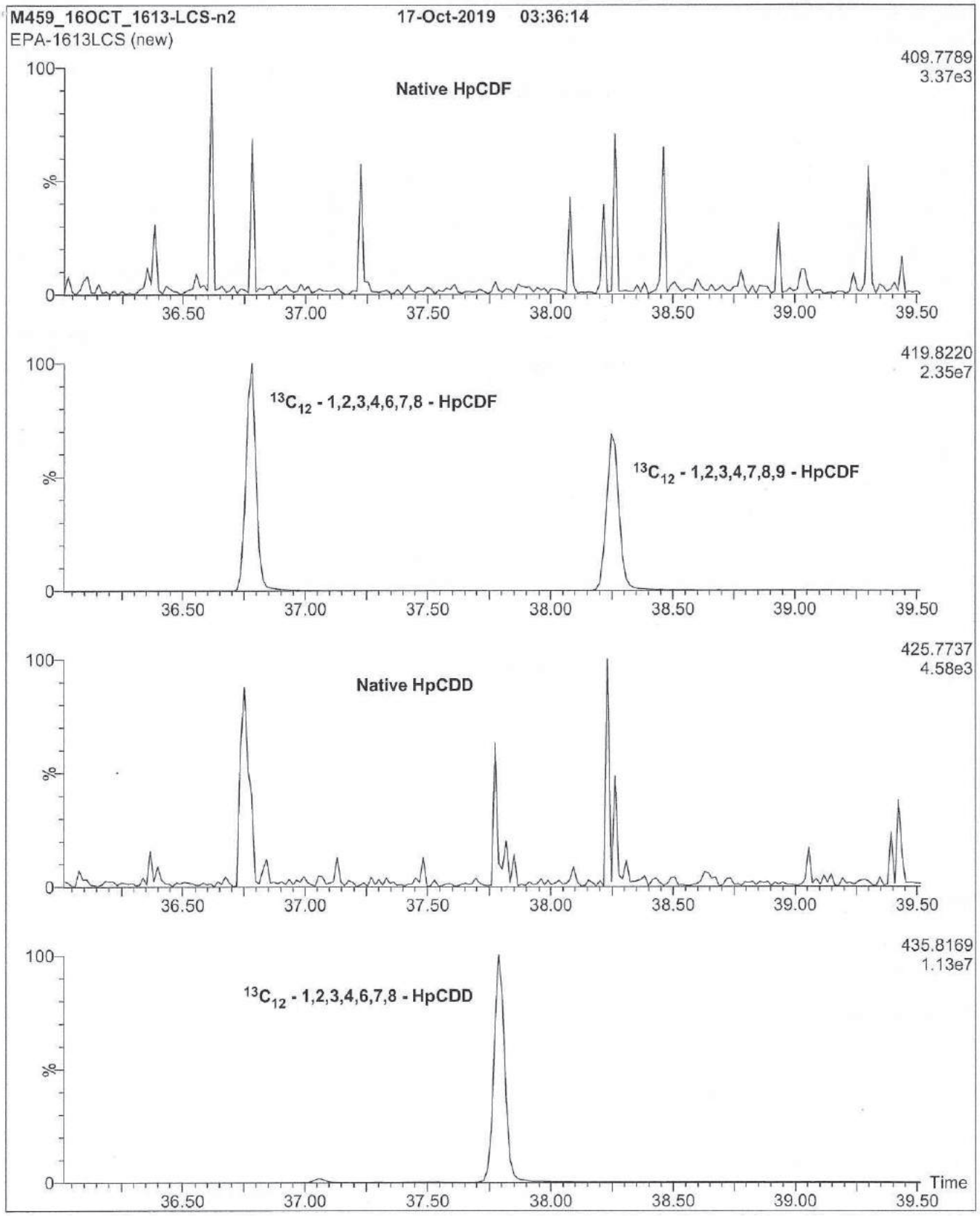
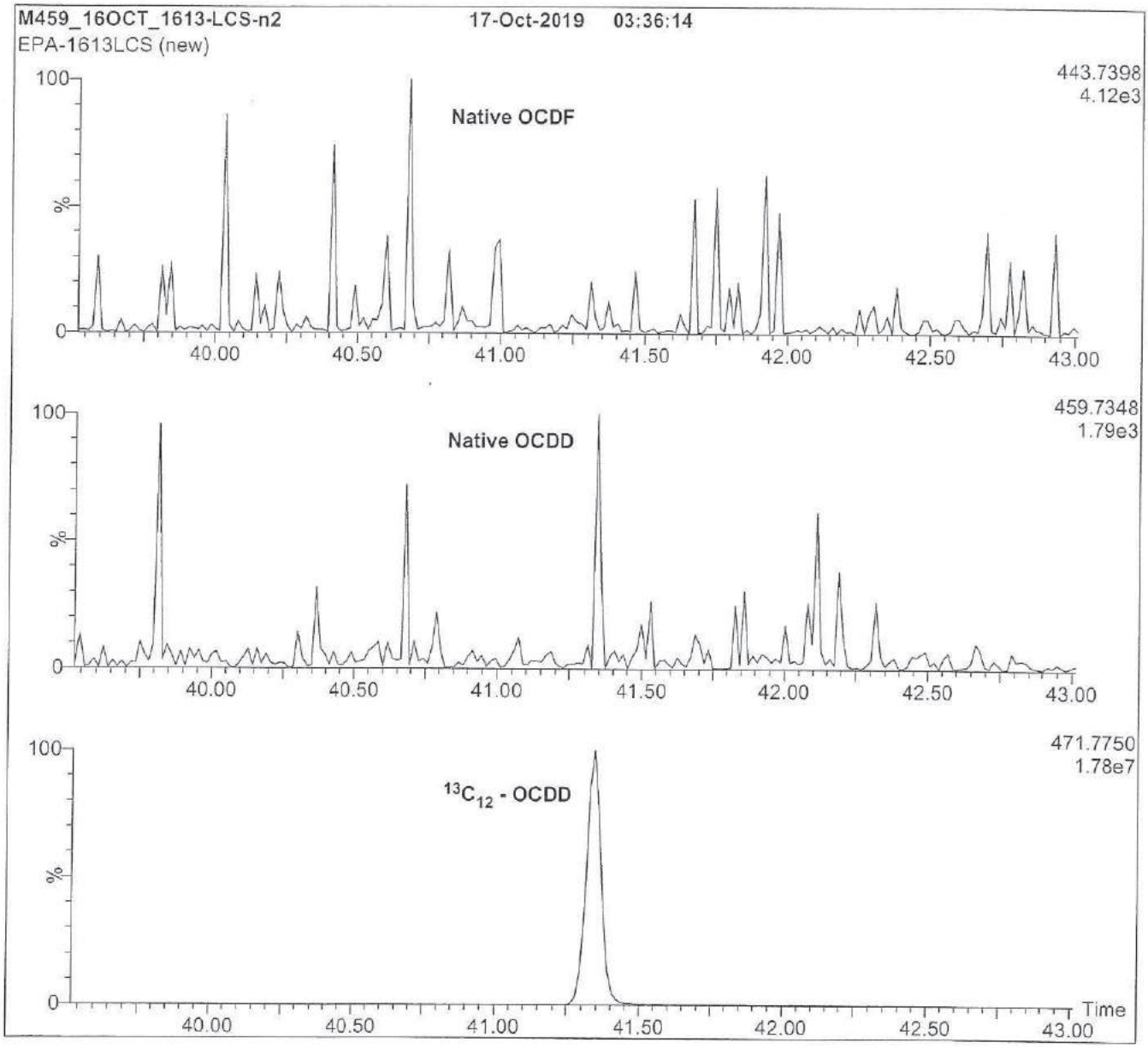


Figure 1: **EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)**



HRGC/HRMS:

Agilent 6890N (HRGC)
Autospec Ultima (HRMS)

Chromatographic Conditions:

Column: 60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W

Flow: Constant at 1 ml/min
Injector: 280 °C (Splitless Injection)
Ionization: EI+
Detector: 280 °C
SIR at 10,000 mass resolving power

Oven: 150 °C (1 min)
12 °C/min to 200 °C
3 °C/min to 235 °C
235 °C (8 min)
8 °C/min to 310 °C
310 °C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613CSS

U.S. EPA Method 1613 Cleanup Standard Spiking Solution

PRODUCT CODE:	EPA-1613CSS
LOT NUMBER:	13CSS1020
SOLVENT(S):	Nonane
DATE PREPARED: (mm/dd/yyyy)	11/12/2020
LAST TESTED: (mm/dd/yyyy)	11/19/2020
EXPIRY DATE: (mm/dd/yyyy)	11/19/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

E11575

DESCRIPTION:

EPA-1613CSS contains 2,3,7,8-[$^{37}Cl_4$]-tetrachlorodibenzo-*p*-dioxin at the concentration given in Table A.

EPA-1613CSS was designed and prepared to be used according to U.S. EPA Method 1613, Revision B.

2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-*p*-dioxin has a chemical purity of >98% and an isotopic (^{37}Cl) purity of ≥95%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 2 for further details.

Table A: **EPA-1613CSS; Components and Concentrations (ng/mL, ± 5% in nonane)**

Compound	Acronym	CAS #	Concentration (ng/mL)
2,3,7,8-[$^{37}Cl_4$]-Tetrachlorodibenzo-*p*-dioxin	$^{37}Cl_4$-2,3,7,8-TCDD	85508-50-5	40.0

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 11/20/2020 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

INTENDED USE:

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

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ANSI National Accreditation Board ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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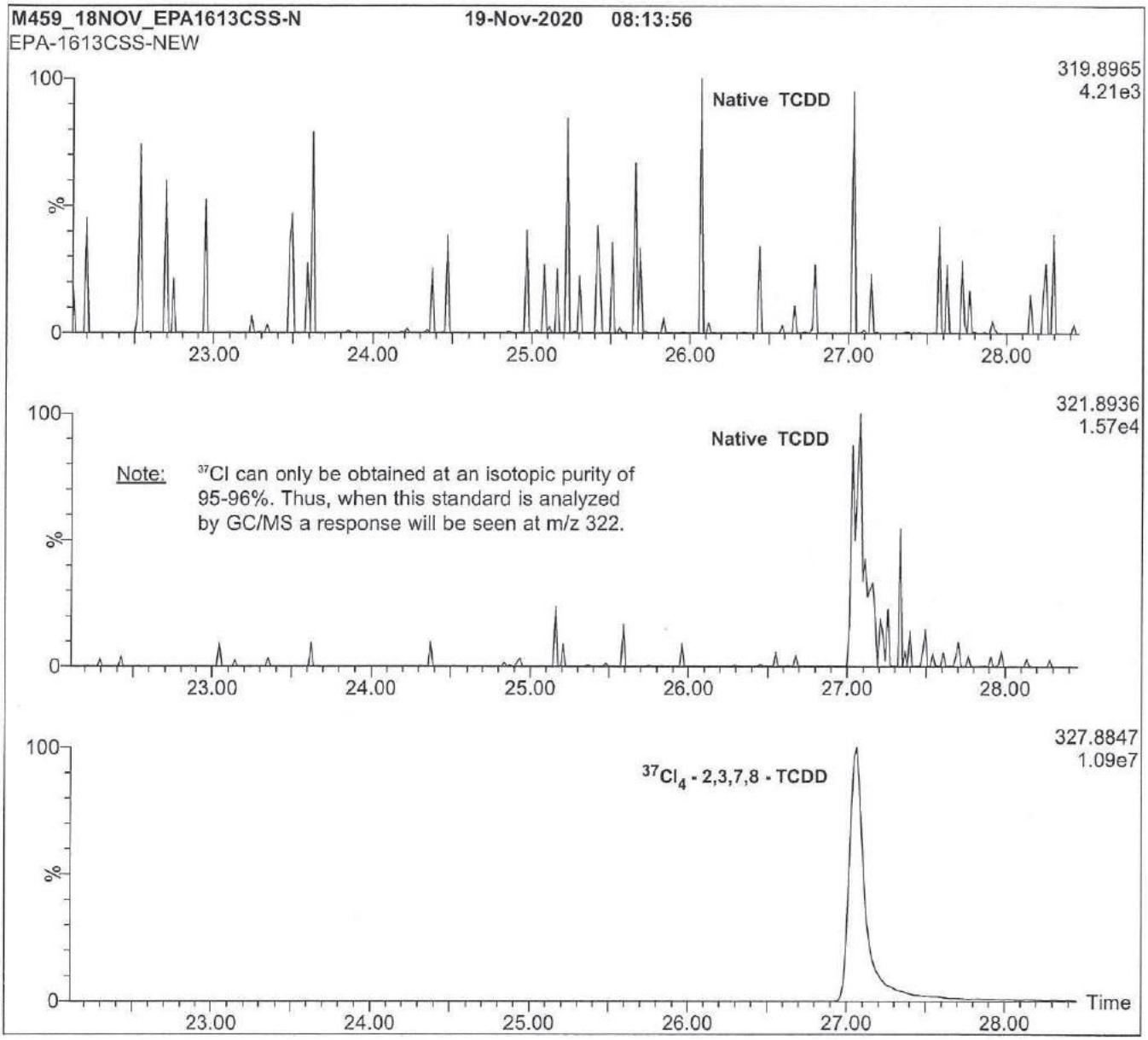
Figure 1: **EPA-1613CSS; HRGC/HRMS Data (60 m DB-5 Column)**



Conditions for Figure 1:

Agilent 6890N HRGC
Autospec Ultima HRMS

Chromatographic Conditions:

Column:	60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W		
Flow:	Constant at 1 mL/min	Oven:	150°C (1 min)
Injector:	280°C (Splitless Injection)		12°C/min to 200°C
Ionization:	EI+		3°C/min to 235°C
Detector:	280°C		235°C (8 min)
	SIR at 10,000 mass resolving power		8°C/min to 310°C
			310°C (8 min)

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

EPA-1613LCS

U.S. EPA Method 1613
Labelled Compound Stock Solution

I 11576

PRODUCT CODE:	EPA-1613LCS
LOT NUMBER:	13LCS1020
SOLVENT(S):	Nonane/Toluene
DATE PREPARED: (mm/dd/yyyy)	10/16/2020
LAST TESTED: (mm/dd/yyyy)	10/21/2020
EXPIRY DATE: (mm/dd/yyyy)	10/21/2027
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

EPA-1613LCS is a solution/mixture of mass-labelled ($^{13}C_{12}$) chlorinated dibenzo-*p*-dioxins (PCDDs) and dibenzofurans (PCDFs). The components and their concentrations are given in Table A.

EPA-1613LCS was designed and prepared to be used according to U.S. EPA Method 1613, Revision B.

The individual ^{13}C-labelled PCDDs and PCDFs all have chemical purities of >98% and isotopic purities of ≥99%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations
Figure 1: HRGC/HRMS Data (SIR; 10,000 mass resolving power)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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CALA Testing Accreditation No. A1226

ANAB ANSI National Accreditation Board ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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Table A: **EPA-1613LCS; Components and Concentrations (ng/mL, ± 5% in nonane/3.2% toluene)**

Compound	Acronym	CAS #	Concentration (ng/mL)
Mass-Labelled PCDDs:			
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin	$^{13}C_{12}$-2,3,7,8-TCDD	76523-40-5	100
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,7,8-PeCDD	109719-79-1	100
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	109719-80-4	100
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	109719-81-5	100
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin	$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	109719-83-7	100
Octachloro[$^{13}C_{12}$]dibenzo-*p*-dioxin	$^{13}C_{12}$-OCDD	114423-97-1	200
Mass-Labelled PCDFs:			
2,3,7,8-Tetrachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-2,3,7,8-TCDF	89059-46-1	100
1,2,3,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-1,2,3,7,8-PeCDF	109719-77-9	100
2,3,4,7,8-Pentachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-2,3,4,7,8-PeCDF	116843-02-8	100
1,2,3,4,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	114423-98-2	100
1,2,3,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	116843-03-9	100
1,2,3,7,8,9-Hexachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	116843-04-0	100
2,3,4,6,7,8-Hexachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	116843-05-1	100
1,2,3,4,6,7,8-Heptachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	109719-84-8	100
1,2,3,4,7,8,9-Heptachloro[$^{13}C_{12}$]dibenzofuran	$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	109719-94-0	100

Certified By: _____ **Date:** 11/09/2020
(mm/dd/yyyy)
B.G. Chittim, General Manager

Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)

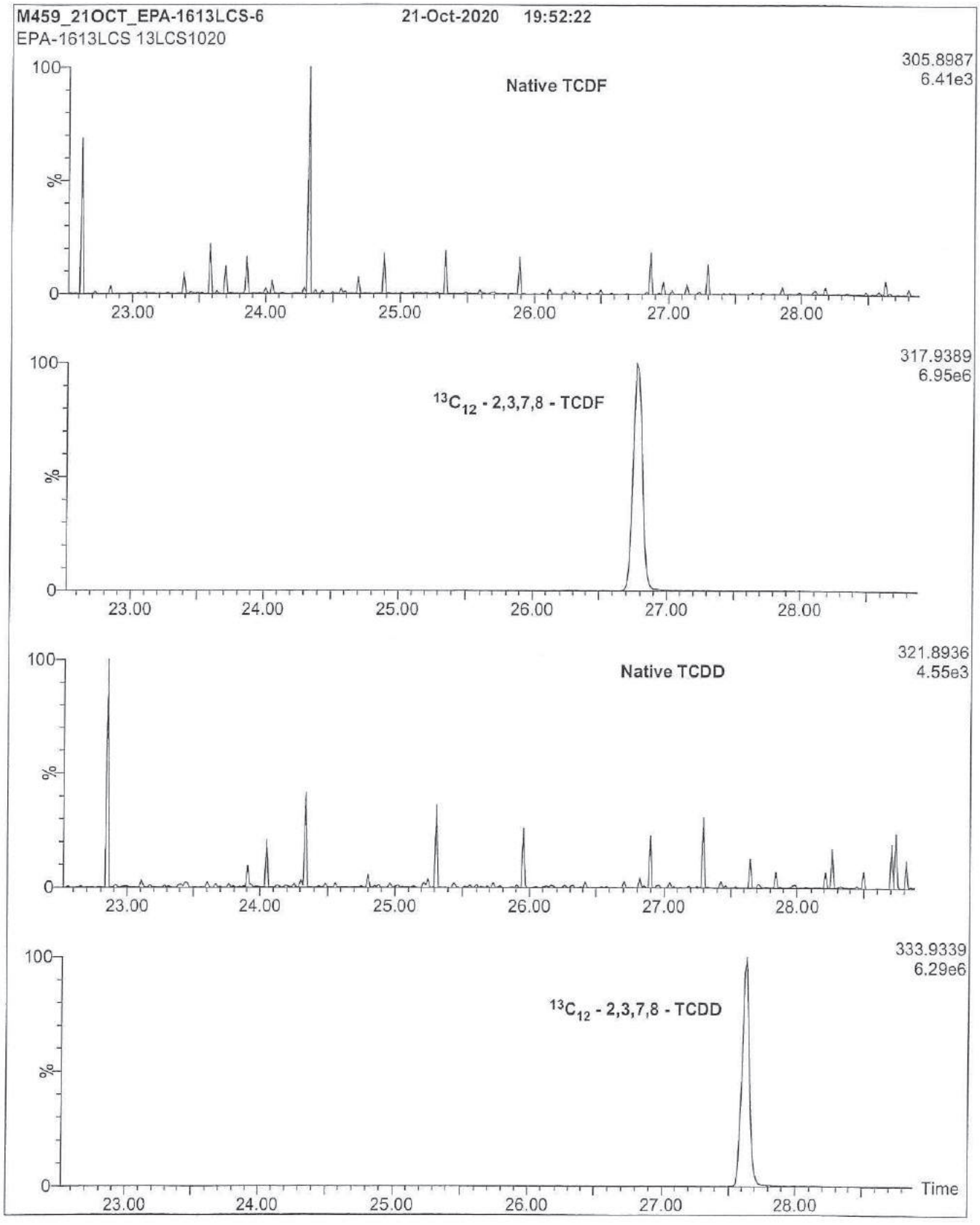


Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)

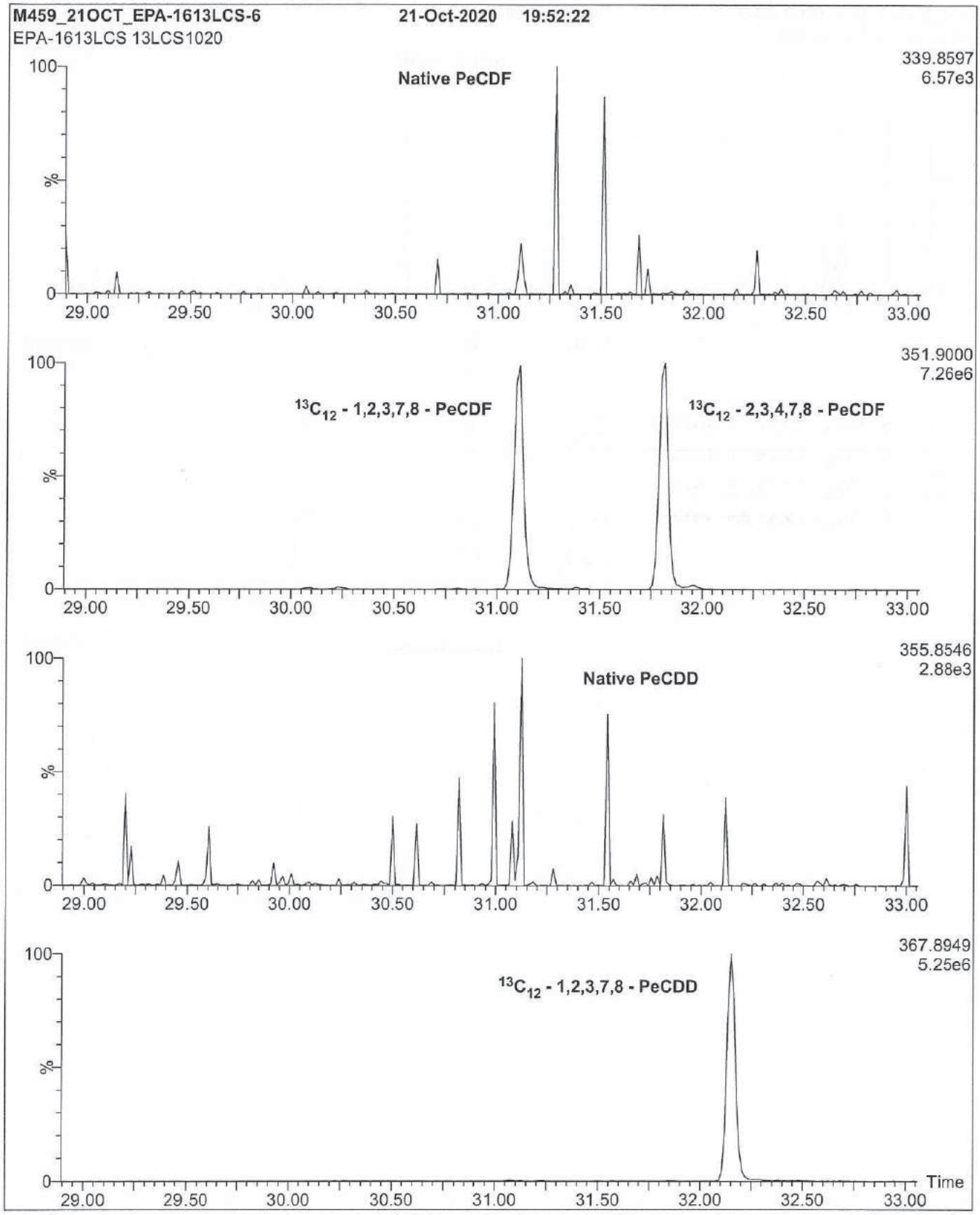


Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)

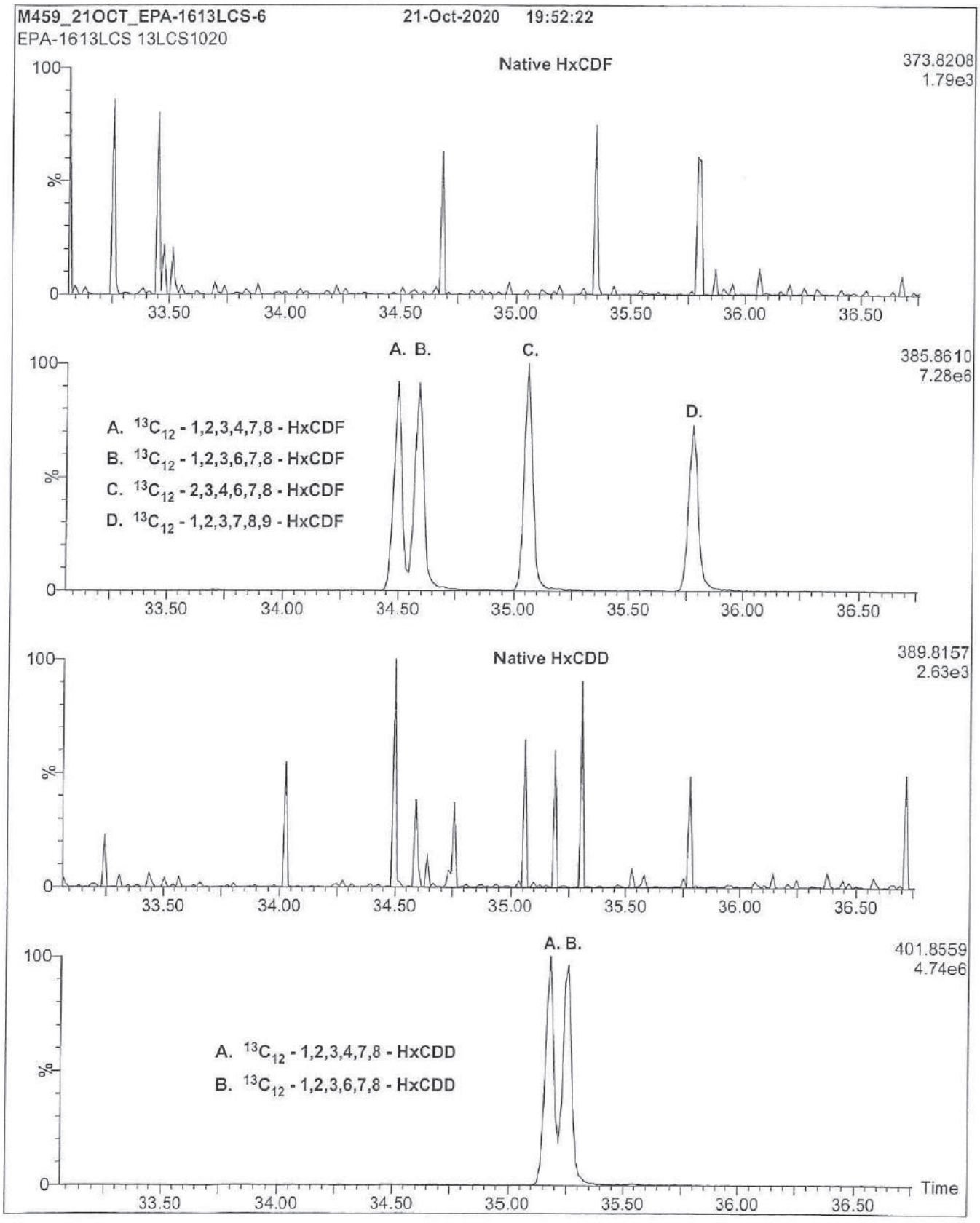


Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)

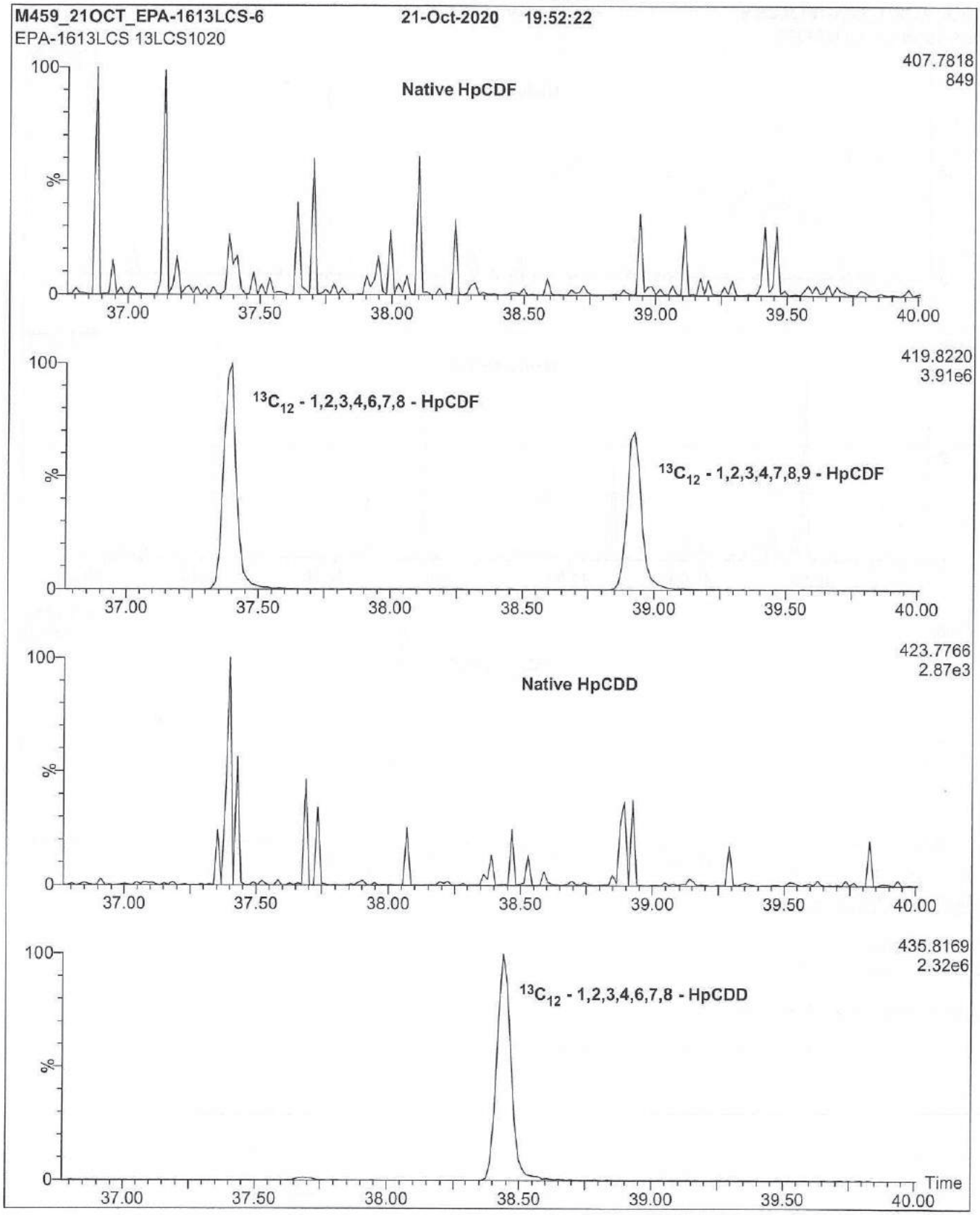
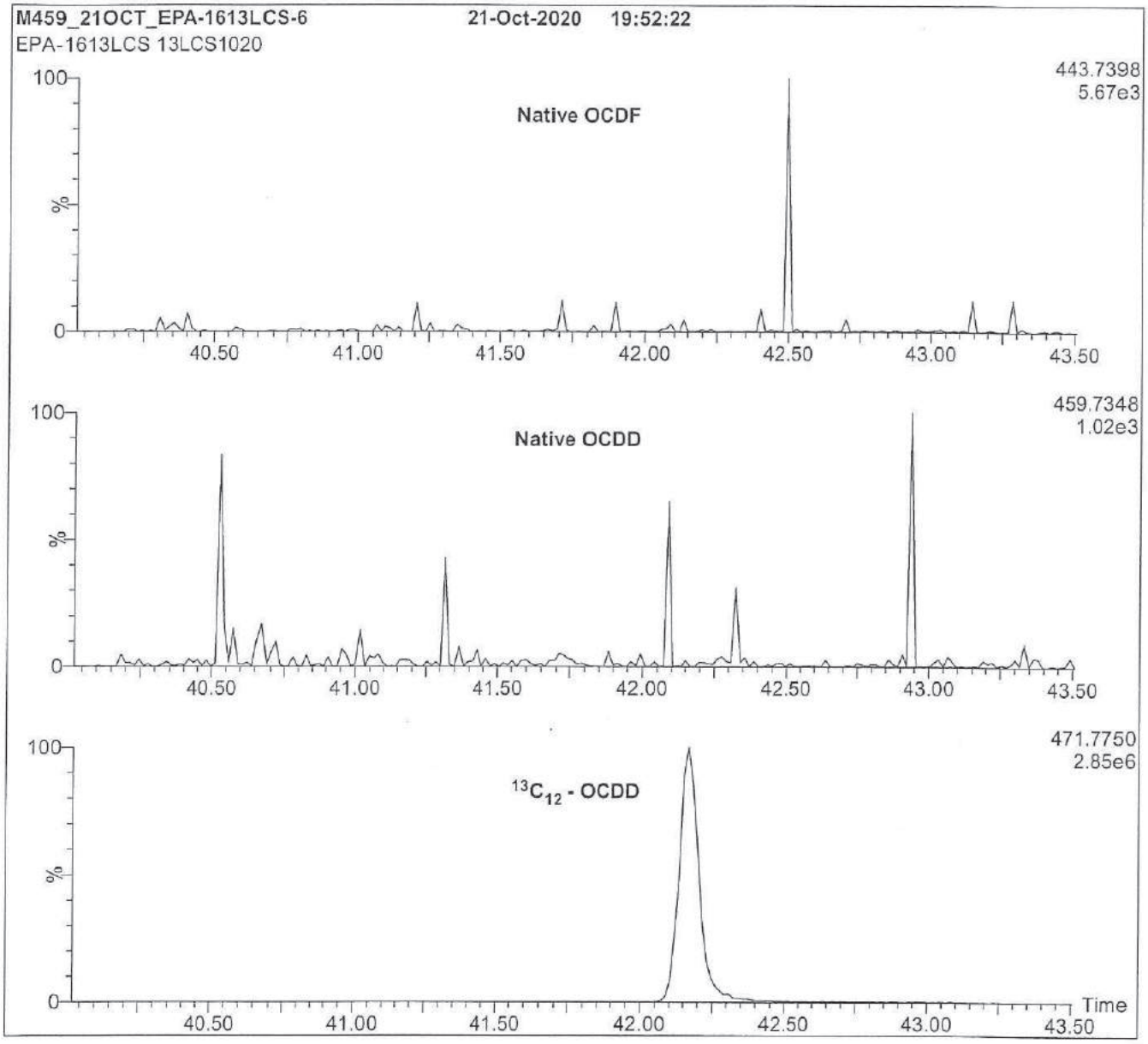


Figure 1: EPA-1613LCS; HRGC/HRMS Data (60 m DB-5 Column)



Conditions for Figure 1:

Agilent 6890N HRGC
Autospec Ultima HRMS

Chromatographic Conditions:

Column:	60 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W		
Flow:	Constant at 1 mL/min	Oven:	150°C (1 min)
Injector:	280°C (Splitless Injection)		12°C/min to 200°C
Ionization:	EI+		3°C/min to 235°C
Detector:	300°C		235°C (8 min)
	SIR at 10,000 mass resolving power		8°C/min to 310°C
			310°C (8 min)

Form I
INORGANIC ANALYSIS DATA SHEET
EPA 200.8 UCT-KED

Dissolved Metals

MW-C3-031621

Laboratory:	Analytical Resources, Inc.				
Client:	Floyd - Snider				
Project:	Lora Lake				
Matrix:	Ground Water	Laboratory ID:	21C0250-01 A 01	SDG:	21C0250
Sampled:	03/16/21 10:10	Prepared:	03/29/21 13:42	File ID:	XDT_m1210330A-087
% Solids:	0.00	Preparation:	REN_EPA 600/4-79-020 4.1.4 HNO3 matrix	Analyzed:	03/30/21 23:40
Batch:	BJC0762	Sequence:	SJC0512	Initial/Final:	25 mL / 25 mL
Instrument:	ICPMS1			Calibration:	EC00098

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	MDL	MRL	Q
7440-38-2	Arsenic-75a, Dissolved	0.192	1	0.0220	0.200	J

Form I
INORGANIC ANALYSIS DATA SHEET
EPA 200.8 UCT-KED

Dissolved Metals

MW-C3-031621-D

Laboratory6	Analytical Resources, Inc.				
Client6	Floyd - Snider				
Nroject6	Lora Lake				
Matrix6	Ground Water	Laboratory ID6	21C0250-02 A 01	SDG6	21C0250
Sampled6	0371/ 721 10615	Nrepared6	0372: 721 13692	File ID6	XDT_m1210330A-088
% Solids6	0.00	Nreparation6	R4E_4NA / 007P-P: -020 9.1.9 HEO3 matrix	Analyzed6	0373072121 23699
Batch6	BJC0P/ 2	Sequence6	SJC0512	Initial7Final6	25 mL 725 mL
Instrument6	ICNMS1			Calibration6	4C000: 8

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	MDL	MRL	Q
P990-38-2	Arsenic-P5a, Dissolved	0.208	1	0.0220	0.200	

Form I
INORGANIC ANALYSIS DATA SHEET
EPA 300.8 UCT-KED

Dissolved Metals

MW-C3-016236

Laboratory:	Analytical Resources, Inc.				
Client:	Floyd - Snider				
Project:	Lora Lake				
Matrix:	Ground Water	Laboratory ID:	21C0250-03 A 01	SDG:	21C0250
Sampled:	03/16/21 10:35	Prepared:	03/27/21 13:92	File ID:	XDT_m1210330A-087
% Solids:	0.00	Preparation:	R4E_4NA 600/9-P7-020 9.1.9 HEO3 matrix	Analyzed:	03/30/21 23:98
Batch:	BJC0P62	Sequence:	SJC0512	Initial/Final:	25 mL / 25 mL
Instrument:	ICPMS1			Calibration:	4C00078

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	MDL	MRL	Q
P990-38-2	Arsenic-P5a, Dissolved	21.6	1	0.0220	0.200	

Form I
INORGANIC ANALYSIS DATA SHEET
EPA 200.8 UCT-KED

Dissolved Metals

MW-VB3-031621

Laboratory6	Analytical Resources, Inc.				
Client6	Floyd - J nider				
Eroject6	Lora Lake				
MatriO6	Ground Water	Laboratory ID6	21C0250-0: C 01	J DG6	21C0250
J ampled6	037l/ 721 12600	Erepared6	037287 21 136 2	File ID6	XDT_m1210330A-080
% J olids6	0.00	Ereparation6	R94 9EA / 007 -N8-020 : .1.: P4H3 matriO	Analyzed6	037307 21 23652
x atch6	x BC0N/ 2	J equence6	J BC0512	Initial7Final6	25 mL 725 mL
Instrument6	ICEMJ 1			Calibration6	9C0008S

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	MDL	MRL	Q
N : 0-3S-2	Arsenic-N5a, Dissolved	0.380	1	0.0220	0.200	

Form I
INORGANIC ANALYSIS DATA SHEET
EPA 200.8 UCT-KED

Dissolved Metals

HCOO-B312-031621

Laboratory6	Analytical Resources, Inc.				
Client6	Floyd - J nider				
Eroject6	Lora Lake				
MatriO6	Ground Water	Laboratory ID6	21C0250-05 C 01	J DG6	21C0250
J ampled6	037l/ 721 1265 5	Ereparedб	037287 21 136 2	File ID6	XDT_m1210330A-081
% J olids6	0.00	Ereparation6	R94 9EA / 007 -N8-020 : .1.: P4H3 matriO	Analyzed6	037307 21 2365/
x atch6	x BC0N/ 2	J equence6	J BC0512	Initial7Final6	25 mL 725 mL
Instrument6	ICEMJ 1			Calibration6	9C0008S

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	MDL	MRL	Q
N : 0-3S-2	Arsenic-N5a, Dissolved	0.1/ S	1	0.0220	0.200	B

Form I
INORGANIC ANALYSIS DATA SHEET
EPA 200.8 UCT-KED

Dissolved Metals

MW-CP7-031621

Laboratory:	Analytical Resources, Inc.				
Client:	Floyd - J nider				
Eroject:	Lora Lake				
MatriQ	Ground Water	Laboratory ID:	21C0250-0/ C 01	J DG:	21C0250
J ampled:	037l/ 721 16:25	Erepared:	037287 21 13:62	File ID:	XDT_m1210330A-082
% J olids:	0.00	Ereparation:	R94 9EA / 007 6-N8-020 6.1.6 P4 H3 matriQ	Analyzed:	037317 21 00:00
x atch:	x BC0N/ 2	J equence:	J BC0512	Initial7Final:	25 mL 725 mL
Instrument:	ICEMJ 1			Calibration:	9C0008S

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	MDL	MRL	Q
N660-3S-2	Arsenic-N5a, Dissolved	0.630	1	0.0220	0.200	

Form I
INORGANIC ANALYSIS DATA SHEET
E3A P11.8 UCT-KED

Dissolved Metals

MW-C30-1620P2

Laboratory:	Analytical Resources, Inc.				
Client:	Floyd - Jnider				
Eroject:	Lora Lake				
MatriQ	Ground Water	Laboratory ID:	21C0250-0NC 01	J DG:	21C0250
J ampled:	037l/ 721 16:2/	Erepared:	037287 21 13:62	File ID:	XDT_m1210330A-083
% J olids:	0.00	Ereparation:	R94 9EA / 007-N8-020 6.1.6 P4 H3 matriQ	Analyzed:	037317 21 00:06
x atch:	x BC0N/ 2	J equence:	J BC0512	Initial7Final:	25 mL 725 mL
Instrument:	ICEMJ 1			Calibration:	9C0008S

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	MDL	MRL	Q
N660-3S-2	Arsenic-N5a, Dissolved	1.12	1	0.0220	0.200	

Form I
INORGANIC ANALYSIS DATA SHEET
EPA 200.8 UCT-KED

Dissolved Metals

MW-CP4-031621

Laboratory:	Analytical Resources, Inc.				
Client:	Floyd - Snider				
Project:	Lora Lake				
Matrix:	Ground Water	Laboratory ID:	21C0250-09 C 01	SDG:	21C0250
Sampled:	03/16/21 15:30	Prepared:	03/28/21 13:72	File ID:	XDT_m1210330A-087
% Solids:	0.00	Preparation:	R4E_4NA 600/7-P8-020 7.1.7 HEO3 matrix	Analyzed:	03/31/21 00:09
Batch:	BJC0P62	Sequence:	SJC0512	Initial/Final:	25 mL / 25 mL
Instrument:	ICPMS1			Calibration:	4C00089

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	MDL	MRL	Q
P770-39-2	Arsenic-P5a, Dissolved	0.135	1	0.0220	0.200	J

Form I
INORGANIC ANALYSIS DATA SHEET
EPA 200.8 UCT-KED

Dissolved Metals

MW-CP7-031621

LaForatory/	Analytical Resources, Inc.				
Client/	Sloyd - J nider				
Erolɛct/	Lora Lake				
MatriO/	Ground Water	LaForatory ID/	21C0250-06 C 01	J DG/	21C0250
J ambled/	037187Z1 15/55	Erebared/	037267Z1 13/: 2	Sile ID/	XDT_m1210331-038
p J olids/	0.00	Erebaration/	R94 9EA 8007-N6-020 : .1.: P4H3 matriO	Analyɋed/	037317Z1 1: /: :
x atc%	xBC0N82	J ej uence/	JBC0518	Initial7Sinal/	25 mL 725 mL
Instrument/	ICEMJ 1			CaliFration/	9C00100

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	MDL	MRL	Q
N : 0-3z-2	Arsenic-N5a, Dissolved	2.0z	2	0.0: : 0	0.: 00	D

Form I
INORGANIC ANALYSIS DATA SHEET
EPA 200.8 UCT-KED

Dissolved Metals

MW-CP2-031721

Laboratory6	Analytical Resources, Inc.				
Client6	Floyd - J nider				
Eroject6	Lora Lake				
MatriO6	Ground Water	Laboratory ID6	21C0250-10 C 01	J DG6	21C0250
J ampled6	038178210/630	Ereparedб	0382/821 1361 2	File ID6	XDT_m1210330A-101
% J olids6	0.00	Ereparation6	R94_9EA N008-7/-020:.1.: P4H3 matriO	Analyzed6	038318210061 5
x atch6	x BC07N2	J equence6	J BC0512	Initial&Final6	25 mL 825 mL
Instrument6	ICEMJ 1			Calibration6	9C000/S

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	MDL	MRL	Q
7: : 0-3S-2	Arsenic-75a, Dissolved	0.210	1	0.0220	0.200	

Form I
INORGANIC ANALYSIS DATA SHEET
EPA 200.8 UCT-KED

Dissolved Metals

MW-CP2-031721-D

Laboratory6	Analytical Resources, Inc.				
Client6	Floyd - J nider				
Eroject6	Lora Lake				
MatriO6	Ground Water	Laboratory ID6	21C0250-11 C 01	J DG6	21C0250
J ampled6	038178210/ 6 0	Erepared6	0382/ 821 136 2	File ID6	XDT_m1210330A-102
% J olids6	0.00	Ereparation6	R94 9EA N008 -7/ -020 : .1.: P4H3 matriO	Analyzed6	038318210 06 /
x atch6	x BC07N2	J equence6	J BC0512	Initial8Final6	25 mL 825 mL
Instrument6	ICEMJ 1			Calibration6	9C000/ S

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	MDL	MRL	Q
7: : 0-3S-2	Arsenic-75a, Dissolved	0.213	1	0.0220	0.200	

Form I
INORGANIC ANALYSIS DATA SHEET
EPA 700.8 UCT-KED

Dissolved Metals

MW-CP2-023173

Laboratory6	Analytical Resources, Inc.				
Client6	Floyd - J nider				
Eroject6	Lora Lake				
MatriO6	Ground Water	Laboratory ID6	21C0250-12 C 01	J DG6	21C0250
J ampled6	038178210/ 6 0	Erepared6	0382/ 821 136 2	File ID6	XDT_m1210330A-103
% J olids6	0.00	Ereparation6	R94 9EA N008 -7/ -020 : .1.: P4H3 matriO	Analyzed6	038318210065 3
x atch6	x BC07N2	J equence6	J BC0512	Initial8Final6	25 mL 825 mL
Instrument6	ICEMJ 1			Calibration6	9C000/ S

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	MDL	MRL	Q
7: : 0-3S-2	Arsenic-75a, Dissolved	0.325	1	0.0220	0.200	

Form I
INORGANIC ANALYSIS DATA SHEET
EPA 700.8 UCT-KED

Dissolved Metals

MW-CP2-032172

Laboratory6	Analytical Resources, Inc.				
Client6	Floyd - J nider				
Eroject6	Lora Lake				
MatriO6	Ground Water	Laboratory ID6	21C0250-13 C 01	J DG6	21C0250
J ampled6	037l/ 721 10650	Erepared6	0372: 721 13682	File ID6	XDT_m1210330A-108
% J olids6	0.00	Ereparation6	R94 9EA N0078-/ : -020 8.1.8 P4 H3 matriO	Analyzed6	03731721 0065/
x atch6	x BC0/ N2	J equence6	J BC0512	Initial7Final6	25 mL 725 mL
Instrument6	ICEMJ 1			Calibration6	9C000: S

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	MDL	MRL	Q
/ 880-3S-2	Arsenic-/ 5a, Dissolved	0.85:	1	0.0220	0.200	

Form I
INORGANIC ANALYSIS DATA SHEET
EPA 200.8 UCT-KED

Dissolved Metals

MW-C1/VB1-031721

Laboratory6	Analytical Resources, Inc.				
Client6	Floyd - Snider				
Nroject6	Lora Lake				
Matrix6	Ground Water	Laboratory ID6	21C0250-18 C 01	SDG6	21C0250
Sampled6	037l/ 721 13600	Nrepared6	037 2: 721 13682	File ID6	XDT_m1210330A-118
% Solids6	0.00	Nreparation6	R4E 4NA P007 8-/ : -020 8.1.8 HEO3 matrix	Analyzed6	037317 21 01689
Batch6	BJC0/ P2	Sequence6	SJC0512	Initial7Final6	25 mL 725 mL
Instrument6	ICNMS1			Calibration6	4C000: 9

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	MDL	MRL	Q
/ 880-39-2	Arsenic-/ 5a, Dissolved	0.10/	1	0.0220	0.200	J

Form I
INORGANIC ANALYSIS DATA SHEET
E2A VBBP. 8 CT-UED

Dissolved Metals

MW-1 / V-B037V3

Laboratory/	Analytical Resources, Inc.				
Client/	Floyd - J nider				
Eroject/	Lora Lake				
MatriO/	Ground Water	Laboratory ID/	21C0250-15 C 01	J DG/	21C0250
J ampled/	038178 21 13/25	Erepared/	038268 21 13/: 2	File ID/	XDT_m1210330A-105
% J olids/	0.00	Ereparation/	R94_9EA N008 -76-020 : .1.: P 4 H3 matriO	Analyzed/	038318 21 01/01
x atch/	x BC07N2	J equence/	J BC0512	Initial8Final/	25 mL 825 mL
Instrument/	ICEMJ 1			Calibration/	9C0006S

CAS NOP	AQnal yt	CoQct QyrnyioQ e(ugL)	Dia(yioQ Fncyor	MDL	MRL	K
7: : 0-3S-2	Arsenic-75a, Dissolved	0.: NS	1	0.0220	0.200	

PREPARATION BATCH SUMMARY

EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc. SDG: 21C0250

Client: Floyd - Snider Project: Lora Lake

Batch: BJC0762 Batch Matrix: Water Preparation: REN_EPA 600/4-79-020 4.1.4 HNO3 matrix

SAMPLE NAME	LAB SAMPLE ID	LAB FILE ID	DATE PREPARED	OBSERVATIONS
MW-C3-031621	21C0250-01	XDT_m1210330A-087	03/29/21 13:42	
MW-C3-031621-D	21C0250-02	XDT_m1210330A-088	03/29/21 13:42	
MW-C2-031621	21C0250-03	XDT_m1210330A-089	03/29/21 13:42	
MW-VB3-031621	21C0250-04	XDT_m1210330A-090	03/29/21 13:42	
HCOO-B312-031621	21C0250-05	XDT_m1210330A-091	03/29/21 13:42	
MW-CP7-031621	21C0250-06	XDT_m1210330A-092	03/29/21 13:42	
MW-CP6-031621	21C0250-07	XDT_m1210330A-093	03/29/21 13:42	
MW-CP4-031621	21C0250-08	XDT_m1210330A-094	03/29/21 13:42	
MW-CP5-031621	21C0250-09	XDT_m1210331-036	03/29/21 13:42	
MW-CP2-031721	21C0250-10	XDT_m1210330A-101	03/29/21 13:42	
MW-CP2-031721-D	21C0250-11	XDT_m1210330A-102	03/29/21 13:42	
MW-CP3-031721	21C0250-12	XDT_m1210330A-103	03/29/21 13:42	
MW-CP1-031721	21C0250-13	XDT_m1210330A-104	03/29/21 13:42	
MW-C1/VB1-031721	21C0250-14	XDT_m1210330A-114	03/29/21 13:42	
MW-VB2-031721	21C0250-15	XDT_m1210330A-105	03/29/21 13:42	
Blank	BJC0762-BLK1	XDT_m1210330A-048	03/29/21 13:42	
LCS	BJC0762-BS1	XDT_m1210330A-049	03/29/21 13:42	
MW-VB2-031721	BJC0762-DUP1	XDT_m1210330A-106	03/29/21 13:42	
MW-VB2-031721	BJC0762-MS1	XDT_m1210330A-107	03/29/21 13:42	

Form I

METHOD BLANK DATA SHEET

EPA 200.8 UCT-KED

Dissolved Metals

Blank

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Batch: BJC0762
Laboratory ID: BJC0762-BLK1
Prepared: 03/29/21 13:42
Matrix: Water
Preparation: REN_EPA 600/4-79-020 4
Analyzed: 03/30/21 19:56
Sequence: SJC0512
Calibration: EC00098
Instrument: ICPMS1

CAS NO.	Analyte	Concentration (ug/L)	Dilution Factor	MDL	MRL	Q
7440-38-2	Arsenic-75a	ND	1	0.0220	0.200	U

LCS / LCS DUPLICATE RECOVERY

EPA 200.8 UCT-KED

Dissolved Metals

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Matrix:	Water	Analyzed:	03/30/21 20:01
Batch:	BJC0762	Laboratory ID:	BJC0762-BS1
Preparation:	REN EPA 600/4-79-020 4.1.4 HNO3 matrix	Sequence Name:	LCS
Initial/Final:	25 mL / 25 mL		

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	Q	LCS % REC. #	QC LIMITS REC.
Arsenic-75a (dissolved)	25.0	24.2		96.7	80 - 120

* Indicates values outside of QC limits

MW-VB2-031721

DUPLICATES

EPA 200.8 UCT-KED

Dissolved Metals

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Matrix: Water
Laboratory ID: BJC0762-DUP1
Batch: BJC0762
Lab Source ID: 21C0250-15
Preparation: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Initial/Final: 25 mL / 25 mL
Source Sample Name: MW-VB2-031721
% Solids:

ANALYTE	CONTROL LIMIT	SAMPLE CONCENTRATION (ug/L)	C	DUPLICATE CONCENTRATION (ug/L)	C	RPD %	Q
Arsenic-75a (dissolved)	20	0.468		0.475		1.48	

*: Values outside of QC limits
L: Analyte concentration is <=5 times the reporting limit and the replicate control limit defaults to Dup = +/- RL instead of 20% RPD

MS / MS DUPLICATE RECOVERY

EPA 200.8 UCT-KED

Dissolved Metals

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Matrix:	Water	Analyzed:	03/31/21 01:10
Batch:	BJC0762	Laboratory ID:	BJC0762-MS1
Preparation:	REN EPA 600/4-79-020 4.1.4 HNO3 matrix	Sequence Name:	Matrix Spike
Initial/Final:	25 mL / 25 mL	Source Sample:	MW-VB2-031721

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	Q	MS CONCENTRATION (ug/L)	Q	MS % REC. #	QC LIMITS REC.
Arsenic-75a (dissolved)	25.0	0.468		25.2		99.1	75 - 125

* Values outside of QC limits

INITIAL CALIBRATION DATA

EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Calibration: EC00098
Instrument: ICPMS1
Calibration Date: 03/30/2021 16:25

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
		RF		RF		RF		RF		RF		RF
Arsenic-75a, Dissolved	0	0	0.2	425	10	416.9	20	417.05	50	414.2	100	396.5

INITIAL CALIBRATION DATA

EPA 200.8 UCT-KED

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Calibration:	EC00098	Instrument:	ICPMS1
Calibration Date:	03/30/2021 16:25		

COMPOUND	Mean RF	RF RSD	Linear COD	Quad COD	COD Limit	Q
Arsenic-75a, Dissolved	344.9417	49.1	0.9995		0.998	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

ICP/MS - 01 SAMPLE RUN LOG

PE Nexlon ICP-MS Serial No. 85DN5032601

Analysis Date: 3/30/21 **Analyst:** MB **Sequence:** 55C0512 **Cal:** ECQQQ98

All corrections made by analyst unless otherwise noted. MB 3/30/21

Edit Label	Delete Data	ARI Sample ID	Prep Code	Dilution	Comments
	✓	SEQ-CAL1			
		-CAL2			
		-CAL3			Sc sl. noisy
		-CAL1			
		-CAL2			In sl noisy
		-CAL1			
		-CAL2			Standard mode noisy
		BLK			Flushed Sample intro.
		SEQ-CAL1	53284		
		-CAL2	53222		
		-CAL3	53287		Se sl. noisy- int, R-Value ~~OK~~ QC OK
		-CAL4	53288		
		-CAL5	53285		
		-CAL6	53289		
		-IBL1	—		
		-ICV1	51792		
		-ICB1	53284		
		-CCV1	53285		
		-CCB1	53284		
		-CRL1	53222		
		-IFA1	52773		Cr^{53} ↑
		-IFB1	53290		
		-MCV1	52774		Ba^{137} ↓ - Ba_1 < 100
		-MCV2	52867		Ba ↓

Analytical Resources, Incorporated
Analytical Chemists and Consultants

ICP/MS - 01 SAMPLE RUN LOG

PE Nexion ICP-MS Serial No. 85DN5032601

Analysis Date: 3/30/21 **Analyst:** MS **Sequence:** ——— **Cal:** ———

All corrections made by analyst unless otherwise noted.

Edit Label	Delete Data	ARI Sample ID	Prep Code	Dilution	Comments
		SEQ-IBL2			
		↓ -CCV2			
		↓ -CCB2			Sc, In, Tb sl. noisy - %R + Analytes OK
	✓	↓ -CAL1			
		↓ -CCV3			
		↓ -CCB3			
		BJC0831-BLK1	REN		
		↓ -BS1	↓		
		21C0199-04			Fe only
		↓ -06			↓
		21C0412-01	↓		
		21C0218-09	SWN	20	Ba only
		21C0216-01	REN	10	
		↓ -02	↓	↓	Ge sl. noisy - %R + Analytes OK
		↓ -03	↓	2	In ↓ - Not Needed As only
		SEQ-IBL4			
		↓ -CCV4			
		↓ -CCB4			
		BJC0762-BLK1	REN		
		↓ -BS1	↓		
		21C0415-01			No Cr
		21C0227-01			Ge, In ↓ / Mg Satd / No As, Mg
		↓ -03			Ge, In, In', Tb ↓ ↓ ↓
		↓ -04	↓		Mn ↑ No Mn

Analytical Resources, Incorporated
Analytical Chemists and Consultants

ICP/MS - 01 SAMPLE RUN LOG

PE Nexlon ICP-MS Serial No. 85DN5032601

Analysis Date: 3/30/21 **Analyst:** MB **Sequence:** — **Cal:** —

All corrections made by analyst unless otherwise noted.

Edit Label	Delete Data	ARI Sample ID	Prep Code	Dilution	Comments
		21Cφ227-φ5	REN		Ge, In, In^{-1}, Tb ↓ / Mg Satrtd / No As, Mg
		-φ6	↓		In, In^{-1} Tb ↓ ↓ No Mg
		-φ7	↓		Ge, In, In^{-1}, Tb ↓ ↓ No As, Mg
		SEQ-IBL5			
		-CCV5			
		-CCB5			Cr^{53} ↑
		21Cφ227-φ9	REN		Ge, In, In^{-1}, Tb ↓ / Mg Satrtd / No As, Mg
		-1φ	↓		↓ No Mg
		-12	↓		Mn↑ No Mn
		-φ8	↓	20	
		-11	↓	↓	
		SEQ-IBL6			(Cr^{53}↑)
		21Cφ227-φ2	REN	2	Mn↑ / Sc noisy As only
		21Cφ228-12	↓	↓	
		-14	↓	↓	
		SEQ-IBL7			(Cr^{53}↑)
		-CCV6	↓		
		-CCB6	↓		
	✓	-CAL1	↓		Ge-noisy - Int. OK
		-CCV7	↓		
		-CCB7	↓		
		BJCφ839-BLK1	REN		
		-BS1	↓		Std Made noisy No Ag, Ba, Cr, Pb
		21Cφ228-18	↓		

ICP/MS - 01 SAMPLE RUN LOG

Analytical Resources, Incorporated
Analytical Chemists and Consultants

PE Nexlon ICP-MS Serial No. 85DN5032601

Analysis Date: 3/30/21 **Analyst:** MB **Sequence:** ——— **Cal:** ———

All corrections made by analyst unless otherwise noted.

Edit Label	Delete Data	ARI Sample ID	Prep Code	Dilution	Comments
		21CØ228-2Ø	REN		
		-22	↓		
		-Ø4	↓		Mn↑ No Mn
		BJCØ831-DUP1	↓		↓ ↓
		-MS1	↓		/ In⁻¹ very noisy / No Cd
		-MSD1	↓		↓ ↓
		SEQ-IBL8			
		-CCV8			
		-CCB8			In⁻¹ noisy - %R± Analytes OK
		21CØ25Ø-Ø1	REN		
		-Ø2	↓		
		-Ø3	↓		
		-Ø4	↓		
		-Ø5	↓		
		-Ø6	↓		
		-Ø7	↓		
		-Ø8	↓		
	✓	-Ø9	↓		Ge noisy As sl. noisy
		SEQ-IBL9			
		-CCV9			Fe^{54}↓
		-CCB9			
		BJCØ837-BLK1	REN		No Ag, Pb
		-BS1	↓		↓
		21CØ25Ø-1Ø	↓		

Analytical Resources, Incorporated
Analytical Chemists and Consultants

ICP/MS - 01 SAMPLE RUN LOG

PE Nexion ICP-MS Serial No. 85DN5032601

Analysis Date: 3/30/21 **Analyst:** MB **Sequence:** ——— **Cal:** ———

All corrections made by analyst unless otherwise noted.

Edit Label	Delete Data	ARI Sample ID	Prep Code	Dilution	Comments
		21CΦ25Φ-11	REN		
		-12			
		-13			
		-15			
		BJCΦ762-DUP1			
		-MS1			
		SEQ-IBLA			
		-CCVA			↓Fe54/Ag+Pb↑
		-CCBA			
	✓	-CAL1			In noisy - Int. OK
		-CCVB			Fe54↓/Ag+Pb↑
		-CCBB			
		21CΦ25Φ-14	REN		
		21CΦ252-1Φ			In+1 sl. noisy - %R & Analytes OK — No Ag, Pb
		-12			↓
		-14			
		-16			Ge, In In+1, Tb ↓ — Cr only
		-19			Sc, In, Tb sl. noisy - %R+ Analytes OK — No Ag, Pb
		BJCΦ837-DUP1			↓
		-MS1			
		-MSD1			In noisy / Sc sl. noisy - %R+ Analytes OK / No Ag, Ba, Pb
		SEQ-IBLB			
		-CCVC			Fe54↓/Ag+Pb↑
		-CCBC			

Analytical Resources, Incorporated
Analytical Chemists and Consultants

ICP/MS - 01 SAMPLE RUN LOG

PE Nexion ICP-MS Serial No. 85DN5032601

Analysis Date: 3/30/21 **Analyst:** MB **Sequence:** ——— **Cal:** ———

All corrections made by analyst unless otherwise noted. MB 3/30/21

Edit Label	Delete Data	ARI Sample ID	Prep Code	Dilution	Comments
680		BJC0~~86~~68Φ-BLK1	LEN	200	No Ag, Pb
		21CΦ265-Φ2	↓	↓	↓
~~680~~		BJCΦ~~86~~68Φ-DUP1			
↓		↓ -MS1			
		SEQ-IBLC			
		21CΦ27Φ-12	REN		No Ag, Pb
		BJCΦ839-DUP1	↓		↓
		↓ -MS1			In-1st noisy - %R + Analytes OK
		↓ -MSD1			
		SEQ-IBLD			
		↓ -CCVD			Fe^{54}↓/Ag+Pb↑
		↓ -CCBD			
		21CΦ27Φ-14	REN		No Ag, Pb, Ba
		↓ -16	↓		↓
		21CΦ288-14			
		↓ -17			
		↓ -Φ6			
		BJCΦ839-DUP2			
		↓ -MS2			
		↓ -MSD2	↓		↓
		SEQ-IBLE			
		↓ -CCVE			Fe^{54}, Ba^{135}↓/Ag+Pb↑
		↓ -CCBE			
		Rinse/DI			

Performance Check Report

Sample ID: STD Performance Check
Sample Date/Time: Tuesday, March 30, 2021 10:57:37
Sample Description:
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\STD Performance Check.mth
Dataset File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\DataSet\Default\STD Performance Check.10570
MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Conditions File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Dual Detector Mode: Pulse
Acq. Dead Time (ns): 35
Current Dead Time (ns): 35
Torch Z position (mm): 0.00

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD	Mode
	Be	9.0	6660.0	6660.019	120.314	1.8	Standard
	In	114.9	120101.6	-3408363.694	1869.477	0.1	Standard
	U	238.1	150512.6	150512.637	4259.831	2.8	Standard
⌈	CeO	155.9	3853.1	0.020	0.000	2.3	Standard
| >	Ce	139.9	188201.6	188201.633	2068.512	1.1	Standard
⌊	Ce++	70.0	1564.6	0.008	0.000	4.8	Standard
	Bkgd	220.0	14.1	14.100	7.836	55.6	Standard

Current Conditions File Data

Current Value	Description
0.92	Nebulizer Gas Flow STD/KED [NEB]
1.25	Auxiliary Gas Flow
17.50	Plasma Gas Flow
-10.75	Deflector Voltage
1600.00	ICP RF Power
-1787.00	Analog Stage Voltage
1550.00	Pulse Stage Voltage
0.00	Quadrupole Rod Offset STD [QRO]
-17.00	Cell Rod Offset STD [CRO]
14.00	Discriminator Threshold
-2.00	Cell Entrance/Exit Voltage STD
0.00	RPa
0.45	RPq
0.92	DRC Mode NEB
-7.50	DRC Mode QRO
-2.00	DRC Mode CRO
-5.00	DRC Mode Cell Entrance/Exit Voltage
1.00	Cell Gas A
0.00	Cell Gas B
200.00	Axial Field Voltage
-11.00	KED Mode CRO
-12.00	KED Mode QRO
-11.00	KED Mode Cell Entrance Voltage
-33.00	KED Mode Cell Exit Voltage
0.00	KED Cell Gas A
3.00	KED Cell Gas B
0.00	KED RPa
0.25	KED RPq
125.00	KED Mode Axial Field Voltage

SmartTune Wizard - Summary

Optimization Summary

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\ARISmartTuneDailyUCT.swz

Start Time: 3/30/2021 10:57:34 AM
End Time: 3/30/2021 11:05:58 AM

STD Performance Check - [Failed]
Obtained Intensity (Be 9): 6660.02
Obtained Intensity (In 115): 120101.64
Obtained Intensity (U 238): 150512.64
Obtained Intensity (Bkgd 220): 14.10 - <Target not achieved>
Obtained Formula (Ce++ 70 / Ce 140): 0.008 (=1564.62 / 188201.63)
Obtained Formula (CeO 156 / Ce 140): 0.020 (=3853.12 / 188201.63)
Obtained RSD (Be 9): 0.0181
Obtained RSD (In 115): 0.0005
Obtained RSD (U 238): 0.0283

Torch Alignment - [Passed]

Vertical	Horizontal	Intensity
2.64 mm	-0.18 mm	132730.76

Nebulizer Gas Flow STD/KED [NEB] - [Passed] Optimum value(s): 0.91
Obtained Intensity (In 115): 109214.89
Obtained Formula (CeO 156 / Ce 140): 0.0197 (=3499.43 / 177841.11)

Mass Calibration and Resolution - [Passed] Optimum value(s): N/A
Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.710)
Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.717)
Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.7/0.702)
Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.702)

QID STD/DRC - Optimum value(s): Correlation Coefficient = 0.994; Intercept = -15.33

KED Mode QID - Optimum value(s): Correlation Coefficient = 0.984; Intercept = -12.61

SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\ARISmartTuneDailyUCT.swz

Optimization Status

Start Time: 3/30/2021 10:57:34 AM

STD Performance Check
	Optimization Settings:
		Method: STD Performance Check.mth.
		Intensity Criterion: Be 9 > 2000
		Intensity Criterion: In 115 > 40000
		Intensity Criterion: U 238 > 30000
		Intensity Criterion: Bkgd 220 <= 5
		Formula Criterion: Ce++ 70 / Ce 140 <= 0.03
		Formula Criterion: CeO 156 / Ce 140 <= 0.025
		RSD Criterion: Be 9.0122 < 5
		RSD Criterion: In 114.904 < 5
		RSD Criterion: U 238.05 < 5

	Optimization Results:
	Initial Try
		Obtained Intensity (Be 9): 6660.02
		Obtained Intensity (In 115): 120101.64
		Obtained Intensity (U 238): 150512.64
		Obtained Intensity (Bkgd 220): 14.10 - <Target not achieved>
		Obtained Formula (Ce++ 70 / Ce 140): 0.008 (=1564.62 / 188201.63)
		Obtained Formula (CeO 156 / Ce 140): 0.020 (=3853.12 / 188201.63)
		Obtained RSD (Be 9): 0.0181
		Obtained RSD (In 115): 0.0005
		Obtained RSD (U 238): 0.0283

		[Failed]
[Failed]

Torch Alignment
	Optimization Settings:
		Method: Torch Alignment.mth.
		Intensity Criterion: In 115 Maximum

	Optimization Results:
		Vertical	Horizontal	Intensity
[Passed]	2.64 mm	-0.18 mm	132730.76

Nebulizer Gas Flow STD/KED [NEB]
	Optimization Settings:
		Method: Optimize.mth.
			Initial Try - Start/End/Step: 0.9/0.95/0.01.
		Intensity Criterion: In 115 Maximum
		Formula Criterion: CeO 156 / Ce 140 <= 0.02

	Optimization Results:
	Initial Try

		Obtained Intensity (In 115): 109214.89
		Obtained Formula (CeO 156 / Ce 140): 0.0197 (=3499.43 / 177841.11)
[Passed] Optimum value(s): 0.91

Mass Calibration and Resolution
	Optimization Settings:
		Method: Tuning.mth.
		MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
		Iterations: 6
		Target accuracy (+/- amu): 0.05 for Mass Cal. and 0.03 for Resolution
		Peak height (%) for Res. Opt.: 10

	Optimization Results:
	Initial Try
		Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.710)
		Target/Obtained mass (23.985/23.975), Target/Obtained resolution (0.7/0.717)
		Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.7/0.702)
		Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.7/0.702)
[Passed] Optimum value(s): N/A

QID STD/DRC
	Optimization Settings:
		Method: QID Calibration.mth.
			Initial Try - Start/End/Step: -20/0/0.5.

	Optimization Results:
	Initial Try

  Optimum value(s): Correlation Coefficient = 0.994; Intercept = -15.33

	Analyte	Mass	Points	DAC	MaxIntensity

	Li	7	41	-15	24665.3
	Mg	24	41	-14.5	44047.8
	In	115	41	-11.5	121946
	Ce	140	41	-11.5	184253
	Pb	208	41	-10.5	86553.4
	U	238	41	-10.5	149623

KED Mode QID
	Optimization Settings:
		Method: QID Calibration.mth.
			Initial Try - Start/End/Step: -20/0/0.5.

	Optimization Results:
	Initial Try

  Optimum value(s): Correlation Coefficient = 0.984; Intercept = -12.61

	Analyte	Mass	Points	DAC	MaxIntensity

	Li	7	41	-13.5	17522.7
	Mg	24	41	-14	57178.2
	In	115	41	-12	127135
	Ce	140	41	-10.5	111860
	Pb	208	41	-10	51737.5
	U	238	41	-5	95695.4

End Time: 3/30/2021 11:05:58 AM

SmartTune Wizard - Summary

Optimization Summary

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\ARISmartTuneDailyUCT.swz

Start Time: 3/30/2021 11:11:43 AM
End Time: 3/30/2021 11:14:39 AM

QID STD/DRC - Optimum value(s): Correlation Coefficient = 0.995; Intercept = -15.28

KED Mode QID - Optimum value(s): Correlation Coefficient = 0.987; Intercept = -13.59

SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\ARISmartTuneDailyUCT.swz

Optimization Status

Start Time: 3/30/2021 11:11:43 AM

QID STD/DRC

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 0.995; Intercept = -15.28

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-15	22938.4
Mg	24	41	-14.5	42551.3
In	115	41	-11.5	119982
Ce	140	41	-11.5	177443
Pb	208	41	-11	86348.2
U	238	41	-11	150521

KED Mode QID

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 0.987; Intercept = -13.59

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-13.5	18055.4
Mg	24	41	-13	58266.6
In	115	41	-11.5	124900
Ce	140	41	-10.5	119042
Pb	208	41	-10	56126
U	238	41	-10	101302

End Time: 3/30/2021 11:14:39 AM

Performance Check Report

Sample ID: STD Performance Check
Sample Date/Time: Tuesday, March 30, 2021 11:16:09
Sample Description:
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\STD Performance Check.mth
Dataset File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\DataSet\Default\STD Performance Check.10583
MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Conditions File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Dual Detector Mode: Pulse
Acq. Dead Time (ns): 35
Current Dead Time (ns): 35
Torch Z position (mm): 0.00

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD	Mode
	Be	9.0	5792.4	5792.441	125.753	2.2	Standard
	In	114.9	106703.4	106703.360	700.259	0.7	Standard
	U	238.1	144750.6	144750.625	1244.698	0.9	Standard
⎡	CeO	155.9	3465.5	0.020	0.000	2.2	Standard
| >	Ce	139.9	171800.2	171800.202	1643.671	1.0	Standard
⎣	Ce++	70.0	1204.5	0.007	0.000	1.7	Standard
	Bkgd	220.0	2.6	2.567	0.713	27.8	Standard

Current Conditions File Data

Current Value	Description
0.91	Nebulizer Gas Flow STD/KED [NEB]
1.25	Auxiliary Gas Flow
17.50	Plasma Gas Flow
-10.75	Deflector Voltage
1600.00	ICP RF Power
-1787.00	Analog Stage Voltage
1550.00	Pulse Stage Voltage
0.00	Quadrupole Rod Offset STD [QRO]
-17.00	Cell Rod Offset STD [CRO]
14.00	Discriminator Threshold
-2.00	Cell Entrance/Exit Voltage STD
0.00	RPa
0.45	RPq
0.91	DRC Mode NEB
-7.50	DRC Mode QRO
-2.00	DRC Mode CRO
-5.00	DRC Mode Cell Entrance/Exit Voltage
1.00	Cell Gas A
0.00	Cell Gas B
200.00	Axial Field Voltage
-11.00	KED Mode CRO
-12.00	KED Mode QRO
-11.00	KED Mode Cell Entrance Voltage
-33.00	KED Mode Cell Exit Voltage
0.00	KED Cell Gas A
3.00	KED Cell Gas B
0.00	KED RPa
0.25	KED RPq
125.00	KED Mode Axial Field Voltage

SmartTune Wizard - Summary

Optimization Summary

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\ARISmartTuneDailyUCT.swz

Start Time: 3/30/2021 11:14:49 AM
End Time: 3/30/2021 11:18:13 AM

KED Mode QID - Optimum value(s): Correlation Coefficient = 0.995; Intercept = -13.31

STD Performance Check - [Passed] Optimum value(s): N/A
Obtained Intensity (Be 9): 5792.44
Obtained Intensity (In 115): 106703.36
Obtained Intensity (U 238): 144750.63
Obtained Intensity (Bkgd 220): 2.57
Obtained Formula (Ce++ 70 / Ce 140): 0.007 (=1204.52 / 171800.20)
Obtained Formula (CeO 156 / Ce 140): 0.020 (=3465.49 / 171800.20)
Obtained RSD (Be 9): 0.0217
Obtained RSD (In 115): 0.0066
Obtained RSD (U 238): 0.0086

SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\ARISmartTuneDailyUCT.swz

Optimization Status

Start Time: 3/30/2021 11:14:49 AM

KED Mode QID

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 0.995; Intercept = -13.31

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-13.5	18463.9
Mg	24	41	-13.5	57961.3
In	115	41	-11.5	125263
Ce	140	41	-10.5	122632
Pb	208	41	-10	54507.8
U	238	41	-10	101648

STD Performance Check

Optimization Settings:

Method: STD Performance Check.mth.

Intensity Criterion: Be 9 > 2000

Intensity Criterion: In 115 > 40000

Intensity Criterion: U 238 > 30000

Intensity Criterion: Bkgd 220 <= 5

Formula Criterion: Ce++ 70 / Ce 140 <= 0.03

Formula Criterion: CeO 156 / Ce 140 <= 0.025

RSD Criterion: Be 9.0122 < 5

RSD Criterion: In 114.904 < 5

RSD Criterion: U 238.05 < 5

Optimization Results:

Initial Try

Obtained Intensity (Be 9): 5792.44

Obtained Intensity (In 115): 106703.36

Obtained Intensity (U 238): 144750.63

Obtained Intensity (Bkgd 220): 2.57

Obtained Formula (Ce++ 70 / Ce 140): 0.007 (=1204.52 / 171800.20)

Obtained Formula (CeO 156 / Ce 140): 0.020 (=3465.49 / 171800.20)

Obtained RSD (Be 9): 0.0217

Obtained RSD (In 115): 0.0066

Obtained RSD (U 238): 0.0086

[Passed] Optimum value(s): N/A

End Time: 3/30/2021 11:18:13 AM

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 15:28:24

DEL

Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
C	13		ug/L				33812	0	Standard
Cl	37		ug/L				6933127	1	Standard
> Sc	45		ug/L				2792046	2	Standard
Mg	24		ug/L				3521	4	Standard
Cr	52		ug/L				27616	1	Standard
Cr	53		ug/L				238	6	Standard
Fe	54		ug/L				142387	1	Standard
Fe	57		ug/L				55579	1	Standard
Mn	55		ug/L				774	4	Standard
> Ge	72		ug/L				127123	0	KED
Ni	60		ug/L				14	49	KED
Ni	62		ug/L				3	86	KED
Cu	63		ug/L				175	9	KED
Cu	65		ug/L				89	9	KED
Zn	66		ug/L				100	34	KED
Zn	67		ug/L				13	51	KED
As	75		ug/L				6	19	KED
Se	78		ug/L				29	11	KED
Y	89		ug/L				827798	3	Standard
Kr	83		ug/L				53	18	Standard
> In-1	115		ug/L				54613	1	KED
Cd	111		ug/L				2	33	KED
Cd	114		ug/L				2	74	KED
> In	115		ug/L				2847671	3	Standard
Ag	107		ug/L				70	23	Standard
Ba	135		ug/L				137	9	Standard
Ba	137		ug/L				236	10	Standard
> Tb	159		ug/L				3119667	1	Standard
Pb	208		ug/L				380	10	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL2
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 15:32:49

DEL

Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33812	34288	4	Standard
	Cl	**37**		ug/L			6933127	6890386	1	Standard
⌈>	**Sc**	**45**		ug/L			2792046	2779781	1	Standard
|	**Mg**	**24**	**20.000**	ug/L	0.485	2	3521	685061	2	Standard
|	**Cr**	**52**	**0.500**	ug/L	0.009	1	27616	42034	1	Standard
|	**Cr**	**53**	**0.500**	ug/L	0.017	3	238	1938	1	Standard
|	**Fe**	**54**	**20.000**	ug/L	0.944	4	142387	224377	3	Standard
|	**Fe**	**57**	**20.000**	ug/L	1.570	7	55579	81506	3	Standard
⌊	**Mn**	**55**	**0.500**	ug/L	0.010	2	774	22599	2	Standard
⌈>	**Ge**	**72**		ug/L			127123	125701	1	KED
|	**Ni**	**60**	**0.500**	ug/L	0.022	4	14	1033	3	KED
|	**Ni**	**62**	**0.500**	ug/L	0.017	3	3	166	2	KED
|	**Cu**	**63**	**0.500**	ug/L	0.010	1	175	3325	0	KED
|	**Cu**	**65**	**0.500**	ug/L	0.022	4	89	1636	3	KED
|	**Zn**	**66**	**4.000**	ug/L	0.140	3	100	3264	2	KED
|	**Zn**	**67**	**4.000**	ug/L	0.284	7	13	520	8	KED
|	**As**	**75**	**0.200**	ug/L	0.013	6	6	85	5	KED
⌊	**Se**	**78**	**0.500**	ug/L	0.079	15	29	42	4	KED
	Y	**89**		ug/L			827798	826216	2	Standard
	Kr	**83**		ug/L			53	59	24	Standard
⌈>	**In-1**	**115**		ug/L			54613	54574	1	KED
|	**Cd**	**111**	**0.100**	ug/L	0.008	7	2	46	8	KED
⌊	**Cd**	**114**	**0.100**	ug/L	0.005	4	2	131	5	KED
⌈>	**In**	**115**		ug/L			2847671	2821416	0	Standard
|	**Ag**	**107**	**0.200**	ug/L	0.006	3	70	4770	2	Standard
|	**Ba**	**135**	**0.500**	ug/L	0.012	2	137	4797	1	Standard
⌊	**Ba**	**137**	**0.500**	ug/L	0.009	1	236	8532	1	Standard
⌈>	**Tb**	**159**		ug/L			3119667	3112764	0	Standard
⌊	**Pb**	**208**	**0.100**	ug/L	0.001	1	380	13210	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL3
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 15:37:15

DEL

Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33812	38232	2	Standard
	Cl	**37**		ug/L			6933127	7025359	3	Standard
>	**Sc**	**45**		ug/L			2792046	2645083	7	Standard
	Mg	**24**	**1000.017**	ug/L	45.380	4	3521	33819470	4	Standard
	Cr	**52**	**10.001**	ug/L	0.610	6	27616	313739	1	Standard
	Cr	**53**	**10.001**	ug/L	0.528	5	238	33841	2	Standard
	Fe	**54**	**1000.012**	ug/L	33.154	3	142387	4182973	3	Standard
	Fe	**57**	**1000.035**	ug/L	35.699	3	55579	1414803	4	Standard
	Mn	**55**	**10.001**	ug/L	0.713	7	774	427480	0	Standard
>	**Ge**	**72**		ug/L			127123	127238	0	KED
	Ni	**60**	**10.001**	ug/L	0.148	1	14	21626	0	KED
	Ni	**62**	**10.002**	ug/L	0.486	4	3	3564	4	KED
	Cu	**63**	**10.000**	ug/L	0.142	1	175	62967	1	KED
	Cu	**65**	**10.000**	ug/L	0.216	2	89	31059	1	KED
	Zn	**66**	**10.020**	ug/L	0.261	2	100	8229	1	KED
	Zn	**67**	**10.066**	ug/L	0.451	4	13	1360	3	KED
	As	**75**	**10.000**	ug/L	0.251	2	6	4066	2	KED
	Se	**78**	**10.008**	ug/L	0.285	2	29	450	2	KED
	Y	**89**		ug/L			827798	808202	7	Standard
	Kr	**83**		ug/L			53	72	13	Standard
>	**In-1**	**115**		ug/L			54613	53768	0	KED
	Cd	**111**	**10.000**	ug/L	0.099	0	2	4542	1	KED
	Cd	**114**	**10.000**	ug/L	0.179	1	2	11668	2	KED
>	**In**	**115**		ug/L			2847671	2789598	5	Standard
	Ag	**107**	**10.000**	ug/L	0.352	3	70	242228	3	Standard
	Ba	**135**	**10.001**	ug/L	0.527	5	137	95754	1	Standard
	Ba	**137**	**10.001**	ug/L	0.247	2	236	170602	3	Standard
>	**Tb**	**159**		ug/L			3119667	3046097	4	Standard
	Pb	**208**	**10.000**	ug/L	0.254	2	380	1277474	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL1
Sample Dil Factor:
Comments:

DEL

Sample Date/Time: Tuesday, March 30, 2021 15:42:26
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L				31649	2	Standard
	Cl	**37**		ug/L				6952818	2	Standard
⌈>	**Sc**	**45**		ug/L				2764609	1	Standard
|	**Mg**	**24**		ug/L				2856	3	Standard
|	**Cr**	**52**		ug/L				27479	2	Standard
|	**Cr**	**53**		ug/L				220	4	Standard
|	**Fe**	**54**		ug/L				141988	0	Standard
|	**Fe**	**57**		ug/L				51767	3	Standard
⌊	**Mn**	**55**		ug/L				724	1	Standard
⌈>	**Ge**	**72**		ug/L				124001	1	KED
|	**Ni**	**60**		ug/L				13	49	KED
|	**Ni**	**62**		ug/L				3	69	KED
|	**Cu**	**63**		ug/L				158	5	KED
|	**Cu**	**65**		ug/L				82	15	KED
|	**Zn**	**66**		ug/L				47	8	KED
|	**Zn**	**67**		ug/L				8	24	KED
|	**As**	**75**		ug/L				5	19	KED
⌊	**Se**	**78**		ug/L				25	6	KED
	Y	**89**		ug/L				838255	1	Standard
	Kr	**83**		ug/L				71	26	Standard
⌈>	**In-1**	**115**		ug/L				52216	4	KED
|	**Cd**	**111**		ug/L				5	44	KED
⌊	**Cd**	**114**		ug/L				4	25	KED
⌈>	**In**	**115**		ug/L				2775201	1	Standard
|	**Ag**	**107**		ug/L				81	18	Standard
|	**Ba**	**135**		ug/L				93	23	Standard
⌊	**Ba**	**137**		ug/L				183	22	Standard
⌈>	**Tb**	**159**		ug/L				3124863	0	Standard
⌊	**Pb**	**208**		ug/L				429	15	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL2
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 15:46:51

DEL

Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31649	33805	3	Standard
	Cl	**37**		ug/L			6952818	7027364	1	Standard
⌈>	**Sc**	**45**		ug/L			2764609	2763604	0	Standard
|	**Mg**	**24**	**20.000**	ug/L	0.572	2	2856	678060	3	Standard
|	**Cr**	**52**	**0.500**	ug/L	0.018	3	27479	41655	1	Standard
|	**Cr**	**53**	**0.500**	ug/L	0.025	5	220	1842	4	Standard
|	**Fe**	**54**	**20.000**	ug/L	0.923	4	141988	221340	1	Standard
|	**Fe**	**57**	**20.000**	ug/L	0.394	1	51767	80132	0	Standard
⌊	**Mn**	**55**	**0.500**	ug/L	0.012	2	724	21786	2	Standard
⌈>	**Ge**	**72**		ug/L			124001	125988	0	KED
|	**Ni**	**60**	**0.500**	ug/L	0.011	2	13	1041	3	KED
|	**Ni**	**62**	**0.500**	ug/L	0.021	4	3	199	3	KED
|	**Cu**	**63**	**0.500**	ug/L	0.006	1	158	3195	1	KED
|	**Cu**	**65**	**0.500**	ug/L	0.017	3	82	1646	3	KED
|	**Zn**	**66**	**4.000**	ug/L	0.137	3	47	3257	2	KED
|	**Zn**	**67**	**4.000**	ug/L	0.113	2	8	472	3	KED
|	**As**	**75**	**0.200**	ug/L	0.013	6	5	79	5	KED
⌊	**Se**	**78**	**0.500**	ug/L	0.151	30	25	45	13	KED
	Y	**89**		ug/L			838255	837366	2	Standard
	Kr	**83**		ug/L			71	80	2	Standard
⌈>	**In-1**	**115**		ug/L			52216	43995	11	KED
|	**Cd**	**111**	**0.100**	ug/L	0.018	17	5	51	18	KED
⌊	**Cd**	**114**	**0.100**	ug/L	0.008	8	4	108	10	KED
⌈>	**In**	**115**		ug/L			2775201	2835430	2	Standard
|	**Ag**	**107**	**0.200**	ug/L	0.009	4	81	4619	3	Standard
|	**Ba**	**135**	**0.500**	ug/L	0.019	3	93	4810	1	Standard
⌊	**Ba**	**137**	**0.500**	ug/L	0.010	1	183	8323	1	Standard
⌈>	**Tb**	**159**		ug/L			3124863	3175945	0	Standard
⌊	**Pb**	**208**	**0.100**	ug/L	0.001	0	429	13236	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL1
Sample Dil Factor:
Comments:

DEL

Sample Date/Time: Tuesday, March 30, 2021 15:52:54
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L				33482	2	Standard
	Cl	**37**		ug/L				7038517	1	Standard
⌈>	**Sc**	**45**		ug/L				2732713	1	Standard
|	**Mg**	**24**		ug/L				2700	5	Standard
|	**Cr**	**52**		ug/L				27368	1	Standard
|	**Cr**	**53**		ug/L				210	6	Standard
|	**Fe**	**54**		ug/L				138760	2	Standard
|	**Fe**	**57**		ug/L				54987	2	Standard
⌊	**Mn**	**55**		ug/L				712	2	Standard
⌈>	**Ge**	**72**		ug/L				121452	2	KED
|	**Ni**	**60**		ug/L				17	48	KED
|	**Ni**	**62**		ug/L				3	69	KED
|	**Cu**	**63**		ug/L				163	18	KED
|	**Cu**	**65**		ug/L				68	9	KED
|	**Zn**	**66**		ug/L				55	8	KED
|	**Zn**	**67**		ug/L				10	65	KED
|	**As**	**75**		ug/L				5	36	KED
⌊	**Se**	**78**		ug/L				23	8	KED
	Y	**89**		ug/L				828295	1	Standard
	Kr	**83**		ug/L				62	22	Standard
⌈>	**In-1**	**115**		ug/L				52443	1	KED
|	**Cd**	**111**		ug/L				1	69	KED
⌊	**Cd**	**114**		ug/L				5	33	KED
⌈>	**In**	**115**		ug/L				2811858	0	Standard
|	**Ag**	**107**		ug/L				56	1	Standard
|	**Ba**	**135**		ug/L				97	13	Standard
⌊	**Ba**	**137**		ug/L				165	21	Standard
⌈>	**Tb**	**159**		ug/L				3142056	2	Standard
⌊	**Pb**	**208**		ug/L				350	8	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL2
Sample Dil Factor:
Comments:

DEL

Sample Date/Time: Tuesday, March 30, 2021 15:57:19
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
C	13		ug/L			33482	32195	4	Standard
Cl	37		ug/L			7038517	6921338	4	Standard
> Sc	45		ug/L			2732713	2643307	10	Standard
Mg	24	20.000	ug/L	2.049	10	2700	661007	1	Standard
Cr	52	0.500	ug/L	0.116	23	27368	40881	2	Standard
Cr	53	0.500	ug/L	0.084	16	210	1901	5	Standard
Fe	54	20.000	ug/L	6.233	31	138760	223641	1	Standard
Fe	57	20.000	ug/L	4.843	24	54987	79211	2	Standard
Mn	55	0.500	ug/L	0.052	10	712	21879	1	Standard
> Ge	72		ug/L			121452	124323	0	KED
Ni	60	0.500	ug/L	0.020	3	17	1156	3	KED
Ni	62	0.500	ug/L	0.045	8	3	179	7	KED
Cu	63	0.500	ug/L	0.013	2	163	3370	3	KED
Cu	65	0.500	ug/L	0.020	4	68	1686	4	KED
Zn	66	4.000	ug/L	0.231	5	55	3281	5	KED
Zn	67	4.000	ug/L	0.106	2	10	537	2	KED
As	75	0.200	ug/L	0.018	9	5	85	8	KED
Se	78	0.500	ug/L	0.058	11	23	45	4	KED
Y	89		ug/L			828295	784569	10	Standard
Kr	83		ug/L			62	83	19	Standard
> In-1	115		ug/L			52443	53538	0	KED
Cd	111	0.100	ug/L	0.024	24	1	43	24	KED
Cd	114	0.100	ug/L	0.004	4	5	98	2	KED
> In	115		ug/L			2811858	2706447	13	Standard
Ag	107	0.200	ug/L	0.033	16	56	4759	1	Standard
Ba	135	0.500	ug/L	0.060	11	97	4702	3	Standard
Ba	137	0.500	ug/L	0.082	16	165	8307	1	Standard
> Tb	159		ug/L			3142056	2903769	9	Standard
Pb	208	0.100	ug/L	0.010	10	350	13463	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 1
Sample Dil Factor:
Comments:

DEL

Sample Date/Time: Tuesday, March 30, 2021 16:21:04
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			0	32656	0	Standard
	Cl	37		ug/L			0	7164641	2	Standard
>	Sc	45		ug/L			0	2744322	0	Standard
	Mg	24		ug/L			0	4382	2	Standard
	Cr	52		ug/L			0	27613	1	Standard
	Cr	53		ug/L			0	296	8	Standard
	Fe	54		ug/L			0	153896	4	Standard
	Fe	57		ug/L			0	53978	1	Standard
	Mn	55		ug/L			0	989	3	Standard
>	Ge	72		ug/L			0	123818	4	KED
	Ni	60		ug/L			0	159	26	KED
	Ni	62		ug/L			0	30	10	KED
	Cu	63		ug/L			0	424	5	KED
	Cu	65		ug/L			0	226	5	KED
	Zn	66		ug/L			0	253	34	KED
	Zn	67		ug/L			0	33	37	KED
	As	75		ug/L			0	7	21	KED
	Se	78		ug/L			0	24	4	KED
	Y	89		ug/L			0	828193	2	Standard
	Kr	83		ug/L			0	81	22	Standard
>	In-1	115		ug/L			0	55378	1	KED
	Cd	111		ug/L			0	2	107	KED
	Cd	114		ug/L			0	1	60	KED
>	In	115		ug/L			0	2830885	4	Standard
	Ag	107		ug/L			0	93	16	Standard
	Ba	135		ug/L			0	899	7	Standard
	Ba	137		ug/L			0	1700	5	Standard
>	Tb	159		ug/L			0	3122137	0	Standard
	Pb	208		ug/L			0	6561	9	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 16:25:45
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L				33151	1	Standard
	Cl	**37**		ug/L				7165427	0	Standard
⎡>	**Sc**	**45**		ug/L				2837603	2	Standard
⎢	**Mg**	**24**		ug/L				3136	2	Standard
⎢	**Cr**	**52**		ug/L				27670	2	Standard
⎢	**Cr**	**53**		ug/L				259	1	Standard
⎢	**Fe**	**54**		ug/L				148035	1	Standard
⎢	**Fe**	**57**		ug/L				53579	4	Standard
⎣	**Mn**	**55**		ug/L				766	5	Standard
⎡>	**Ge**	**72**		ug/L				125988	1	KED
⎢	**Ni**	**60**		ug/L				43	19	KED
⎢	**Ni**	**62**		ug/L				14	27	KED
⎢	**Cu**	**63**		ug/L				183	1	KED
⎢	**Cu**	**65**		ug/L				96	21	KED
⎢	**Zn**	**66**		ug/L				71	20	KED
⎢	**Zn**	**67**		ug/L				9	20	KED
⎢	**As**	**75**		ug/L				4	50	KED
⎣	**Se**	**78**		ug/L				29	4	KED
	Y	**89**		ug/L				831527	2	Standard
	Kr	**83**		ug/L				62	8	Standard
⎡>	**In-1**	**115**		ug/L				54227	1	KED
⎢	**Cd**	**111**		ug/L				3	56	KED
⎣	**Cd**	**114**		ug/L				3	52	KED
⎡>	**In**	**115**		ug/L				2847067	4	Standard
⎢	**Ag**	**107**		ug/L				48	24	Standard
⎢	**Ba**	**135**		ug/L				582	3	Standard
⎣	**Ba**	**137**		ug/L				980	6	Standard
⎡>	**Tb**	**159**		ug/L				3137629	3	Standard
⎣	**Pb**	**208**		ug/L				1274	3	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL2
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 16:30:10
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	34021	3	Standard
	Cl	**37**		ug/L			7165427	7293894	2	Standard
⌈>	**Sc**	**45**		ug/L			2837603	2744869	2	Standard
|	**Mg**	**24**	**20.000**	ug/L	0.334	1	3136	691843	1	Standard
|	**Cr**	**52**	**0.500**	ug/L	0.041	8	27670	42548	0	Standard
|	**Cr**	**53**	**0.500**	ug/L	0.020	3	259	1893	0	Standard
|	**Fe**	**54**	**20.000**	ug/L	2.125	10	148035	229668	1	Standard
|	**Fe**	**57**	**20.000**	ug/L	2.895	14	53579	82218	2	Standard
⌊	**Mn**	**55**	**0.500**	ug/L	0.007	1	766	22339	1	Standard
⌈>	**Ge**	**72**		ug/L			125988	126300	0	KED
|	**Ni**	**60**	**0.500**	ug/L	0.023	4	43	1114	4	KED
|	**Ni**	**62**	**0.500**	ug/L	0.064	12	14	187	11	KED
|	**Cu**	**63**	**0.500**	ug/L	0.032	6	183	3397	5	KED
|	**Cu**	**65**	**0.500**	ug/L	0.017	3	96	1748	3	KED
|	**Zn**	**66**	**4.000**	ug/L	0.170	4	71	3515	3	KED
|	**Zn**	**67**	**4.000**	ug/L	0.234	5	9	526	6	KED
|	**As**	**75**	**0.200**	ug/L	0.014	6	4	85	6	KED
⌊	**Se**	**78**	**0.500**	ug/L	0.242	48	29	41	13	KED
	Y	**89**		ug/L			831527	832416	1	Standard
	Kr	**83**		ug/L			62	80	13	Standard
⌈>	**In-1**	**115**		ug/L			54227	54484	0	KED
|	**Cd**	**111**	**0.100**	ug/L	0.005	5	3	44	4	KED
⌊	**Cd**	**114**	**0.100**	ug/L	0.010	10	3	131	9	KED
⌈>	**In**	**115**		ug/L			2847067	2870578	4	Standard
|	**Ag**	**107**	**0.200**	ug/L	0.010	4	48	4678	4	Standard
|	**Ba**	**135**	**0.500**	ug/L	0.024	4	582	5306	3	Standard
⌊	**Ba**	**137**	**0.500**	ug/L	0.015	3	980	9340	1	Standard
⌈>	**Tb**	**159**		ug/L			3137629	3078098	3	Standard
⌊	**Pb**	**208**	**0.100**	ug/L	0.003	3	1274	14144	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL3
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 16:34:36
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	41565	1	Standard
	Cl	**37**		ug/L			7165427	7407645	0	Standard
⌈>	**Sc**	**45**		ug/L			2837603	2904626	2	Standard
|	**Mg**	**24**	**999.998**	ug/L	31.227	3	3136	36224446	1	Standard
|	**Cr**	**52**	**9.998**	ug/L	0.333	3	27670	338841	1	Standard
|	**Cr**	**53**	**10.001**	ug/L	0.268	2	259	35946	1	Standard
|	**Fe**	**54**	**999.969**	ug/L	16.380	1	148035	4403872	1	Standard
|	**Fe**	**57**	**999.961**	ug/L	20.137	2	53579	1524417	1	Standard
⌊	**Mn**	**55**	**10.000**	ug/L	0.256	2	766	466302	0	Standard
⌈>	**Ge**	**72**		ug/L			125988	129628	1	KED
|	**Ni**	**60**	**10.001**	ug/L	0.284	2	43	22540	2	KED
|	**Ni**	**62**	**10.001**	ug/L	0.208	2	14	3756	0	KED
|	**Cu**	**63**	**10.000**	ug/L	0.071	0	183	66122	1	KED
|	**Cu**	**65**	**9.999**	ug/L	0.018	0	96	32783	1	KED
|	**Zn**	**66**	**9.930**	ug/L	0.353	3	71	8479	2	KED
|	**Zn**	**67**	**10.127**	ug/L	0.326	3	9	1470	4	KED
|	**As**	**75**	**10.000**	ug/L	0.340	3	4	4169	3	KED
⌊	**Se**	**78**	**10.011**	ug/L	0.765	7	29	460	7	KED
	Y	**89**		ug/L			831527	857787	2	Standard
	Kr	**83**		ug/L			62	68	11	Standard
⌈>	**In-1**	**115**		ug/L			54227	55053	1	KED
|	**Cd**	**111**	**10.000**	ug/L	0.101	1	3	4803	0	KED
⌊	**Cd**	**114**	**10.000**	ug/L	0.154	1	3	12403	1	KED
⌈>	**In**	**115**		ug/L			2847067	3008290	2	Standard
|	**Ag**	**107**	**10.000**	ug/L	0.227	2	48	255613	3	Standard
|	**Ba**	**135**	**10.001**	ug/L	0.490	4	582	101797	3	Standard
⌊	**Ba**	**137**	**10.000**	ug/L	0.184	1	980	178777	2	Standard
⌈>	**Tb**	**159**		ug/L			3137629	3212505	0	Standard
⌊	**Pb**	**208**	**10.000**	ug/L	0.089	0	1274	1354444	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL4
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 16:39:15
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	38857	1	Standard
	Cl	**37**		ug/L			7165427	7668931	0	Standard
⌈>	**Sc**	**45**		ug/L			2837603	2914615	1	Standard
|	**Mg**	**24**	**1997.562**	ug/L	61.488	3	3136	72274211	1	Standard
|	**Cr**	**52**	**19.941**	ug/L	0.223	1	27670	642959	0	Standard
|	**Cr**	**53**	**20.063**	ug/L	0.369	1	259	73026	0	Standard
|	**Fe**	**54**	**2001.057**	ug/L	60.624	3	148035	8709194	1	Standard
|	**Fe**	**57**	**2093.981**	ug/L	14.506	0	53579	3858435	1	Standard
⌊	**Mn**	**55**	**19.935**	ug/L	0.490	2	766	920307	1	Standard
⌈>	**Ge**	**72**		ug/L			125988	126296	0	KED
|	**Ni**	**60**	**19.969**	ug/L	0.150	0	43	43550	0	KED
|	**Ni**	**62**	**20.020**	ug/L	0.579	2	14	7341	2	KED
|	**Cu**	**63**	**20.016**	ug/L	0.129	0	183	129165	0	KED
|	**Cu**	**65**	**20.052**	ug/L	0.736	3	96	64619	2	KED
|	**Zn**	**66**	**19.980**	ug/L	0.397	1	71	16496	1	KED
|	**Zn**	**67**	**19.835**	ug/L	0.461	2	9	2718	2	KED
|	**As**	**75**	**20.107**	ug/L	0.029	0	4	8341	0	KED
⌊	**Se**	**78**	**20.208**	ug/L	0.371	1	29	911	1	KED
	Y	**89**		ug/L			831527	867606	1	Standard
	Kr	**83**		ug/L			62	69	11	Standard
⌈>	**In-1**	**115**		ug/L			54227	54822	0	KED
|	**Cd**	**111**	**19.903**	ug/L	0.142	0	3	9336	1	KED
⌊	**Cd**	**114**	**19.945**	ug/L	0.358	1	3	24361	1	KED
⌈>	**In**	**115**		ug/L			2847067	3059171	0	Standard
|	**Ag**	**107**	**19.820**	ug/L	0.422	2	48	497056	1	Standard
|	**Ba**	**135**	**20.001**	ug/L	0.157	0	582	206585	0	Standard
⌊	**Ba**	**137**	**19.929**	ug/L	0.284	1	980	356217	0	Standard
⌈>	**Tb**	**159**		ug/L			3137629	3276369	1	Standard
⌊	**Pb**	**208**	**19.879**	ug/L	0.117	0	1274	2680099	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL5
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 16:44:04
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	33892	1	Standard
	Cl	**37**		ug/L			7165427	7611906	1	Standard
⎡>	**Sc**	**45**		ug/L			2837603	2781223	1	Standard
⎢	**Mg**	**24**	**5015.325**	ug/L	42.574	0	3136	175888146	1	Standard
⎢	**Cr**	**52**	**50.083**	ug/L	1.069	2	27670	1512085	0	Standard
⎢	**Cr**	**53**	**50.048**	ug/L	0.772	1	259	174330	2	Standard
⎢	**Fe**	**54**	**5019.911**	ug/L	110.480	2	148035	21046951	1	Standard
⎢	**Fe**	**57**	**5078.496**	ug/L	246.382	4	53579	9600688	3	Standard
⎣	**Mn**	**55**	**50.231**	ug/L	1.070	2	766	2263839	0	Standard
⎡>	**Ge**	**72**		ug/L			125988	124988	1	KED
⎢	**Ni**	**60**	**50.195**	ug/L	0.956	1	43	110410	0	KED
⎢	**Ni**	**62**	**49.998**	ug/L	0.316	0	14	18121	1	KED
⎢	**Cu**	**63**	**49.926**	ug/L	0.659	1	183	316216	0	KED
⎢	**Cu**	**65**	**49.859**	ug/L	1.171	2	96	156678	2	KED
⎢	**Zn**	**66**	**50.170**	ug/L	0.636	1	71	41578	2	KED
⎢	**Zn**	**67**	**49.885**	ug/L	1.005	2	9	6678	1	KED
⎢	**As**	**75**	**50.076**	ug/L	0.280	0	4	20710	1	KED
⎣	**Se**	**78**	**49.896**	ug/L	0.835	1	29	2161	1	KED
	Y	**89**		ug/L			831527	848745	1	Standard
	Kr	**83**		ug/L			62	79	26	Standard
⎡>	**In-1**	**115**		ug/L			54227	53643	0	KED
⎢	**Cd**	**111**	**50.154**	ug/L	0.904	1	3	23374	1	KED
⎣	**Cd**	**114**	**50.154**	ug/L	0.862	1	3	60877	1	KED
⎡>	**In**	**115**		ug/L			2847067	2864721	3	Standard
⎢	**Ag**	**107**	**50.383**	ug/L	2.514	4	48	1229028	1	Standard
⎢	**Ba**	**135**	**50.494**	ug/L	1.992	3	582	512314	0	Standard
⎣	**Ba**	**137**	**50.416**	ug/L	1.155	2	980	878459	1	Standard
⎡>	**Tb**	**159**		ug/L			3137629	3165624	0	Standard
⎣	**Pb**	**208**	**50.047**	ug/L	0.446	0	1274	6547559	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL6
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 16:50:33
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	36597	1	Standard
	Cl	**37**		ug/L			7165427	7786625	1	Standard
⌈>	**Sc**	**45**		ug/L			2837603	2731701	1	Standard
|	**Mg**	**24**	**9933.316**	ug/L	156.560	1	3136	334657980	0	Standard
|	**Cr**	**52**	**99.853**	ug/L	1.819	1	27670	2920273	0	Standard
|	**Cr**	**53**	**100.089**	ug/L	1.177	1	259	343208	3	Standard
|	**Fe**	**54**	**9978.876**	ug/L	198.244	1	148035	40664228	0	Standard
|	**Fe**	**57**	**9992.408**	ug/L	220.616	2	53579	18463029	2	Standard
⌊	**Mn**	**55**	**99.351**	ug/L	1.359	1	766	4305430	3	Standard
⌈>	**Ge**	**72**		ug/L			125988	121074	0	KED
|	**Ni**	**60**	**99.614**	ug/L	0.443	0	43	209544	0	KED
|	**Ni**	**62**	**99.527**	ug/L	2.091	2	14	34384	1	KED
|	**Cu**	**63**	**99.589**	ug/L	1.612	1	183	602609	0	KED
|	**Cu**	**65**	**99.369**	ug/L	1.678	1	96	296161	1	KED
|	**Zn**	**66**	**99.078**	ug/L	0.915	0	71	77108	0	KED
|	**Zn**	**67**	**99.549**	ug/L	2.998	3	9	12711	2	KED
|	**As**	**75**	**99.762**	ug/L	1.432	1	4	39650	1	KED
⌊	**Se**	**78**	**99.591**	ug/L	0.512	0	29	4095	0	KED
	Y	**89**		ug/L			831527	822076	1	Standard
	Kr	**83**		ug/L			62	93	2	Standard
⌈>	**In-1**	**115**		ug/L			54227	52769	2	KED
|	**Cd**	**111**	**99.366**	ug/L	2.344	2	3	44591	0	KED
⌊	**Cd**	**114**	**99.269**	ug/L	1.994	2	3	115668	0	KED
⌈>	**In**	**115**		ug/L			2847067	2724724	1	Standard
|	**Ag**	**107**	**99.659**	ug/L	1.896	1	48	2288275	0	Standard
|	**Ba**	**135**	**99.820**	ug/L	3.442	3	582	957535	2	Standard
⌊	**Ba**	**137**	**100.126**	ug/L	1.037	1	980	1666077	0	Standard
⌈>	**Tb**	**159**		ug/L			3137629	3108136	1	Standard
⌊	**Pb**	**208**	**98.602**	ug/L	1.471	1	1274	12099597	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IBL1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 16:57:43
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	34105	1	Standard
	Cl	**37**		ug/L			7165427	7558595	2	Standard
⌈>	**Sc**	**45**		ug/L			2837603	2804198	1	Standard
|	**Mg**	**24**	**0.063**	ug/L	0.006	9	3136	5280	3	Standard
|	**Cr**	**52**	**0.057**	ug/L	0.022	39	27670	29035	0	Standard
|	**Cr**	**53**	**-0.016**	ug/L	0.002	15	259	201	6	Standard
|	**Fe**	**54**	**1.252**	ug/L	0.656	52	148035	151497	1	Standard
|	**Fe**	**57**	**-4.221**	ug/L	1.211	28	53579	44938	3	Standard
⌊	**Mn**	**55**	**0.000**	ug/L	0.001	286	766	769	5	Standard
⌈>	**Ge**	**72**		ug/L			125988	124740	1	KED
|	**Ni**	**60**	**-0.010**	ug/L	0.001	9	43	21	10	KED
|	**Ni**	**62**	**-0.019**	ug/L	0.019	97	14	7	86	KED
|	**Cu**	**63**	**-0.002**	ug/L	0.004	186	183	168	14	KED
|	**Cu**	**65**	**-0.000**	ug/L	0.006	11108	96	95	18	KED
|	**Zn**	**66**	**-0.009**	ug/L	0.008	95	71	64	9	KED
|	**Zn**	**67**	**0.025**	ug/L	0.021	85	9	12	22	KED
|	**As**	**75**	**0.009**	ug/L	0.005	55	4	7	27	KED
⌊	**Se**	**78**	**-0.092**	ug/L	0.107	116	29	25	18	KED
	Y	**89**		ug/L			831527	837178	1	Standard
	Kr	**83**		ug/L			62	64	17	Standard
⌈>	**In-1**	**115**		ug/L			54227	53660	1	KED
|	**Cd**	**111**	**-0.001**	ug/L	0.006	413	3	2	88	KED
⌊	**Cd**	**114**	**0.001**	ug/L	0.001	79	3	4	20	KED
⌈>	**In**	**115**		ug/L			2847067	2863055	3	Standard
|	**Ag**	**107**	**0.015**	ug/L	0.001	9	48	408	7	Standard
|	**Ba**	**135**	**-0.032**	ug/L	0.002	6	582	258	7	Standard
⌊	**Ba**	**137**	**-0.031**	ug/L	0.001	3	980	446	4	Standard
⌈>	**Tb**	**159**		ug/L			3137629	3120700	0	Standard
⌊	**Pb**	**208**	**0.003**	ug/L	0.001	26	1274	1582	4	Standard

Sample Information

Sample Date/Time: Tuesday, March 30, 2021 16:50:33
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.m
Mass Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Conditions File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

Calibration

Analyte	Mass	**r Corr Coef**	Slope	Std 1 Conc	Std 2 Conc	Std 3 Conc	Std 4 Conc	Std 5 Conc
C	13							
Cl	37							
Sc	45							
Mg	24	**0.9999**	0.012	20.00	1000	2000	5000	10000
Cr	52	**1.0000**	0.011	0.50	10	20	50	100
Cr	53	**1.0000**	0.001	0.50	10	20	50	100
Fe	54	**1.0000**	0.001	20.00	1000	2000	5000	10000
Fe	57	**0.9997**	0.001	20.00	1000	2000	5000	10000
Mn	55	**0.9999**	0.016	0.50	10	20	50	100
Ge	72							
Ni	60	**1.0000**	0.017	0.50	10	20	50	100
Ni	62	**1.0000**	0.003	0.50	10	20	50	100
Cu	63	**1.0000**	0.050	0.50	10	20	50	100
Cu	65	**0.9999**	0.025	0.50	10	20	50	100
Zn	66	**0.9999**	0.006	4.00	10	20	50	100
Zn	67	**1.0000**	0.001	4.00	10	20	50	100
As	75	**1.0000**	0.003	0.20	10	20	50	100
Se	78	**1.0000**	0.000	0.50	10	20	50	100
Y	89							
Kr	83							
In-1	115							
Cd	111	**0.9999**	0.009	0.10	10	20	50	100
Cd	114	**0.9999**	0.022	0.10	10	20	50	100
In	115							
Ag	107	**0.9999**	0.008	0.20	10	20	50	100
Ba	135	**0.9999**	0.004	0.50	10	20	50	100
Ba	137	**1.0000**	0.006	0.50	10	20	50	100
Tb	159							
Pb	208	**0.9997**	0.039	0.10	10	20	50	100

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-ICV1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 17:04:44
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	36736	3	Standard
	Cl	**37**		ug/L			7165427	7622422	1	Standard
⌈>	**Sc**	**45**		ug/L			2837603	2827923	1	Standard
|	**Mg**	**24**	**5283.096**	ug/L	159.868	3	3136	184258714	2	Standard
|	**Cr**	**52**	**53.320**	ug/L	1.187	2	27670	1627231	1	Standard
|	**Cr**	**53**	**51.555**	ug/L	0.296	0	259	183111	1	Standard
|	**Fe**	**54**	**5189.138**	ug/L	101.446	1	148035	21963736	0	Standard
|	**Fe**	**57**	**5165.710**	ug/L	142.967	2	53579	9905313	1	Standard
⌊	**Mn**	**55**	**52.848**	ug/L	1.273	2	766	2370455	1	Standard
⌈>	**Ge**	**72**		ug/L			125988	124295	1	KED
|	**Ni**	**60**	**53.129**	ug/L	0.632	1	43	114751	1	KED
|	**Ni**	**62**	**52.306**	ug/L	0.920	1	14	18556	0	KED
|	**Cu**	**63**	**52.799**	ug/L	1.413	2	183	328028	1	KED
|	**Cu**	**65**	**52.601**	ug/L	0.893	1	96	160980	0	KED
|	**Zn**	**66**	**51.714**	ug/L	0.549	1	71	41350	0	KED
|	**Zn**	**67**	**52.753**	ug/L	1.097	2	9	6921	3	KED
|	**As**	**75**	**51.569**	ug/L	0.371	0	4	21042	1	KED
⌊	**Se**	**78**	**81.223**	ug/L	1.763	2	29	3434	2	KED
	Y	**89**		ug/L			831527	873662	2	Standard
	Kr	**83**		ug/L			62	72	2	Standard
⌈>	**In-1**	**115**		ug/L			54227	54486	0	KED
|	**Cd**	**111**	**50.495**	ug/L	0.666	1	3	23408	0	KED
⌊	**Cd**	**114**	**49.763**	ug/L	0.712	1	3	59894	1	KED
⌈>	**In**	**115**		ug/L			2847067	2907275	2	Standard
|	**Ag**	**107**	**49.934**	ug/L	1.166	2	48	1223197	0	Standard
|	**Ba**	**135**	**49.109**	ug/L	1.196	2	582	502945	0	Standard
⌊	**Ba**	**137**	**50.145**	ug/L	1.224	2	980	890736	2	Standard
⌈>	**Tb**	**159**		ug/L			3137629	3198667	1	Standard
⌊	**Pb**	**208**	**52.939**	ug/L	0.658	1	1274	6686183	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-ICB1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 17:11:53
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	34085	0	Standard
	Cl	**37**		ug/L			7165427	7549773	1	Standard
>	**Sc**	**45**		ug/L			2837603	2817745	1	Standard
	Mg	**24**	**0.241**	ug/L	0.012	5	3136	11506	4	Standard
	Cr	**52**	**0.065**	ug/L	0.008	12	27670	29426	1	Standard
	Cr	**53**	**-0.015**	ug/L	0.004	26	259	206	7	Standard
	Fe	**54**	**0.479**	ug/L	0.634	132	148035	148983	1	Standard
	Fe	**57**	**-4.482**	ug/L	0.944	21	53579	44676	3	Standard
	Mn	**55**	**0.001**	ug/L	0.001	40	766	821	1	Standard
>	**Ge**	**72**		ug/L			125988	123967	0	KED
	Ni	**60**	**-0.005**	ug/L	0.007	149	43	33	44	KED
	Ni	**62**	**-0.012**	ug/L	0.017	147	14	10	60	KED
	Cu	**63**	**0.001**	ug/L	0.002	176	183	187	6	KED
	Cu	**65**	**-0.002**	ug/L	0.003	168	96	90	7	KED
	Zn	**66**	**-0.005**	ug/L	0.018	366	71	66	22	KED
	Zn	**67**	**-0.014**	ug/L	0.025	181	9	7	43	KED
	As	**75**	**0.007**	ug/L	0.002	26	4	6	10	KED
	Se	**78**	**-0.102**	ug/L	0.116	113	29	25	19	KED
	Y	**89**		ug/L			831527	859196	1	Standard
	Kr	**83**		ug/L			62	65	31	Standard
>	**In-1**	**115**		ug/L			54227	54889	1	KED
	Cd	**111**	**0.005**	ug/L	0.001	20	3	6	9	KED
	Cd	**114**	**0.004**	ug/L	0.005	125	3	8	67	KED
>	**In**	**115**		ug/L			2847067	2966304	1	Standard
	Ag	**107**	**0.012**	ug/L	0.001	7	48	353	7	Standard
	Ba	**135**	**-0.034**	ug/L	0.002	5	582	248	9	Standard
	Ba	**137**	**-0.033**	ug/L	0.001	2	980	418	4	Standard
>	**Tb**	**159**		ug/L			3137629	3106287	0	Standard
	Pb	**208**	**0.000**	ug/L	0.000	291	1274	1271	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCV1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 17:18:26
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	33154	2	Standard
	Cl	**37**		ug/L			7165427	7488520	1	Standard
⌈>	**Sc**	**45**		ug/L			2837603	2799619	1	Standard
|	**Mg**	**24**	**5058.316**	ug/L	112.011	2	3136	174661319	1	Standard
|	**Cr**	**52**	**50.817**	ug/L	0.321	0	27670	1536777	0	Standard
|	**Cr**	**53**	**50.282**	ug/L	1.545	3	259	176761	1	Standard
|	**Fe**	**54**	**5046.099**	ug/L	113.390	2	148035	21147850	1	Standard
|	**Fe**	**57**	**4987.732**	ug/L	62.963	1	53579	9473229	2	Standard
⌊	**Mn**	**55**	**51.128**	ug/L	1.046	2	766	2270353	0	Standard
⌈>	**Ge**	**72**		ug/L			125988	124564	1	KED
|	**Ni**	**60**	**50.898**	ug/L	1.193	2	43	110150	0	KED
|	**Ni**	**62**	**50.970**	ug/L	1.154	2	14	18121	0	KED
|	**Cu**	**63**	**51.142**	ug/L	0.814	1	183	318442	0	KED
|	**Cu**	**65**	**51.616**	ug/L	0.236	0	96	158324	1	KED
|	**Zn**	**66**	**51.340**	ug/L	1.300	2	71	41134	1	KED
|	**Zn**	**67**	**52.225**	ug/L	0.843	1	9	6865	2	KED
|	**As**	**75**	**50.009**	ug/L	0.466	0	4	20449	1	KED
⌊	**Se**	**78**	**50.137**	ug/L	0.314	0	29	2135	0	KED
	Y	**89**		ug/L			831527	859691	1	Standard
	Kr	**83**		ug/L			62	71	17	Standard
⌈>	**In-1**	**115**		ug/L			54227	53566	0	KED
|	**Cd**	**111**	**50.900**	ug/L	1.092	2	3	23197	2	KED
⌊	**Cd**	**114**	**50.236**	ug/L	1.260	2	3	59436	1	KED
⌈>	**In**	**115**		ug/L			2847067	2854839	1	Standard
|	**Ag**	**107**	**49.541**	ug/L	1.452	2	48	1191801	1	Standard
|	**Ba**	**135**	**49.341**	ug/L	1.928	3	582	496190	2	Standard
⌊	**Ba**	**137**	**49.803**	ug/L	1.659	3	980	868607	2	Standard
⌈>	**Tb**	**159**		ug/L			3137629	3156554	1	Standard
⌊	**Pb**	**208**	**52.075**	ug/L	0.508	0	1274	6490831	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCB1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 17:25:36
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	33598	3	Standard
	Cl	**37**		ug/L			7165427	7479373	1	Standard
⌈>	**Sc**	**45**		ug/L			2837603	2810882	0	Standard
|	**Mg**	**24**	**0.225**	ug/L	0.012	5	3136	10911	3	Standard
|	**Cr**	**52**	**0.052**	ug/L	0.011	21	27670	28964	1	Standard
|	**Cr**	**53**	**-0.019**	ug/L	0.007	36	259	190	13	Standard
|	**Fe**	**54**	**0.528**	ug/L	0.029	5	148035	148849	0	Standard
|	**Fe**	**57**	**-4.325**	ug/L	0.065	1	53579	44873	0	Standard
⌊	**Mn**	**55**	**0.002**	ug/L	0.001	43	766	857	5	Standard
⌈>	**Ge**	**72**		ug/L			125988	123109	0	KED
|	**Ni**	**60**	**-0.011**	ug/L	0.000	4	43	19	5	KED
|	**Ni**	**62**	**-0.005**	ug/L	0.014	298	14	12	37	KED
|	**Cu**	**63**	**-0.000**	ug/L	0.003	640	183	176	9	KED
|	**Cu**	**65**	**-0.002**	ug/L	0.005	289	96	88	18	KED
|	**Zn**	**66**	**0.220**	ug/L	0.017	7	71	243	5	KED
|	**Zn**	**67**	**0.242**	ug/L	0.063	26	9	40	19	KED
|	**As**	**75**	**0.008**	ug/L	0.005	56	4	7	24	KED
⌊	**Se**	**78**	**-0.066**	ug/L	0.040	60	29	26	6	KED
	Y	**89**		ug/L			831527	833792	0	Standard
	Kr	**83**		ug/L			62	67	24	Standard
⌈>	**In-1**	**115**		ug/L			54227	52881	2	KED
|	**Cd**	**111**	**0.023**	ug/L	0.007	30	3	13	22	KED
⌊	**Cd**	**114**	**0.005**	ug/L	0.004	89	3	9	54	KED
⌈>	**In**	**115**		ug/L			2847067	2873828	0	Standard
|	**Ag**	**107**	**0.010**	ug/L	0.001	6	48	300	5	Standard
|	**Ba**	**135**	**-0.035**	ug/L	0.000	1	582	229	1	Standard
⌊	**Ba**	**137**	**-0.035**	ug/L	0.001	2	980	376	5	Standard
⌈>	**Tb**	**159**		ug/L			3137629	3133226	1	Standard
⌊	**Pb**	**208**	**-0.001**	ug/L	0.000	74	1274	1201	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CRL1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 17:30:50
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	32831	3	Standard
	Cl	**37**		ug/L			7165427	7403485	2	Standard
⌈>	**Sc**	**45**		ug/L			2837603	2812355	1	Standard
|	**Mg**	**24**	**19.952**	ug/L	0.195	0	3136	695339	2	Standard
|	**Cr**	**52**	**0.505**	ug/L	0.012	2	27670	42501	0	Standard
|	**Cr**	**53**	**0.451**	ug/L	0.017	3	259	1846	2	Standard
|	**Fe**	**54**	**20.826**	ug/L	0.620	2	148035	233781	0	Standard
|	**Fe**	**57**	**10.315**	ug/L	1.733	16	53579	72640	3	Standard
⌊	**Mn**	**55**	**0.495**	ug/L	0.013	2	766	22825	0	Standard
⌈>	**Ge**	**72**		ug/L			125988	125503	1	KED
|	**Ni**	**60**	**0.492**	ug/L	0.007	1	43	1115	1	KED
|	**Ni**	**62**	**0.466**	ug/L	0.041	8	14	181	9	KED
|	**Cu**	**63**	**0.500**	ug/L	0.004	0	183	3321	1	KED
|	**Cu**	**65**	**0.491**	ug/L	0.032	6	96	1610	4	KED
|	**Zn**	**66**	**3.990**	ug/L	0.080	2	71	3287	3	KED
|	**Zn**	**67**	**3.828**	ug/L	0.246	6	9	515	5	KED
|	**As**	**75**	**0.185**	ug/L	0.013	6	4	80	4	KED
⌊	**Se**	**78**	**0.327**	ug/L	0.077	23	29	43	9	KED
	Y	**89**		ug/L			831527	850330	1	Standard
	Kr	**83**		ug/L			62	52	38	Standard
⌈>	**In-1**	**115**		ug/L			54227	53213	3	KED
|	**Cd**	**111**	**0.098**	ug/L	0.016	16	3	47	17	KED
⌊	**Cd**	**114**	**0.106**	ug/L	0.005	4	3	127	5	KED
⌈>	**In**	**115**		ug/L			2847067	2913011	3	Standard
|	**Ag**	**107**	**0.193**	ug/L	0.013	6	48	4791	4	Standard
|	**Ba**	**135**	**0.426**	ug/L	0.009	2	582	4959	2	Standard
⌊	**Ba**	**137**	**0.428**	ug/L	0.009	2	980	8608	1	Standard
⌈>	**Tb**	**159**		ug/L			3137629	3129685	1	Standard
⌊	**Pb**	**208**	**0.098**	ug/L	0.001	1	1274	13403	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IFA1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 17:35:35
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	117553	3	Standard
	Cl	**37**		ug/L			7165427	12801843	0	Standard
>	**Sc**	**45**		ug/L			2837603	2537814	0	Standard
	Mg	**24**	**19936.917**	ug/L	283.256	1	3136	624118846	1	Standard
	Cr	**52**	**0.675**	ug/L	0.006	0	27670	42935	0	Standard
	Cr	**53**	**4.817**	ug/L	0.072	1	259	15563	1	Standard
	Fe	**54**	**18207.249**	ug/L	159.591	0	148035	68839733	1	Standard
	Fe	**57**	**21017.482**	ug/L	359.022	1	53579	36029170	2	Standard
	Mn	**55**	**0.232**	ug/L	0.002	0	766	10041	0	Standard
>	**Ge**	**72**		ug/L			125988	114600	1	KED
	Ni	**60**	**0.130**	ug/L	0.005	3	43	299	4	KED
	Ni	**62**	**0.159**	ug/L	0.038	24	14	65	20	KED
	Cu	**63**	**0.130**	ug/L	0.006	4	183	911	5	KED
	Cu	**65**	**0.127**	ug/L	0.007	5	96	445	4	KED
	Zn	**66**	**3.550**	ug/L	0.129	3	71	2677	3	KED
	Zn	**67**	**3.157**	ug/L	0.096	3	9	389	2	KED
	As	**75**	**0.028**	ug/L	0.005	16	4	14	13	KED
	Se	**78**	**0.002**	ug/L	0.156	10159	29	27	21	KED
	Y	**89**		ug/L			831527	844486	1	Standard
	Kr	**83**		ug/L			62	94	22	Standard
>	**In-1**	**115**		ug/L			54227	48545	0	KED
	Cd	**111**	**0.067**	ug/L	0.009	12	3	30	11	KED
	Cd	**114**	**0.070**	ug/L	0.013	18	3	78	17	KED
>	**In**	**115**		ug/L			2847067	2889618	3	Standard
	Ag	**107**	**0.013**	ug/L	0.000	2	48	354	3	Standard
	Ba	**135**	**0.167**	ug/L	0.009	5	582	2287	2	Standard
	Ba	**137**	**0.172**	ug/L	0.018	10	980	4034	11	Standard
>	**Tb**	**159**		ug/L			3137629	3184945	0	Standard
	Pb	**208**	**0.080**	ug/L	0.002	2	1274	11314	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IFB1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 17:40:00
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	113984	0	Standard
	Cl	**37**		ug/L			7165427	12602108	2	Standard
⌈>	**Sc**	**45**		ug/L			2837603	2476156	0	Standard
|	**Mg**	**24**	**19522.378**	ug/L	286.339	1	3136	596324992	1	Standard
|	**Cr**	**52**	**19.589**	ug/L	0.191	0	27670	538852	1	Standard
|	**Cr**	**53**	**23.616**	ug/L	0.205	0	259	73568	1	Standard
|	**Fe**	**54**	**17883.441**	ug/L	329.743	1	148035	65968279	1	Standard
|	**Fe**	**57**	**19831.984**	ug/L	260.916	1	53579	33173133	1	Standard
⌊	**Mn**	**55**	**19.683**	ug/L	0.197	1	766	773598	1	Standard
⌈>	**Ge**	**72**		ug/L			125988	111017	0	KED
|	**Ni**	**60**	**20.557**	ug/L	0.188	0	43	39682	1	KED
|	**Ni**	**62**	**20.553**	ug/L	0.182	0	14	6521	1	KED
|	**Cu**	**63**	**20.522**	ug/L	0.249	1	183	114000	1	KED
|	**Cu**	**65**	**20.607**	ug/L	0.058	0	96	56388	0	KED
|	**Zn**	**66**	**22.384**	ug/L	0.359	1	71	16022	1	KED
|	**Zn**	**67**	**20.979**	ug/L	0.531	2	9	2463	2	KED
|	**As**	**75**	**19.403**	ug/L	0.131	0	4	7073	0	KED
⌊	**Se**	**78**	**-0.011**	ug/L	0.110	990	29	25	15	KED
	Y	**89**		ug/L			831527	846458	0	Standard
	Kr	**83**		ug/L			62	118	2	Standard
⌈>	**In-1**	**115**		ug/L			54227	46765	0	KED
|	**Cd**	**111**	**19.622**	ug/L	0.099	0	3	7809	1	KED
⌊	**Cd**	**114**	**19.676**	ug/L	0.057	0	3	20327	0	KED
⌈>	**In**	**115**		ug/L			2847067	2828509	1	Standard
|	**Ag**	**107**	**21.451**	ug/L	0.222	1	48	511423	1	Standard
|	**Ba**	**135**	**0.149**	ug/L	0.017	11	582	2060	6	Standard
⌊	**Ba**	**137**	**0.146**	ug/L	0.005	3	980	3489	2	Standard
⌈>	**Tb**	**159**		ug/L			3137629	3097807	1	Standard
⌊	**Pb**	**208**	**0.117**	ug/L	0.003	2	1274	15550	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-HCV1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 17:44:24
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	33474	0	Standard
	Cl	**37**		ug/L			7165427	6945026	0	Standard
>	**Sc**	**45**		ug/L			2837603	2415735	0	Standard
	Mg	**24**	**20202.434**	ug/L	180.145	0	3136	601993483	0	Standard
	Cr	**52**	**196.638**	ug/L	2.744	1	27670	5063495	0	Standard
	Cr	**53**	**196.211**	ug/L	2.025	1	259	594701	1	Standard
	Fe	**54**	**18860.453**	ug/L	162.480	0	148035	67875085	1	Standard
	Fe	**57**	**20467.065**	ug/L	116.977	0	53579	33396784	0	Standard
	Mn	**55**	**200.135**	ug/L	4.170	2	766	7666982	1	Standard
>	**Ge**	**72**		ug/L			125988	108716	0	KED
	Ni	**60**	**201.541**	ug/L	2.129	1	43	380640	0	KED
	Ni	**62**	**200.989**	ug/L	0.642	0	14	62342	0	KED
	Cu	**63**	**201.056**	ug/L	1.029	0	183	1092318	0	KED
	Cu	**65**	**199.157**	ug/L	2.590	1	96	532946	1	KED
	Zn	**66**	**195.729**	ug/L	0.948	0	71	136726	0	KED
	Zn	**67**	**192.187**	ug/L	2.447	1	9	22029	1	KED
	As	**75**	**197.277**	ug/L	1.366	0	4	70398	0	KED
	Se	**78**	**191.633**	ug/L	0.584	0	29	7052	0	KED
	Y	**89**		ug/L			831527	810970	1	Standard
	Kr	**83**		ug/L			62	118	5	Standard
>	**In-1**	**115**		ug/L			54227	46006	0	KED
	Cd	**111**	**201.986**	ug/L	3.399	1	3	79052	1	KED
	Cd	**114**	**202.993**	ug/L	1.055	0	3	206286	1	KED
>	**In**	**115**		ug/L			2847067	2764970	3	Standard
	Ag	**107**	**208.614**	ug/L	4.727	2	48	4858828	1	Standard
	Ba	**135**	**181.143**	ug/L	8.593	4	582	1761308	1	Standard
	Ba	**137**	**179.705**	ug/L	10.006	5	980	3029548	1	Standard
>	**Tb**	**159**		ug/L			3137629	2987746	1	Standard
	Pb	**208**	**204.146**	ug/L	4.010	1	1274	24078101	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-HCV2
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 17:48:49
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	35696	2	Standard
	Cl	**37**		ug/L			7165427	6785620	1	Standard
⌈>	**Sc**	**45**		ug/L			2837603	2442630	1	Standard
|	**Mg**	**24**	**29310.278**	ug/L	1024.240	3	3136	882776150	1	Standard
|	**Cr**	**52**	**288.344**	ug/L	8.727	3	27670	7496138	2	Standard
|	**Cr**	**53**	**290.626**	ug/L	6.493	2	259	890309	0	Standard
|	**Fe**	**54**	**27930.132**	ug/L	380.685	1	148035	101550999	0	Standard
|	**Fe**	**57**	**31088.558**	ug/L	774.364	2	53579	51258761	1	Standard
⌊	**Mn**	**55**	**288.587**	ug/L	4.162	1	766	11177625	0	Standard
⌈>	**Ge**	**72**		ug/L			125988	107414	2	KED
|	**Ni**	**60**	**294.371**	ug/L	5.238	1	43	549184	1	KED
|	**Ni**	**62**	**293.781**	ug/L	7.739	2	14	89994	0	KED
|	**Cu**	**63**	**292.565**	ug/L	2.388	0	183	1570196	1	KED
|	**Cu**	**65**	**290.997**	ug/L	4.637	1	96	769177	0	KED
|	**Zn**	**66**	**283.898**	ug/L	2.894	1	71	195886	1	KED
|	**Zn**	**67**	**278.853**	ug/L	5.358	1	9	31568	0	KED
|	**As**	**75**	**290.949**	ug/L	3.617	1	4	102564	1	KED
⌊	**Se**	**78**	**277.017**	ug/L	7.158	2	29	10058	2	KED
	Y	**89**		ug/L			831527	781638	1	Standard
	Kr	**83**		ug/L			62	153	3	Standard
⌈>	**In-1**	**115**		ug/L			54227	45442	1	KED
|	**Cd**	**111**	**295.508**	ug/L	0.910	0	3	114243	1	KED
⌊	**Cd**	**114**	**292.916**	ug/L	2.422	0	3	294037	2	KED
⌈>	**In**	**115**		ug/L			2847067	2612950	1	Standard
|	**Ag**	**107**	**291.410**	ug/L	3.444	1	48	6417091	1	Standard
|	**Ba**	**135**	**264.299**	ug/L	4.049	1	582	2431044	1	Standard
⌊	**Ba**	**137**	**261.980**	ug/L	7.094	2	980	4178577	2	Standard
⌈>	**Tb**	**159**		ug/L			3137629	2918873	1	Standard
⌊	**Pb**	**208**	**295.405**	ug/L	4.241	1	1274	34040038	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IBL2
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 17:55:58
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	32467	3	Standard
	Cl	**37**		ug/L			7165427	7013582	0	Standard
>	**Sc**	**45**		ug/L			2837603	2530802	0	Standard
	Mg	**24**	**0.481**	ug/L	0.017	3	3136	17820	2	Standard
	Cr	**52**	**0.067**	ug/L	0.008	11	27670	26489	0	Standard
	Cr	**53**	**0.078**	ug/L	0.005	6	259	480	3	Standard
	Fe	**54**	**-0.598**	ug/L	0.093	15	148035	129778	0	Standard
	Fe	**57**	**-5.309**	ug/L	0.314	5	53579	38722	1	Standard
	Mn	**55**	**0.005**	ug/L	0.001	15	766	864	2	Standard
>	**Ge**	**72**		ug/L			125988	116169	1	KED
	Ni	**60**	**-0.009**	ug/L	0.002	24	43	21	22	KED
	Ni	**62**	**-0.029**	ug/L	0.006	20	14	3	50	KED
	Cu	**63**	**0.006**	ug/L	0.003	46	183	205	8	KED
	Cu	**65**	**0.003**	ug/L	0.007	250	96	96	19	KED
	Zn	**66**	**0.009**	ug/L	0.028	327	71	72	27	KED
	Zn	**67**	**0.006**	ug/L	0.028	445	9	9	34	KED
	As	**75**	**0.064**	ug/L	0.002	2	4	28	2	KED
	Se	**78**	**-0.093**	ug/L	0.058	62	29	23	9	KED
	Y	**89**		ug/L			831527	812879	0	Standard
	Kr	**83**		ug/L			62	55	7	Standard
>	**In-1**	**115**		ug/L			54227	50620	2	KED
	Cd	**111**	**0.058**	ug/L	0.075	127	3	28	113	KED
	Cd	**114**	**0.022**	ug/L	0.011	51	3	28	46	KED
>	**In**	**115**		ug/L			2847067	2950060	0	Standard
	Ag	**107**	**0.030**	ug/L	0.002	8	48	796	8	Standard
	Ba	**135**	**-0.038**	ug/L	0.001	3	582	203	7	Standard
	Ba	**137**	**-0.037**	ug/L	0.001	2	980	347	4	Standard
>	**Tb**	**159**		ug/L			3137629	3065246	1	Standard
	Pb	**208**	**0.005**	ug/L	0.001	14	1274	1870	6	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IBL3
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 18:02:18
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	32188	1	Standard
	Cl	**37**		ug/L			7165427	6893327	1	Standard
>	**Sc**	**45**		ug/L			2837603	2580577	1	Standard
	Mg	**24**	**0.248**	ug/L	0.031	12	3136	10744	7	Standard
	Cr	**52**	**0.066**	ug/L	0.025	38	27670	26956	0	Standard
	Cr	**53**	**0.069**	ug/L	0.003	4	259	460	0	Standard
	Fe	**54**	**-2.814**	ug/L	0.526	18	148035	123809	0	Standard
	Fe	**57**	**-4.580**	ug/L	0.737	16	53579	40758	3	Standard
	Mn	**55**	**0.002**	ug/L	0.001	33	766	769	2	Standard
>	**Ge**	**72**		ug/L			125988	115596	1	KED
	Ni	**60**	**-0.004**	ug/L	0.005	126	43	31	36	KED
	Ni	**62**	**-0.021**	ug/L	0.007	30	14	6	34	KED
	Cu	**63**	**0.000**	ug/L	0.003	803	183	170	8	KED
	Cu	**65**	**-0.007**	ug/L	0.005	80	96	69	22	KED
	Zn	**66**	**0.009**	ug/L	0.011	122	71	72	9	KED
	Zn	**67**	**0.053**	ug/L	0.039	72	9	15	33	KED
	As	**75**	**0.017**	ug/L	0.009	49	4	10	29	KED
	Se	**78**	**-0.103**	ug/L	0.044	42	29	23	7	KED
	Y	**89**		ug/L			831527	814910	2	Standard
	Kr	**83**		ug/L			62	64	6	Standard
>	**In-1**	**115**		ug/L			54227	40014	9	KED
	Cd	**111**	**0.016**	ug/L	0.021	127	3	7	81	KED
	Cd	**114**	**0.008**	ug/L	0.005	58	3	9	39	KED
>	**In**	**115**		ug/L			2847067	2932692	2	Standard
	Ag	**107**	**0.014**	ug/L	0.002	12	48	396	9	Standard
	Ba	**135**	**-0.040**	ug/L	0.003	8	582	186	16	Standard
	Ba	**137**	**-0.039**	ug/L	0.001	2	980	311	8	Standard
>	**Tb**	**159**		ug/L			3137629	3083239	0	Standard
	Pb	**208**	**-0.001**	ug/L	0.000	11	1274	1111	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCV2
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 18:08:38
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	32032	1	Standard
	Cl	**37**		ug/L			7165427	7133716	0	Standard
⌈>	**Sc**	**45**		ug/L			2837603	2580221	1	Standard
|	**Mg**	**24**	**5070.604**	ug/L	112.500	2	3136	161362019	1	Standard
|	**Cr**	**52**	**50.195**	ug/L	1.010	2	27670	1399263	1	Standard
|	**Cr**	**53**	**49.603**	ug/L	1.082	2	259	160721	1	Standard
|	**Fe**	**54**	**4748.915**	ug/L	32.354	0	148035	18355176	2	Standard
|	**Fe**	**57**	**4934.350**	ug/L	54.655	1	53579	8636601	1	Standard
⌊	**Mn**	**55**	**50.122**	ug/L	1.081	2	766	2051503	2	Standard
⌈>	**Ge**	**72**		ug/L			125988	117322	0	KED
|	**Ni**	**60**	**51.211**	ug/L	1.451	2	43	104389	2	KED
|	**Ni**	**62**	**51.709**	ug/L	0.411	0	14	17317	0	KED
|	**Cu**	**63**	**51.391**	ug/L	0.532	1	183	301430	1	KED
|	**Cu**	**65**	**50.998**	ug/L	2.083	4	96	147301	3	KED
|	**Zn**	**66**	**51.548**	ug/L	0.974	1	71	38904	1	KED
|	**Zn**	**67**	**52.574**	ug/L	1.302	2	9	6510	3	KED
|	**As**	**75**	**49.410**	ug/L	0.293	0	4	19030	0	KED
⌊	**Se**	**78**	**49.691**	ug/L	1.363	2	29	1993	2	KED
	Y	**89**		ug/L			831527	815117	2	Standard
	Kr	**83**		ug/L			62	81	18	Standard
⌈>	**In-1**	**115**		ug/L			54227	49985	0	KED
|	**Cd**	**111**	**50.130**	ug/L	0.353	0	3	21319	0	KED
⌊	**Cd**	**114**	**50.781**	ug/L	0.175	0	3	56070	0	KED
⌈>	**In**	**115**		ug/L			2847067	2856498	1	Standard
|	**Ag**	**107**	**53.569**	ug/L	1.088	2	48	1289455	0	Standard
|	**Ba**	**135**	**47.762**	ug/L	1.185	2	582	480650	0	Standard
⌊	**Ba**	**137**	**48.080**	ug/L	1.285	2	980	839164	2	Standard
⌈>	**Tb**	**159**		ug/L			3137629	3088287	0	Standard
⌊	**Pb**	**208**	**52.503**	ug/L	0.437	0	1274	6403087	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCB2
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 18:15:47
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			33151	31393	2	Standard
	Cl	**37**		ug/L			7165427	7188613	6	Standard
⌈>	**Sc**	**45**		ug/L			2837603	2575911	6	Standard
|	**Mg**	**24**	**0.433**	ug/L	0.025	5	3136	16563	2	Standard
|	**Cr**	**52**	**0.049**	ug/L	0.033	66	27670	26415	3	Standard
|	**Cr**	**53**	**0.044**	ug/L	0.008	18	259	378	3	Standard
|	**Fe**	**54**	**1.366**	ug/L	3.795	277	148035	138971	3	Standard
|	**Fe**	**57**	**-4.390**	ug/L	1.254	28	53579	40953	5	Standard
⌊	**Mn**	**55**	**0.003**	ug/L	0.002	70	766	815	5	Standard
⌈>	**Ge**	**72**		ug/L			125988	116482	1	KED
|	**Ni**	**60**	**-0.010**	ug/L	0.003	33	43	20	32	KED
|	**Ni**	**62**	**-0.018**	ug/L	0.010	55	14	7	43	KED
|	**Cu**	**63**	**-0.000**	ug/L	0.002	1854	183	168	7	KED
|	**Cu**	**65**	**-0.003**	ug/L	0.005	206	96	81	19	KED
|	**Zn**	**66**	**0.007**	ug/L	0.026	406	71	71	27	KED
|	**Zn**	**67**	**0.001**	ug/L	0.024	3763	9	8	32	KED
|	**As**	**75**	**0.022**	ug/L	0.007	30	4	12	20	KED
⌊	**Se**	**78**	**-0.063**	ug/L	0.034	53	29	25	6	KED
	Y	**89**		ug/L			831527	800602	7	Standard
	Kr	**83**		ug/L			62	81	24	Standard
⌈>	**In-1**	**115**		ug/L			54227	50968	2	KED
|	**Cd**	**111**	**0.009**	ug/L	0.005	58	3	7	32	KED
⌊	**Cd**	**114**	**0.006**	ug/L	0.003	45	3	10	27	KED
⌈>	**In**	**115**		ug/L			2847067	2881539	7	Standard
|	**Ag**	**107**	**0.015**	ug/L	0.001	6	48	403	2	Standard
|	**Ba**	**135**	**-0.040**	ug/L	0.001	3	582	184	9	Standard
⌊	**Ba**	**137**	**-0.039**	ug/L	0.001	3	980	306	12	Standard
⌈>	**Tb**	**159**		ug/L			3137629	3010328	6	Standard
⌊	**Pb**	**208**	**0.000**	ug/L	0.000	18	1274	1274	6	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 18:21:42
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L				31270	0	Standard
	Cl	**37**		ug/L				7087560	2	Standard
>	**Sc**	**45**		ug/L				2658271	1	Standard
	Mg	**24**		ug/L				16066	57	Standard
	Cr	**52**		ug/L				27124	0	Standard
	Cr	**53**		ug/L				372	6	Standard
	Fe	**54**		ug/L				135554	1	Standard
	Fe	**57**		ug/L				43975	2	Standard
	Mn	**55**		ug/L				827	19	Standard
>	**Ge**	**72**		ug/L				120171	1	KED
	Ni	**60**		ug/L				18	83	KED
	Ni	**62**		ug/L				3	34	KED
	Cu	**63**		ug/L				169	11	KED
	Cu	**65**		ug/L				64	16	KED
	Zn	**66**		ug/L				59	11	KED
	Zn	**67**		ug/L				9	20	KED
	As	**75**		ug/L				6	23	KED
	Se	**78**		ug/L				20	9	KED
	Y	**89**		ug/L				822262	1	Standard
	Kr	**83**		ug/L				65	17	Standard
>	**In-1**	**115**		ug/L				51219	1	KED
	Cd	**111**		ug/L				6	9	KED
	Cd	**114**		ug/L				8	12	KED
>	**In**	**115**		ug/L				2981018	1	Standard
	Ag	**107**		ug/L				299	24	Standard
	Ba	**135**		ug/L				206	17	Standard
	Ba	**137**		ug/L				307	17	Standard
>	**Tb**	**159**		ug/L				3076406	1	Standard
	Pb	**208**		ug/L				1022	29	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCV3
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 18:26:08
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31270	31916	3	Standard
	Cl	**37**		ug/L			7087560	7294111	2	Standard
⌈>	**Sc**	**45**		ug/L			2658271	2615399	1	Standard
|	**Mg**	**24**	**5108.552**	ug/L	140.758	2	16066	164822452	2	Standard
|	**Cr**	**52**	**50.755**	ug/L	1.928	3	27124	1434768	2	Standard
|	**Cr**	**53**	**49.682**	ug/L	0.797	1	372	163315	1	Standard
|	**Fe**	**54**	**4780.787**	ug/L	53.199	1	135554	18723427	0	Standard
|	**Fe**	**57**	**5064.109**	ug/L	90.043	1	43975	8976270	0	Standard
⌊	**Mn**	**55**	**50.682**	ug/L	1.303	2	827	2102484	1	Standard
⌈>	**Ge**	**72**		ug/L			120171	117214	1	KED
|	**Ni**	**60**	**51.574**	ug/L	1.033	2	18	105008	0	KED
|	**Ni**	**62**	**51.676**	ug/L	1.269	2	3	17277	1	KED
|	**Cu**	**63**	**51.914**	ug/L	0.301	0	169	304196	1	KED
|	**Cu**	**65**	**52.142**	ug/L	0.541	1	64	150477	1	KED
|	**Zn**	**66**	**52.421**	ug/L	0.423	0	59	39517	0	KED
|	**Zn**	**67**	**52.034**	ug/L	0.268	0	9	6437	1	KED
|	**As**	**75**	**49.916**	ug/L	0.773	1	6	19207	0	KED
⌊	**Se**	**78**	**48.495**	ug/L	0.938	1	20	1937	1	KED
	Y	**89**		ug/L			822262	830630	2	Standard
	Kr	**83**		ug/L			65	76	9	Standard
⌈>	**In-1**	**115**		ug/L			51219	49953	2	KED
|	**Cd**	**111**	**51.448**	ug/L	0.790	1	6	21864	1	KED
⌊	**Cd**	**114**	**50.911**	ug/L	1.414	2	8	56160	1	KED
⌈>	**In**	**115**		ug/L			2981018	2926767	2	Standard
|	**Ag**	**107**	**51.798**	ug/L	0.923	1	299	1277822	2	Standard
|	**Ba**	**135**	**46.885**	ug/L	1.353	2	206	482951	0	Standard
⌊	**Ba**	**137**	**47.787**	ug/L	1.185	2	307	853791	2	Standard
⌈>	**Tb**	**159**		ug/L			3076406	3153704	1	Standard
⌊	**Pb**	**208**	**52.147**	ug/L	0.935	1	1022	6493282	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCB3
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 18:33:17
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31270	31623	1	Standard
	Cl	**37**		ug/L			7087560	7181458	1	Standard
⌈>	**Sc**	**45**		ug/L			2658271	2659251	0	Standard
|	**Mg**	**24**	**-0.186**	ug/L	0.003	1	16066	9980	0	Standard
|	**Cr**	**52**	**-0.010**	ug/L	0.014	142	27124	26863	1	Standard
|	**Cr**	**53**	**-0.022**	ug/L	0.004	19	372	300	4	Standard
|	**Fe**	**54**	**0.124**	ug/L	0.577	466	135554	136095	1	Standard
|	**Fe**	**57**	**-1.312**	ug/L	0.815	62	43975	41636	3	Standard
⌊	**Mn**	**55**	**-0.001**	ug/L	0.001	51	827	786	2	Standard
⌈>	**Ge**	**72**		ug/L			120171	119337	0	KED
|	**Ni**	**60**	**0.004**	ug/L	0.003	78	18	26	23	KED
|	**Ni**	**62**	**0.021**	ug/L	0.018	87	3	10	60	KED
|	**Cu**	**63**	**0.000**	ug/L	0.001	727	169	169	4	KED
|	**Cu**	**65**	**0.011**	ug/L	0.004	40	64	96	13	KED
|	**Zn**	**66**	**-0.000**	ug/L	0.007	2539	59	58	9	KED
|	**Zn**	**67**	**0.005**	ug/L	0.031	569	9	10	39	KED
|	**As**	**75**	**0.007**	ug/L	0.006	97	6	9	26	KED
⌊	**Se**	**78**	**0.023**	ug/L	0.060	263	20	21	11	KED
	Y	**89**		ug/L			822262	806106	1	Standard
	Kr	**83**		ug/L			65	60	10	Standard
⌈>	**In-1**	**115**		ug/L			51219	51399	2	KED
|	**Cd**	**111**	**0.006**	ug/L	0.008	135	6	8	40	KED
⌊	**Cd**	**114**	**-0.003**	ug/L	0.002	60	8	5	32	KED
⌈>	**In**	**115**		ug/L			2981018	2889605	0	Standard
|	**Ag**	**107**	**0.002**	ug/L	0.001	35	299	341	5	Standard
|	**Ba**	**135**	**-0.003**	ug/L	0.002	62	206	173	9	Standard
⌊	**Ba**	**137**	**0.001**	ug/L	0.001	145	307	307	3	Standard
⌈>	**Tb**	**159**		ug/L			3076406	3071909	0	Standard
⌊	**Pb**	**208**	**0.000**	ug/L	0.001	368	1022	1038	5	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0831-BLK1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 18:39:49
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31270	52684	2	Standard
	Cl	37		ug/L			7087560	7054332	0	Standard
>	Sc	45		ug/L			2658271	2620110	1	Standard
	Mg	24	0.284	ug/L	0.012	4	16066	25019	0	Standard
	Cr	52	0.124	ug/L	0.019	15	27124	30188	0	Standard
	Cr	53	0.040	ug/L	0.010	26	372	497	6	Standard
	Fe	54	2.081	ug/L	0.770	36	135554	141729	3	Standard
	Fe	57	0.227	ug/L	0.228	100	43975	43740	1	Standard
	Mn	55	0.019	ug/L	0.001	4	827	1596	1	Standard
>	Ge	72		ug/L			120171	118413	0	KED
	Ni	60	0.004	ug/L	0.003	71	18	27	24	KED
	Ni	62	0.011	ug/L	0.003	29	3	6	15	KED
	Cu	63	0.028	ug/L	0.006	20	169	330	10	KED
	Cu	65	0.043	ug/L	0.005	12	64	187	7	KED
	Zn	66	0.100	ug/L	0.017	16	59	133	9	KED
	Zn	67	0.144	ug/L	0.045	31	9	27	20	KED
	As	75	0.001	ug/L	0.002	132	6	7	9	KED
	Se	78	0.033	ug/L	0.078	233	20	21	14	KED
	Y	89		ug/L			822262	822726	1	Standard
	Kr	83		ug/L			65	60	11	Standard
>	In-1	115		ug/L			51219	50457	2	KED
	Cd	111	-0.001	ug/L	0.008	1192	6	5	60	KED
	Cd	114	-0.004	ug/L	0.002	48	8	4	42	KED
>	In	115		ug/L			2981018	2943432	2	Standard
	Ag	107	-0.005	ug/L	0.000	10	299	183	7	Standard
	Ba	135	0.011	ug/L	0.002	22	206	313	5	Standard
	Ba	137	0.014	ug/L	0.004	27	307	549	9	Standard
>	Tb	159		ug/L			3076406	3067638	0	Standard
	Pb	208	0.000	ug/L	0.000	14	1022	1076	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0831-BS1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 18:44:14
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31270	57128	2	Standard
	Cl	37		ug/L			7087560	7402347	1	Standard
>	Sc	45		ug/L			2658271	2638776	2	Standard
	Mg	24	5211.388	ug/L	142.831	2	16066	169571039	0	Standard
	Cr	52	25.761	ug/L	0.728	2	27124	747864	0	Standard
	Cr	53	25.235	ug/L	0.415	1	372	83873	2	Standard
	Fe	54	4730.493	ug/L	134.121	2	135554	18686246	0	Standard
	Fe	57	5020.300	ug/L	102.294	2	43975	8977394	1	Standard
	Mn	55	25.339	ug/L	0.768	3	827	1060676	0	Standard
>	Ge	72		ug/L			120171	120648	0	KED
	Ni	60	25.172	ug/L	0.524	2	18	52775	2	KED
	Ni	62	25.111	ug/L	0.432	1	3	8644	1	KED
	Cu	63	25.688	ug/L	0.350	1	169	155019	0	KED
	Cu	65	25.127	ug/L	0.268	1	64	74673	1	KED
	Zn	66	80.497	ug/L	1.349	1	59	62437	2	KED
	Zn	67	75.885	ug/L	1.986	2	9	9657	2	KED
	As	75	24.177	ug/L	0.119	0	6	9580	0	KED
	Se	78	76.754	ug/L	1.603	2	20	3144	2	KED
	Y	89		ug/L			822262	826353	0	Standard
	Kr	83		ug/L			65	60	19	Standard
>	In-1	115		ug/L			51219	50597	2	KED
	Cd	111	24.783	ug/L	0.128	0	6	10673	2	KED
	Cd	114	25.070	ug/L	0.552	2	8	28034	4	KED
>	In	115		ug/L			2981018	2913279	5	Standard
	Ag	107	26.473	ug/L	0.578	2	299	649866	3	Standard
	Ba	135	23.701	ug/L	1.217	5	206	242821	1	Standard
	Ba	137	23.711	ug/L	0.816	3	307	421554	3	Standard
>	Tb	159		ug/L			3076406	3107973	1	Standard
	Pb	208	26.771	ug/L	0.436	1	1022	3285519	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0199-04
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 18:49:42
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31270	60241	1	Standard
	Cl	**37**		ug/L			7087560	6856630	1	Standard
⌈>	**Sc**	**45**		ug/L			2658271	2715594	0	Standard
|	**Mg**	**24**	**3712.522**	ug/L	185.809	5	16066	124376184	4	Standard
|	**Cr**	**52**	**0.291**	ug/L	0.007	2	27124	36086	0	Standard
|	**Cr**	**53**	**0.412**	ug/L	0.026	6	372	1781	5	Standard
|	**Fe**	**54**	**19.521**	ug/L	1.225	6	135554	217301	2	Standard
|	**Fe**	**57**	**26.650**	ug/L	2.253	8	43975	93736	4	Standard
⌊	**Mn**	**55**	**0.712**	ug/L	0.008	1	827	31494	1	Standard
⌈>	**Ge**	**72**		ug/L			120171	119241	2	KED
|	**Ni**	**60**	**0.073**	ug/L	0.013	17	18	168	13	KED
|	**Ni**	**62**	**0.101**	ug/L	0.023	23	3	37	21	KED
|	**Cu**	**63**	**0.140**	ug/L	0.007	4	169	1003	3	KED
|	**Cu**	**65**	**0.148**	ug/L	0.010	6	64	499	7	KED
|	**Zn**	**66**	**0.838**	ug/L	0.076	9	59	699	6	KED
|	**Zn**	**67**	**0.998**	ug/L	0.197	19	9	134	16	KED
|	**As**	**75**	**0.429**	ug/L	0.017	4	6	174	5	KED
⌊	**Se**	**78**	**0.171**	ug/L	0.137	80	20	27	21	KED
	Y	**89**		ug/L			822262	838371	1	Standard
	Kr	**83**		ug/L			65	67	5	Standard
⌈>	**In-1**	**115**		ug/L			51219	50189	1	KED
|	**Cd**	**111**	**0.001**	ug/L	0.003	332	6	6	22	KED
⌊	**Cd**	**114**	**-0.001**	ug/L	0.004	654	8	7	49	KED
⌈>	**In**	**115**		ug/L			2981018	2939352	3	Standard
|	**Ag**	**107**	**-0.002**	ug/L	0.001	70	299	257	10	Standard
|	**Ba**	**135**	**2.035**	ug/L	0.132	6	206	21231	3	Standard
⌊	**Ba**	**137**	**2.026**	ug/L	0.096	4	307	36617	1	Standard
⌈>	**Tb**	**159**		ug/L			3076406	3186288	2	Standard
⌊	**Pb**	**208**	**0.044**	ug/L	0.002	4	1022	6598	3	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0199-06
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 18:54:31
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31270	59960	2	Standard
	Cl	**37**		ug/L			7087560	7040238	1	Standard
⌈>	**Sc**	**45**		ug/L			2658271	2665351	1	Standard
|	**Mg**	**24**	**5.603**	ug/L	0.337	6	16066	200256	4	Standard
|	**Cr**	**52**	**0.282**	ug/L	0.021	7	27124	35184	2	Standard
|	**Cr**	**53**	**0.173**	ug/L	0.002	1	372	952	1	Standard
|	**Fe**	**54**	**8.154**	ug/L	0.645	7	135554	168215	1	Standard
|	**Fe**	**57**	**-1.682**	ug/L	0.352	20	43975	41062	1	Standard
⌊	**Mn**	**55**	**1.142**	ug/L	0.031	2	827	49083	2	Standard
⌈>	**Ge**	**72**		ug/L			120171	120203	1	KED
|	**Ni**	**60**	**0.093**	ug/L	0.015	16	18	211	13	KED
|	**Ni**	**62**	**0.089**	ug/L	0.018	19	3	33	17	KED
|	**Cu**	**63**	**0.171**	ug/L	0.008	4	169	1193	2	KED
|	**Cu**	**65**	**0.183**	ug/L	0.019	10	64	607	11	KED
|	**Zn**	**66**	**0.428**	ug/L	0.055	12	59	389	12	KED
|	**Zn**	**67**	**0.501**	ug/L	0.130	25	9	73	22	KED
|	**As**	**75**	**0.006**	ug/L	0.004	61	6	9	14	KED
⌊	**Se**	**78**	**0.027**	ug/L	0.061	224	20	22	9	KED
	Y	**89**		ug/L			822262	834693	0	Standard
	Kr	**83**		ug/L			65	63	13	Standard
⌈>	**In-1**	**115**		ug/L			51219	51324	1	KED
|	**Cd**	**111**	**-0.009**	ug/L	0.003	37	6	2	65	KED
⌊	**Cd**	**114**	**-0.003**	ug/L	0.003	100	8	4	80	KED
⌈>	**In**	**115**		ug/L			2981018	2937513	1	Standard
|	**Ag**	**107**	**-0.006**	ug/L	0.001	20	299	151	21	Standard
|	**Ba**	**135**	**1.083**	ug/L	0.022	2	206	11402	0	Standard
⌊	**Ba**	**137**	**1.088**	ug/L	0.030	2	307	19809	1	Standard
⌈>	**Tb**	**159**		ug/L			3076406	3122952	1	Standard
⌊	**Pb**	**208**	**0.003**	ug/L	0.000	15	1022	1391	3	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0412-01
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 18:59:20
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31270	80247	3	Standard
	Cl	37		ug/L			7087560	11542005	1	Standard
>	Sc	45		ug/L			2658271	2645047	2	Standard
	Mg	24	7197.846	ug/L	215.860	2	16066	234772008	1	Standard
	Cr	52	120.970	ug/L	4.326	3	27124	3420410	1	Standard
	Cr	53	126.435	ug/L	2.809	2	372	419688	1	Standard
	Fe	54	3023.426	ug/L	62.514	2	135554	12024319	2	Standard
	Fe	57	3186.969	ug/L	26.591	0	43975	5730308	2	Standard
	Mn	55	260.987	ug/L	3.836	1	827	10946617	1	Standard
>	Ge	72		ug/L			120171	108977	0	KED
	Ni	60	63.328	ug/L	1.055	1	18	119896	1	KED
	Ni	62	63.598	ug/L	0.220	0	3	19773	0	KED
	Cu	63	39.572	ug/L	0.264	0	169	215628	0	KED
	Cu	65	39.823	ug/L	0.582	1	64	106864	1	KED
	Zn	66	136.640	ug/L	0.652	0	59	95688	0	KED
	Zn	67	131.821	ug/L	1.413	1	9	15148	1	KED
	As	75	2.060	ug/L	0.041	2	6	743	2	KED
	Se	78	0.383	ug/L	0.158	41	20	33	17	KED
	Y	89		ug/L			822262	822065	2	Standard
	Kr	83		ug/L			65	151	10	Standard
>	In-1	115		ug/L			51219	47770	2	KED
	Cd	111	0.521	ug/L	0.044	8	6	217	6	KED
	Cd	114	0.472	ug/L	0.041	8	8	505	7	KED
>	In	115		ug/L			2981018	2680635	4	Standard
	Ag	107	0.023	ug/L	0.002	10	299	796	4	Standard
	Ba	135	57.278	ug/L	3.538	6	206	539623	1	Standard
	Ba	137	57.357	ug/L	2.658	4	307	937501	0	Standard
>	Tb	159		ug/L			3076406	3037997	0	Standard
	Pb	208	6.967	ug/L	0.080	1	1022	836652	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0218-09
Sample Dil Factor: 20
Comments:
Sample Date/Time: Tuesday, March 30, 2021 19:07:09
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31270	51231	1	Standard
	Cl	**37**		ug/L			7087560	6972183	0	Standard
>	**Sc**	**45**		ug/L			2658271	2704659	0	Standard
	Mg	**24**	**1049.152**	ug/L	32.657	3	16066	35022928	3	Standard
	Cr	**52**	**8.519**	ug/L	0.160	1	27124	272075	1	Standard
	Cr	**53**	**8.645**	ug/L	0.118	1	372	29701	0	Standard
	Fe	**54**	**3726.293**	ug/L	48.947	1	135554	15123720	1	Standard
	Fe	**57**	**3827.001**	ug/L	106.305	2	43975	7027432	3	Standard
	Mn	**55**	**51.153**	ug/L	0.322	0	827	2194899	0	Standard
>	**Ge**	**72**		ug/L			120171	119753	2	KED
	Ni	**60**	**2.652**	ug/L	0.060	2	18	5535	3	KED
	Ni	**62**	**2.636**	ug/L	0.105	3	3	904	5	KED
	Cu	**63**	**5.590**	ug/L	0.077	1	169	33615	1	KED
	Cu	**65**	**5.589**	ug/L	0.153	2	64	16529	1	KED
	Zn	**66**	**9.098**	ug/L	0.320	3	59	7053	2	KED
	Zn	**67**	**8.937**	ug/L	0.556	6	9	1136	4	KED
	As	**75**	**1.423**	ug/L	0.074	5	6	566	3	KED
	Se	**78**	**0.494**	ug/L	0.285	57	20	40	27	KED
	Y	**89**		ug/L			822262	1013107	0	Standard
	Kr	**83**		ug/L			65	79	16	Standard
>	**In-1**	**115**		ug/L			51219	51546	0	KED
	Cd	**111**	**0.008**	ug/L	0.011	143	6	9	52	KED
	Cd	**114**	**0.003**	ug/L	0.004	124	8	12	35	KED
>	**In**	**115**		ug/L			2981018	2946017	0	Standard
	Ag	**107**	**0.025**	ug/L	0.004	14	299	913	10	Standard
	Ba	**135**	**12.605**	ug/L	0.257	2	206	130912	2	Standard
	Ba	**137**	**12.854**	ug/L	0.032	0	307	231454	0	Standard
>	**Tb**	**159**		ug/L			3076406	3162937	3	Standard
	Pb	**208**	**0.957**	ug/L	0.026	2	1022	120480	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0216-01
Sample Dil Factor: 10
Comments:
Sample Date/Time: Tuesday, March 30, 2021 19:11:34
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31270	42332	3	Standard
	Cl	**37**		ug/L			7087560	6908355	0	Standard
>	**Sc**	**45**		ug/L			2658271	2494196	0	Standard
	Mg	**24**	**84.830**	ug/L	2.563	3	16066	2625069	3	Standard
	Cr	**52**	**0.418**	ug/L	0.013	3	27124	36516	1	Standard
	Cr	**53**	**0.441**	ug/L	0.006	1	372	1728	0	Standard
	Fe	**54**	**10.561**	ug/L	1.227	11	135554	166348	2	Standard
	Fe	**57**	**29.435**	ug/L	1.204	4	43975	90786	2	Standard
	Mn	**55**	**1.619**	ug/L	0.025	1	827	64829	1	Standard
>	**Ge**	**72**		ug/L			120171	111024	1	KED
	Ni	**60**	**0.542**	ug/L	0.023	4	18	1061	5	KED
	Ni	**62**	**0.540**	ug/L	0.043	7	3	173	9	KED
	Cu	**63**	**0.773**	ug/L	0.021	2	169	4441	1	KED
	Cu	**65**	**0.812**	ug/L	0.038	4	64	2277	3	KED
	Zn	**66**	**0.324**	ug/L	0.036	11	59	285	9	KED
	Zn	**67**	**1.658**	ug/L	0.175	10	9	202	8	KED
	As	**75**	**4.035**	ug/L	0.121	3	6	1476	2	KED
	Se	**78**	**0.317**	ug/L	0.106	33	20	31	12	KED
	Y	**89**		ug/L			822262	781615	2	Standard
	Kr	**83**		ug/L			65	64	4	Standard
>	**In-1**	**115**		ug/L			51219	46945	1	KED
	Cd	**111**	**0.007**	ug/L	0.011	162	6	8	53	KED
	Cd	**114**	**0.001**	ug/L	0.005	317	8	9	50	KED
>	**In**	**115**		ug/L			2981018	2594284	1	Standard
	Ag	**107**	**-0.006**	ug/L	0.000	5	299	133	5	Standard
	Ba	**135**	**22.020**	ug/L	0.181	0	206	201249	1	Standard
	Ba	**137**	**22.336**	ug/L	0.253	1	307	353956	0	Standard
>	**Tb**	**159**		ug/L			3076406	2950735	3	Standard
	Pb	**208**	**12.570**	ug/L	0.409	3	1022	1464418	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0216-02
Sample Dil Factor: 10
Comments:
Sample Date/Time: Tuesday, March 30, 2021 19:19:22
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31270	41364	6	Standard
	Cl	37		ug/L			7087560	7020561	1	Standard
>	Sc	45		ug/L			2658271	2558640	0	Standard
	Mg	24	97.052	ug/L	1.257	1	16066	3078482	0	Standard
	Cr	52	0.375	ug/L	0.011	2	27124	36299	1	Standard
	Cr	53	0.393	ug/L	0.005	1	372	1618	0	Standard
	Fe	54	11.054	ug/L	0.849	7	135554	172537	2	Standard
	Fe	57	18.382	ug/L	0.804	4	43975	74049	1	Standard
	Mn	55	1.069	ug/L	0.019	1	827	44167	2	Standard
>	Ge	72		ug/L			120171	105026	7	KED
	Ni	60	0.551	ug/L	0.024	4	18	1020	6	KED
	Ni	62	0.583	ug/L	0.123	21	3	175	14	KED
	Cu	63	0.718	ug/L	0.042	5	169	3907	2	KED
	Cu	65	0.726	ug/L	0.025	3	64	1930	4	KED
	Zn	66	0.494	ug/L	0.049	9	59	383	5	KED
	Zn	67	1.330	ug/L	0.128	9	9	154	3	KED
	As	75	4.125	ug/L	0.240	5	6	1423	1	KED
	Se	78	0.303	ug/L	0.060	19	20	28	5	KED
	Y	89		ug/L			822262	797935	1	Standard
	Kr	83		ug/L			65	59	8	Standard
>	In-1	115		ug/L			51219	47780	2	KED
	Cd	111	0.005	ug/L	0.007	131	6	7	33	KED
	Cd	114	0.005	ug/L	0.004	85	8	13	30	KED
>	In	115		ug/L			2981018	2644754	2	Standard
	Ag	107	-0.007	ug/L	0.000	5	299	112	5	Standard
	Ba	135	13.192	ug/L	0.376	2	206	122940	0	Standard
	Ba	137	13.009	ug/L	0.129	0	307	210271	2	Standard
>	Tb	159		ug/L			3076406	2924806	0	Standard
	Pb	208	7.233	ug/L	0.060	0	1022	836197	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0216-03
Sample Dil Factor: 2
Comments:
Sample Date/Time: Tuesday, March 30, 2021 19:27:11
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31270	47935	3	Standard
	Cl	37		ug/L			7087560	6217516	2	Standard
>	Sc	45		ug/L			2658271	2203537	0	Standard
	Mg	24	349.456	ug/L	3.851	1	16066	9511554	0	Standard
	Cr	52	1.171	ug/L	0.026	2	27124	49854	1	Standard
	Cr	53	1.244	ug/L	0.019	1	372	3745	1	Standard
	Fe	54	162.412	ug/L	3.495	2	135554	644468	1	Standard
	Fe	57	132.834	ug/L	2.399	1	43975	233877	0	Standard
	Mn	55	2.873	ug/L	0.023	0	827	101087	1	Standard
>	Ge	72		ug/L			120171	95656	1	KED
	Ni	60	2.008	ug/L	0.067	3	18	3350	2	KED
	Ni	62	1.899	ug/L	0.219	11	3	520	11	KED
	Cu	63	1.469	ug/L	0.037	2	169	7157	3	KED
	Cu	65	1.503	ug/L	0.037	2	64	3589	1	KED
	Zn	66	0.706	ug/L	0.099	14	59	480	11	KED
	Zn	67	1.523	ug/L	0.129	8	9	161	9	KED
	As	75	1.020	ug/L	0.088	8	6	325	8	KED
	Se	78	1.180	ug/L	0.197	16	20	54	12	KED
	Y	89		ug/L			822262	700795	0	Standard
	Kr	83		ug/L			65	92	12	Standard
>	In-1	115		ug/L			51219	42954	1	KED
	Cd	111	0.011	ug/L	0.011	101	6	9	46	KED
	Cd	114	0.003	ug/L	0.004	150	8	10	40	KED
>	In	115		ug/L			2981018	2073134	2	Standard
	Ag	107	-0.006	ug/L	0.001	9	299	111	10	Standard
	Ba	135	15.004	ug/L	0.369	2	206	109601	1	Standard
	Ba	137	15.244	ug/L	0.372	2	307	193071	0	Standard
>	Tb	159		ug/L			3076406	2580458	1	Standard
	Pb	208	8.015	ug/L	0.096	1	1022	817329	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IBL4
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 19:36:00
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31270	33968	2	Standard
	Cl	**37**		ug/L			7087560	7210051	5	Standard
⌈>	**Sc**	**45**		ug/L			2658271	2526285	12	Standard
|	**Mg**	**24**	**-0.373**	ug/L	0.003	0	16066	3644	14	Standard
|	**Cr**	**52**	**0.030**	ug/L	0.057	192	27124	26454	6	Standard
|	**Cr**	**53**	**-0.034**	ug/L	0.008	22	372	245	7	Standard
|	**Fe**	**54**	**1.631**	ug/L	1.408	86	135554	134527	8	Standard
|	**Fe**	**57**	**-3.246**	ug/L	0.615	18	43975	36177	9	Standard
⌊	**Mn**	**55**	**0.011**	ug/L	0.002	16	827	1234	6	Standard
⌈>	**Ge**	**72**		ug/L			120171	118393	2	KED
|	**Ni**	**60**	**0.002**	ug/L	0.002	90	18	22	16	KED
|	**Ni**	**62**	**0.025**	ug/L	0.006	24	3	11	16	KED
|	**Cu**	**63**	**0.001**	ug/L	0.003	248	169	173	11	KED
|	**Cu**	**65**	**0.004**	ug/L	0.007	197	64	74	26	KED
|	**Zn**	**66**	**0.084**	ug/L	0.003	3	59	121	2	KED
|	**Zn**	**67**	**0.087**	ug/L	0.051	58	9	20	32	KED
|	**As**	**75**	**-0.005**	ug/L	0.004	86	6	5	27	KED
⌊	**Se**	**78**	**0.147**	ug/L	0.093	62	20	26	16	KED
	Y	**89**		ug/L			822262	764552	11	Standard
	Kr	**83**		ug/L			65	56	24	Standard
⌈>	**In-1**	**115**		ug/L			51219	50964	0	KED
|	**Cd**	**111**	**-0.003**	ug/L	0.006	202	6	4	52	KED
⌊	**Cd**	**114**	**-0.005**	ug/L	0.004	97	8	3	137	KED
⌈>	**In**	**115**		ug/L			2981018	2649143	13	Standard
|	**Ag**	**107**	**-0.008**	ug/L	0.001	6	299	84	13	Standard
|	**Ba**	**135**	**-0.001**	ug/L	0.001	42	206	170	15	Standard
⌊	**Ba**	**137**	**-0.001**	ug/L	0.001	194	307	262	17	Standard
⌈>	**Tb**	**159**		ug/L			3076406	2856904	9	Standard
⌊	**Pb**	**208**	**-0.003**	ug/L	0.000	0	1022	589	9	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCV4
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 19:43:10
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31270	31078	2	Standard
	Cl	**37**		ug/L			7087560	7151997	1	Standard
⎡>	**Sc**	**45**		ug/L			2658271	2589643	2	Standard
⎢	**Mg**	**24**	**5175.752**	ug/L	124.969	2	16066	165294807	1	Standard
⎢	**Cr**	**52**	**51.224**	ug/L	1.096	2	27124	1433555	2	Standard
⎢	**Cr**	**53**	**49.937**	ug/L	0.418	0	372	162527	2	Standard
⎢	**Fe**	**54**	**4963.221**	ug/L	200.002	4	135554	19228890	1	Standard
⎢	**Fe**	**57**	**5013.102**	ug/L	106.131	2	43975	8796544	0	Standard
⎣	**Mn**	**55**	**50.507**	ug/L	0.737	1	827	2074489	1	Standard
⎡>	**Ge**	**72**		ug/L			120171	121124	1	KED
⎢	**Ni**	**60**	**49.420**	ug/L	0.941	1	18	103995	2	KED
⎢	**Ni**	**62**	**49.339**	ug/L	0.787	1	3	17048	1	KED
⎢	**Cu**	**63**	**49.808**	ug/L	0.871	1	169	301573	0	KED
⎢	**Cu**	**65**	**49.409**	ug/L	1.116	2	64	147324	1	KED
⎢	**Zn**	**66**	**50.074**	ug/L	0.947	1	59	39011	1	KED
⎢	**Zn**	**67**	**50.368**	ug/L	1.565	3	9	6438	2	KED
⎢	**As**	**75**	**48.900**	ug/L	0.568	1	6	19445	0	KED
⎣	**Se**	**78**	**48.888**	ug/L	0.754	1	20	2018	1	KED
	Y	**89**		ug/L			822262	810604	5	Standard
	Kr	**83**		ug/L			65	61	11	Standard
⎡>	**In-1**	**115**		ug/L			51219	51094	0	KED
⎢	**Cd**	**111**	**49.452**	ug/L	0.496	1	6	21500	1	KED
⎣	**Cd**	**114**	**48.634**	ug/L	0.389	0	8	54897	1	KED
⎡>	**In**	**115**		ug/L			2981018	2706575	2	Standard
⎢	**Ag**	**107**	**50.815**	ug/L	0.857	1	299	1159232	2	Standard
⎢	**Ba**	**135**	**50.001**	ug/L	0.406	0	206	476454	2	Standard
⎣	**Ba**	**137**	**50.030**	ug/L	0.481	0	307	826731	2	Standard
⎡>	**Tb**	**159**		ug/L			3076406	3042944	2	Standard
⎣	**Pb**	**208**	**51.690**	ug/L	1.057	2	1022	6209098	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCB4
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 19:50:19
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31270	31019	3	Standard
	Cl	**37**		ug/L			7087560	7070336	2	Standard
>	**Sc**	**45**		ug/L			2658271	2555610	0	Standard
	Mg	**24**	**-0.254**	ug/L	0.023	9	16066	7437	10	Standard
	Cr	**52**	**0.010**	ug/L	0.008	77	27124	26350	0	Standard
	Cr	**53**	**-0.047**	ug/L	0.007	15	372	207	12	Standard
	Fe	**54**	**1.842**	ug/L	0.727	39	135554	137306	1	Standard
	Fe	**57**	**-2.317**	ug/L	0.186	8	43975	38281	1	Standard
	Mn	**55**	**0.002**	ug/L	0.000	17	827	873	0	Standard
>	**Ge**	**72**		ug/L			120171	119883	2	KED
	Ni	**60**	**0.004**	ug/L	0.006	160	18	26	48	KED
	Ni	**62**	**0.009**	ug/L	0.017	191	3	6	96	KED
	Cu	**63**	**0.002**	ug/L	0.001	66	169	179	3	KED
	Cu	**65**	**0.008**	ug/L	0.005	54	64	89	15	KED
	Zn	**66**	**0.017**	ug/L	0.006	35	59	71	6	KED
	Zn	**67**	**0.011**	ug/L	0.033	313	9	10	36	KED
	As	**75**	**0.002**	ug/L	0.001	52	6	7	7	KED
	Se	**78**	**0.075**	ug/L	0.032	42	20	23	7	KED
	Y	**89**		ug/L			822262	791889	0	Standard
	Kr	**83**		ug/L			65	61	6	Standard
>	**In-1**	**115**		ug/L			51219	51016	3	KED
	Cd	**111**	**-0.008**	ug/L	0.003	43	6	2	57	KED
	Cd	**114**	**-0.002**	ug/L	0.002	139	8	6	41	KED
>	**In**	**115**		ug/L			2981018	2750016	1	Standard
	Ag	**107**	**-0.002**	ug/L	0.002	85	299	234	16	Standard
	Ba	**135**	**-0.006**	ug/L	0.002	41	206	137	16	Standard
	Ba	**137**	**-0.002**	ug/L	0.001	69	307	251	8	Standard
>	**Tb**	**159**		ug/L			3076406	2985626	2	Standard
	Pb	**208**	**-0.001**	ug/L	0.001	51	1022	856	6	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0762-BLK1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 19:56:55
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31270	58918	2	Standard
	Cl	37		ug/L			7087560	7235176	0	Standard
>	Sc	45		ug/L			2658271	2664795	1	Standard
	Mg	24	0.175	ug/L	0.026	14	16066	21861	3	Standard
	Cr	52	0.123	ug/L	0.024	19	27124	30676	1	Standard
	Cr	53	0.022	ug/L	0.002	9	372	446	2	Standard
	Fe	54	7.776	ug/L	1.133	14	135554	166667	1	Standard
	Fe	57	-2.957	ug/L	0.451	15	43975	38764	1	Standard
	Mn	55	0.026	ug/L	0.002	7	827	1927	3	Standard
>	Ge	72		ug/L			120171	114314	5	KED
	Ni	60	0.005	ug/L	0.005	98	18	26	31	KED
	Ni	62	0.014	ug/L	0.007	48	3	7	25	KED
	Cu	63	0.050	ug/L	0.006	11	169	448	7	KED
	Cu	65	0.058	ug/L	0.003	5	64	224	3	KED
	Zn	66	0.185	ug/L	0.007	4	59	192	7	KED
	Zn	67	0.239	ug/L	0.120	50	9	37	34	KED
	As	75	-0.006	ug/L	0.001	9	6	4	0	KED
	Se	78	0.141	ug/L	0.052	37	20	25	10	KED
	Y	89		ug/L			822262	819569	0	Standard
	Kr	83		ug/L			65	54	10	Standard
>	In-1	115		ug/L			51219	50102	1	KED
	Cd	111	-0.006	ug/L	0.003	48	6	3	31	KED
	Cd	114	-0.002	ug/L	0.004	248	8	6	68	KED
>	In	115		ug/L			2981018	2923501	1	Standard
	Ag	107	-0.007	ug/L	0.000	0	299	116	1	Standard
	Ba	135	0.013	ug/L	0.002	12	206	339	3	Standard
	Ba	137	0.021	ug/L	0.002	9	307	671	6	Standard
>	Tb	159		ug/L			3076406	3076763	0	Standard
	Pb	208	0.001	ug/L	0.001	106	1022	1141	10	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0762-BS1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 20:01:20
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31270	58526	2	Standard
	Cl	**37**		ug/L			7087560	7179466	2	Standard
⌈>	**Sc**	**45**		ug/L			2658271	2629151	1	Standard
|	**Mg**	**24**	**0.199**	ug/L	0.011	5	16066	22328	1	Standard
|	**Cr**	**52**	**25.120**	ug/L	0.981	3	27124	727282	2	Standard
|	**Cr**	**53**	**25.425**	ug/L	0.154	0	372	84202	1	Standard
|	**Fe**	**54**	**7.635**	ug/L	0.548	7	135554	163912	1	Standard
|	**Fe**	**57**	**-2.791**	ug/L	0.262	9	43975	38540	1	Standard
⌊	**Mn**	**55**	**25.870**	ug/L	0.805	3	827	1079328	2	Standard
⌈>	**Ge**	**72**		ug/L			120171	118639	1	KED
|	**Ni**	**60**	**25.791**	ug/L	0.599	2	18	53155	0	KED
|	**Ni**	**62**	**25.527**	ug/L	0.511	2	3	8640	1	KED
|	**Cu**	**63**	**25.975**	ug/L	0.405	1	169	154120	0	KED
|	**Cu**	**65**	**26.200**	ug/L	0.309	1	64	76564	2	KED
|	**Zn**	**66**	**81.810**	ug/L	2.156	2	59	62377	1	KED
|	**Zn**	**67**	**77.160**	ug/L	1.031	1	9	9658	2	KED
|	**As**	**75**	**24.178**	ug/L	0.467	1	6	9419	0	KED
⌊	**Se**	**78**	**77.179**	ug/L	0.518	0	20	3108	1	KED
	Y	**89**		ug/L			822262	811083	0	Standard
	Kr	**83**		ug/L			65	69	13	Standard
⌈>	**In-1**	**115**		ug/L			51219	51328	1	KED
|	**Cd**	**111**	**25.318**	ug/L	0.812	3	6	11060	3	KED
⌊	**Cd**	**114**	**25.044**	ug/L	0.173	0	8	28405	1	KED
⌈>	**In**	**115**		ug/L			2981018	2804701	0	Standard
|	**Ag**	**107**	**26.402**	ug/L	0.202	0	299	624395	0	Standard
|	**Ba**	**135**	**24.920**	ug/L	0.462	1	206	246182	0	Standard
⌊	**Ba**	**137**	**24.869**	ug/L	0.311	1	307	426038	0	Standard
⌈>	**Tb**	**159**		ug/L			3076406	3038968	0	Standard
⌊	**Pb**	**208**	**26.956**	ug/L	0.213	0	1022	3235224	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0415-01
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 20:05:45
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31270	529558	4	Standard
	Cl	37		ug/L			7087560	6620319	1	Standard
>	Sc	45		ug/L			2658271	2285126	1	Standard
	Mg	24	5168.042	ug/L	113.942	2	16066	145720241	3	Standard
	Cr	52	22.164	ug/L	0.399	1	27124	560739	2	Standard
	Cr	53	20.438	ug/L	0.515	2	372	58903	3	Standard
	Fe	54	3963.663	ug/L	29.415	0	135554	13583308	0	Standard
	Fe	57	4503.751	ug/L	106.046	2	43975	6981134	3	Standard
	Mn	55	61.381	ug/L	0.600	0	827	2224916	0	Standard
>	Ge	72		ug/L			120171	103130	1	KED
	Ni	60	24.095	ug/L	0.481	1	18	43174	1	KED
	Ni	62	24.170	ug/L	0.875	3	3	7111	2	KED
	Cu	63	2.529	ug/L	0.052	2	169	13176	1	KED
	Cu	65	2.560	ug/L	0.100	3	64	6551	3	KED
	Zn	66	34.779	ug/L	1.271	3	59	23080	2	KED
	Zn	67	32.312	ug/L	0.510	1	9	3519	0	KED
	As	75	0.396	ug/L	0.021	5	6	139	3	KED
	Se	78	0.240	ug/L	0.025	10	20	26	2	KED
	Y	89		ug/L			822262	775012	3	Standard
	Kr	83		ug/L			65	76	11	Standard
>	In-1	115		ug/L			51219	45252	0	KED
	Cd	111	0.463	ug/L	0.043	9	6	183	8	KED
	Cd	114	0.460	ug/L	0.008	1	8	467	1	KED
>	In	115		ug/L			2981018	2601309	3	Standard
	Ag	107	0.006	ug/L	0.001	17	299	402	4	Standard
	Ba	135	7.805	ug/L	0.228	2	206	71606	1	Standard
	Ba	137	7.797	ug/L	0.244	3	307	124005	1	Standard
>	Tb	159		ug/L			3076406	2950409	2	Standard
	Pb	208	0.135	ug/L	0.003	2	1022	16657	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-01
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 20:12:54
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31270	106591	4	Standard
	Cl	37		ug/L			7087560	38371149	2	Standard
>	Sc	45		ug/L			2658271	2336972	1	Standard
	Mg	24	S	ug/L	S	S	16066	S	S	Standard
	Cr	52	6.118	ug/L	0.052	0	27124	175559	1	Standard
	Cr	53	34.733	ug/L	0.130	0	372	102127	0	Standard
	Fe	54	29.167	ug/L	0.335	1	135554	220527	1	Standard
	Fe	57	102.639	ug/L	4.699	4	43975	200514	4	Standard
	Mn	55	28.717	ug/L	0.445	1	827	1064901	0	Standard
>	Ge	72		ug/L			120171	83748	2	KED
	Ni	60	0.856	ug/L	0.035	4	18	1257	4	KED
	Ni	62	0.974	ug/L	0.065	6	3	234	7	KED
	Cu	63	0.081	ug/L	0.010	12	169	458	8	KED
	Cu	65	0.082	ug/L	0.005	5	64	213	2	KED
	Zn	66	2.173	ug/L	0.087	3	59	1210	4	KED
	Zn	67	2.972	ug/L	0.269	9	9	269	10	KED
	As	75	0.340	ug/L	0.018	5	6	98	7	KED
	Se	78	0.669	ug/L	0.047	7	20	33	3	KED
	Y	89		ug/L			822262	672467	2	Standard
	Kr	83		ug/L			65	859	1	Standard
>	In-1	115		ug/L			51219	36657	1	KED
	Cd	111	0.013	ug/L	0.002	17	6	8	6	KED
	Cd	114	0.000	ug/L	0.005	5093	8	6	69	KED
>	In	115		ug/L			2981018	1909815	2	Standard
	Ag	107	-0.002	ug/L	0.001	46	299	165	8	Standard
	Ba	135	17.790	ug/L	0.486	2	206	119660	0	Standard
	Ba	137	18.230	ug/L	0.640	3	307	212613	1	Standard
>	Tb	159		ug/L			3076406	2421015	1	Standard
	Pb	208	0.024	ug/L	0.001	3	1022	3143	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-03
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 20:17:43
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
C	13		ug/L			31270	100813	5	Standard
Cl	37		ug/L			7087560	83869118	1	Standard
> Sc	45		ug/L			2658271	1963657	1	Standard
Mg	24	S	ug/L	S	S	16066	S	S	Standard
Cr	52	6.487	ug/L	0.113	1	27124	155175	0	Standard
Cr	53	67.825	ug/L	0.592	0	372	167306	0	Standard
Fe	54	556.897	ug/L	15.509	2	135554	1725765	1	Standard
Fe	57	571.384	ug/L	11.370	1	43975	789227	1	Standard
Mn	55	87.288	ug/L	0.965	1	827	2718618	0	Standard
> Ge	72		ug/L			120171	68270	0	KED
Ni	60	0.229	ug/L	0.015	6	18	282	6	KED
Ni	62	0.923	ug/L	0.105	11	3	181	11	KED
Cu	63	1.135	ug/L	0.036	3	169	3968	2	KED
Cu	65	1.067	ug/L	0.042	3	64	1829	3	KED
Zn	66	1.170	ug/L	0.063	5	59	546	5	KED
Zn	67	6.167	ug/L	0.584	9	9	448	8	KED
As	75	0.635	ug/L	0.003	0	6	146	1	KED
Se	78	1.600	ug/L	0.207	12	20	48	10	KED
Y	89		ug/L			822262	564324	2	Standard
Kr	83		ug/L			65	9154	1	Standard
> In-1	115		ug/L			51219	29435	1	KED
Cd	111	0.003	ug/L	0.002	91	6	4	13	KED
Cd	114	0.000	ug/L	0.005	1292	8	5	59	KED
> In	115		ug/L			2981018	1337224	0	Standard
Ag	107	0.003	ug/L	0.001	24	299	168	4	Standard
Ba	135	151.219	ug/L	1.835	1	206	711862	1	Standard
Ba	137	153.393	ug/L	2.289	1	307	1252268	1	Standard
> Tb	159		ug/L			3076406	1823585	1	Standard
Pb	208	0.026	ug/L	0.001	5	1022	2494	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-04
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 20:22:32
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31270	86828	1	Standard
	Cl	37		ug/L			7087560	8352670	1	Standard
>	Sc	45		ug/L			2658271	2707398	0	Standard
	Mg	24	23359.314	ug/L	374.819	1	16066	780186410	2	Standard
	Cr	52	3.795	ug/L	0.094	2	27124	136635	1	Standard
	Cr	53	5.528	ug/L	0.124	2	372	19149	2	Standard
	Fe	54	18272.117	ug/L	157.105	0	135554	73696744	1	Standard
	Fe	57	19079.084	ug/L	92.723	0	43975	34888560	0	Standard
	Mn	55	418.186	ug/L	2.319	0	827	17956137	0	Standard
>	Ge	72		ug/L			120171	112761	0	KED
	Ni	60	16.354	ug/L	0.255	1	18	32048	1	KED
	Ni	62	16.375	ug/L	0.953	5	3	5268	5	KED
	Cu	63	3.870	ug/L	0.071	1	169	21959	1	KED
	Cu	65	3.856	ug/L	0.054	1	64	10759	0	KED
	Zn	66	11.253	ug/L	0.278	2	59	8203	1	KED
	Zn	67	14.647	ug/L	0.631	4	9	1749	5	KED
	As	75	74.818	ug/L	0.839	1	6	27695	0	KED
	Se	78	0.433	ug/L	0.079	18	20	36	8	KED
	Y	89		ug/L			822262	853045	0	Standard
	Kr	83		ug/L			65	132	11	Standard
>	In-1	115		ug/L			51219	48170	1	KED
	Cd	111	0.092	ug/L	0.008	9	6	43	7	KED
	Cd	114	0.089	ug/L	0.014	15	8	103	15	KED
>	In	115		ug/L			2981018	2500859	0	Standard
	Ag	107	0.019	ug/L	0.001	6	299	655	3	Standard
	Ba	135	66.536	ug/L	1.143	1	206	585807	1	Standard
	Ba	137	66.915	ug/L	0.987	1	307	1021695	0	Standard
>	Tb	159		ug/L			3076406	2842639	1	Standard
	Pb	208	0.381	ug/L	0.014	3	1022	43667	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-05
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 20:27:21
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
C	13		ug/L			31270	72857	4	Standard
Cl	37		ug/L			7087560	77750893	1	Standard
> Sc	45		ug/L			2658271	2076674	1	Standard
Mg	24	S	ug/L	S	S	16066	S	S	Standard
Cr	52	3.842	ug/L	0.059	1	27124	105850	2	Standard
Cr	53	70.951	ug/L	1.144	1	372	185061	0	Standard
Fe	54	11108.312	ug/L	229.325	2	135554	34401498	1	Standard
Fe	57	11771.806	ug/L	243.511	2	43975	16524822	2	Standard
Mn	55	106.250	ug/L	0.627	0	827	3499717	0	Standard
> Ge	72		ug/L			120171	72769	1	KED
Ni	60	0.169	ug/L	0.016	9	18	225	9	KED
Ni	62	1.089	ug/L	0.032	2	3	227	3	KED
Cu	63	0.230	ug/L	0.018	7	169	939	8	KED
Cu	65	0.112	ug/L	0.020	17	64	240	14	KED
Zn	66	0.721	ug/L	0.067	9	59	372	9	KED
Zn	67	2.276	ug/L	0.152	6	9	180	6	KED
As	75	0.417	ug/L	0.066	15	6	103	16	KED
Se	78	1.283	ug/L	0.399	31	20	44	22	KED
Y	89		ug/L			822262	572244	1	Standard
Kr	83		ug/L			65	10600	3	Standard
> In-1	115		ug/L			51219	30377	0	KED
Cd	111	0.027	ug/L	0.014	50	6	10	32	KED
Cd	114	0.011	ug/L	0.003	24	8	12	13	KED
> In	115		ug/L			2981018	1358616	1	Standard
Ag	107	-0.001	ug/L	0.002	160	299	123	18	Standard
Ba	135	39.027	ug/L	0.838	2	206	186686	0	Standard
Ba	137	39.468	ug/L	0.958	2	307	327385	0	Standard
> Tb	159		ug/L			3076406	1809135	1	Standard
Pb	208	0.015	ug/L	0.000	2	1022	1707	3	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-06
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 20:32:10
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
C	13		ug/L			31270	143985	2	Standard
Cl	37		ug/L			7087560	56147095	1	Standard
> Sc	45		ug/L			2658271	2354419	2	Standard
Mg	24	S	ug/L	S	S	16066	S	S	Standard
Cr	52	6.829	ug/L	0.044	0	27124	194627	2	Standard
Cr	53	53.753	ug/L	0.871	1	372	159044	2	Standard
Fe	54	384.960	ug/L	9.550	2	135554	1467884	3	Standard
Fe	57	367.830	ug/L	5.169	1	43975	623087	2	Standard
Mn	55	205.363	ug/L	4.321	2	827	7666765	1	Standard
> Ge	72		ug/L			120171	84500	1	KED
Ni	60	0.433	ug/L	0.035	8	18	648	6	KED
Ni	62	1.963	ug/L	0.033	1	3	475	3	KED
Cu	63	0.316	ug/L	0.020	6	169	1454	6	KED
Cu	65	0.178	ug/L	0.008	4	64	414	2	KED
Zn	66	0.643	ug/L	0.050	7	59	390	5	KED
Zn	67	1.901	ug/L	0.348	18	9	175	16	KED
As	75	1.246	ug/L	0.016	1	6	350	1	KED
Se	78	1.368	ug/L	0.244	17	20	53	13	KED
Y	89		ug/L			822262	672267	2	Standard
Kr	83		ug/L			65	6349	6	Standard
> In-1	115		ug/L			51219	35147	0	KED
Cd	111	0.014	ug/L	0.013	93	6	8	46	KED
Cd	114	0.004	ug/L	0.005	120	8	9	42	KED
> In	115		ug/L			2981018	1627458	1	Standard
Ag	107	0.005	ug/L	0.000	4	299	226	2	Standard
Ba	135	31.186	ug/L	0.931	2	206	178700	1	Standard
Ba	137	32.170	ug/L	1.815	5	307	319608	4	Standard
> Tb	159		ug/L			3076406	2118772	1	Standard
Pb	208	0.019	ug/L	0.001	5	1022	2285	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-07
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 20:37:59
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
C	13		ug/L			31270	99993	1	Standard
Cl	37		ug/L			7087560	74047267	3	Standard
> Sc	45		ug/L			2658271	2104936	2	Standard
Mg	24	S	ug/L	S	S	16066	S	S	Standard
Cr	52	8.555	ug/L	0.168	1	27124	212517	1	Standard
Cr	53	69.557	ug/L	1.556	2	372	183864	0	Standard
Fe	54	3271.713	ug/L	43.639	1	135554	10345334	0	Standard
Fe	57	3594.941	ug/L	73.809	2	43975	5138484	2	Standard
Mn	55	145.259	ug/L	2.277	1	827	4849024	1	Standard
> Ge	72		ug/L			120171	72841	1	KED
Ni	60	0.281	ug/L	0.015	5	18	366	3	KED
Ni	62	2.978	ug/L	0.153	5	3	620	6	KED
Cu	63	0.456	ug/L	0.015	3	169	1762	4	KED
Cu	65	0.130	ug/L	0.019	14	64	271	13	KED
Zn	66	0.711	ug/L	0.082	11	59	368	8	KED
Zn	67	3.018	ug/L	0.078	2	9	237	3	KED
As	75	0.744	ug/L	0.049	6	6	182	7	KED
Se	78	1.690	ug/L	0.127	7	20	54	4	KED
Y	89		ug/L			822262	587343	2	Standard
Kr	83		ug/L			65	18762	4	Standard
> In-1	115		ug/L			51219	30479	2	KED
Cd	111	0.009	ug/L	0.002	20	6	6	9	KED
Cd	114	0.003	ug/L	0.010	341	8	7	92	KED
> In	115		ug/L			2981018	1398806	2	Standard
Ag	107	-0.000	ug/L	0.000	156	299	137	2	Standard
Ba	135	55.161	ug/L	1.320	2	206	271594	0	Standard
Ba	137	55.589	ug/L	1.797	3	307	474588	1	Standard
> Tb	159		ug/L			3076406	1837611	0	Standard
Pb	208	0.025	ug/L	0.001	3	1022	2446	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IBL5
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 20:45:49
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31270	32839	2	Standard
	Cl	**37**		ug/L			7087560	7747570	1	Standard
⌈>	**Sc**	**45**		ug/L			2658271	2795441	2	Standard
|	**Mg**	**24**	**1.738**	ug/L	0.107	6	16066	76800	4	Standard
|	**Cr**	**52**	**0.106**	ug/L	0.020	18	27124	31660	3	Standard
|	**Cr**	**53**	**2.332**	ug/L	0.117	5	372	8560	2	Standard
|	**Fe**	**54**	**1.687**	ug/L	1.438	85	135554	149455	1	Standard
|	**Fe**	**57**	**-0.646**	ug/L	0.180	27	43975	45026	2	Standard
⌊	**Mn**	**55**	**0.007**	ug/L	0.001	10	827	1161	2	Standard
⌈>	**Ge**	**72**		ug/L			120171	124668	0	KED
|	**Ni**	**60**	**0.006**	ug/L	0.004	63	18	31	24	KED
|	**Ni**	**62**	**0.562**	ug/L	0.027	4	3	203	4	KED
|	**Cu**	**63**	**0.016**	ug/L	0.005	27	169	278	10	KED
|	**Cu**	**65**	**0.009**	ug/L	0.007	79	64	95	24	KED
|	**Zn**	**66**	**0.055**	ug/L	0.022	39	59	105	16	KED
|	**Zn**	**67**	**0.021**	ug/L	0.036	169	9	12	37	KED
|	**As**	**75**	**-0.004**	ug/L	0.009	225	6	5	69	KED
⌊	**Se**	**78**	**0.131**	ug/L	0.112	85	20	27	17	KED
	Y	**89**		ug/L			822262	816211	3	Standard
	Kr	**83**		ug/L			65	200	8	Standard
⌈>	**In-1**	**115**		ug/L			51219	54653	1	KED
|	**Cd**	**111**	**-0.005**	ug/L	0.006	121	6	4	70	KED
⌊	**Cd**	**114**	**-0.006**	ug/L	0.001	15	8	2	46	KED
⌈>	**In**	**115**		ug/L			2981018	2564333	5	Standard
|	**Ag**	**107**	**-0.010**	ug/L	0.000	4	299	46	19	Standard
|	**Ba**	**135**	**-0.007**	ug/L	0.002	33	206	113	15	Standard
⌊	**Ba**	**137**	**-0.004**	ug/L	0.001	26	307	207	12	Standard
⌈>	**Tb**	**159**		ug/L			3076406	2849573	1	Standard
⌊	**Pb**	**208**	**0.003**	ug/L	0.000	18	1022	1231	5	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCV5
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 20:51:38
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31270	32594	2	Standard
	Cl	**37**		ug/L			7087560	7526857	1	Standard
⌈>	**Sc**	**45**		ug/L			2658271	2811191	3	Standard
|	**Mg**	**24**	**4816.186**	ug/L	223.237	4	16066	166841607	1	Standard
|	**Cr**	**52**	**51.357**	ug/L	2.104	4	27124	1559071	0	Standard
|	**Cr**	**53**	**52.498**	ug/L	3.191	6	372	185266	3	Standard
|	**Fe**	**54**	**4739.315**	ug/L	219.811	4	135554	19931134	1	Standard
|	**Fe**	**57**	**4645.056**	ug/L	200.922	4	43975	8845592	0	Standard
⌊	**Mn**	**55**	**50.429**	ug/L	1.630	3	827	2247893	2	Standard
⌈>	**Ge**	**72**		ug/L			120171	123379	1	KED
|	**Ni**	**60**	**48.876**	ug/L	0.243	0	18	104770	1	KED
|	**Ni**	**62**	**49.395**	ug/L	0.511	1	3	17387	1	KED
|	**Cu**	**63**	**50.286**	ug/L	1.268	2	169	310144	2	KED
|	**Cu**	**65**	**50.013**	ug/L	2.236	4	64	151868	3	KED
|	**Zn**	**66**	**49.691**	ug/L	0.691	1	59	39431	0	KED
|	**Zn**	**67**	**50.382**	ug/L	1.987	3	9	6561	4	KED
|	**As**	**75**	**49.167**	ug/L	0.289	0	6	19917	0	KED
⌊	**Se**	**78**	**50.262**	ug/L	1.019	2	20	2112	1	KED
	Y	**89**		ug/L			822262	838224	3	Standard
	Kr	**83**		ug/L			65	107	7	Standard
⌈>	**In-1**	**115**		ug/L			51219	51249	4	KED
|	**Cd**	**111**	**51.065**	ug/L	3.221	6	6	22227	1	KED
⌊	**Cd**	**114**	**50.489**	ug/L	2.613	5	8	57072	0	KED
⌈>	**In**	**115**		ug/L			2981018	2540965	4	Standard
|	**Ag**	**107**	**49.703**	ug/L	3.399	6	299	1062742	2	Standard
|	**Ba**	**135**	**50.291**	ug/L	1.976	3	206	449482	0	Standard
⌊	**Ba**	**137**	**50.195**	ug/L	2.337	4	307	777851	1	Standard
⌈>	**Tb**	**159**		ug/L			3076406	2870245	2	Standard
⌊	**Pb**	**208**	**50.911**	ug/L	1.847	3	1022	5766801	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCB5
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 20:58:48
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31270	32847	0	Standard
	Cl	**37**		ug/L			7087560	7358643	0	Standard
⌈>	**Sc**	**45**		ug/L			2658271	2803690	3	Standard
|	**Mg**	**24**	**3.063**	ug/L	1.310	42	16066	122103	33	Standard
|	**Cr**	**52**	**0.060**	ug/L	0.046	76	27124	30350	1	Standard
|	**Cr**	**53**	**0.899**	ug/L	0.023	2	372	3553	1	Standard
|	**Fe**	**54**	**2.434**	ug/L	0.678	27	135554	153056	1	Standard
|	**Fe**	**57**	**-1.437**	ug/L	1.238	86	43975	43615	2	Standard
⌊	**Mn**	**55**	**0.006**	ug/L	0.003	54	827	1130	9	Standard
⌈>	**Ge**	**72**		ug/L			120171	122004	1	KED
|	**Ni**	**60**	**-0.002**	ug/L	0.006	228	18	13	86	KED
|	**Ni**	**62**	**0.142**	ug/L	0.028	19	3	52	19	KED
|	**Cu**	**63**	**0.003**	ug/L	0.005	139	169	192	15	KED
|	**Cu**	**65**	**0.004**	ug/L	0.006	156	64	76	21	KED
|	**Zn**	**66**	**0.014**	ug/L	0.015	108	59	70	15	KED
|	**Zn**	**67**	**0.009**	ug/L	0.037	419	9	10	44	KED
|	**As**	**75**	**0.003**	ug/L	0.003	106	6	8	13	KED
⌊	**Se**	**78**	**0.268**	ug/L	0.032	12	20	32	3	KED
	Y	**89**		ug/L			822262	841034	1	Standard
	Kr	**83**		ug/L			65	78	4	Standard
⌈>	**In-1**	**115**		ug/L			51219	52913	0	KED
|	**Cd**	**111**	**-0.005**	ug/L	0.002	38	6	3	25	KED
⌊	**Cd**	**114**	**-0.003**	ug/L	0.003	109	8	5	66	KED
⌈>	**In**	**115**		ug/L			2981018	2606169	1	Standard
|	**Ag**	**107**	**-0.003**	ug/L	0.002	51	299	193	17	Standard
|	**Ba**	**135**	**-0.005**	ug/L	0.002	48	206	133	17	Standard
⌊	**Ba**	**137**	**-0.002**	ug/L	0.002	78	307	229	12	Standard
⌈>	**Tb**	**159**		ug/L			3076406	2918780	1	Standard
⌊	**Pb**	**208**	**0.004**	ug/L	0.000	11	1022	1420	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-09
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 21:03:14
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
C	13		ug/L			31270	103289	1	Standard
Cl	37		ug/L			7087560	41752522	2	Standard
> Sc	45		ug/L			2658271	2144587	0	Standard
Mg	24	S	ug/L	S	S	16066	S	S	Standard
Cr	52	9.490	ug/L	0.086	0	27124	237822	0	Standard
Cr	53	50.807	ug/L	0.176	0	372	136956	0	Standard
Fe	54	5730.300	ug/L	122.273	2	135554	18381276	1	Standard
Fe	57	6011.212	ug/L	113.000	1	43975	8731243	1	Standard
Mn	55	113.890	ug/L	1.719	1	827	3873999	1	Standard
> Ge	72		ug/L			120171	77985	1	KED
Ni	60	0.675	ug/L	0.013	1	18	927	3	KED
Ni	62	2.831	ug/L	0.044	1	3	631	0	KED
Cu	63	1.386	ug/L	0.024	1	169	5510	1	KED
Cu	65	1.223	ug/L	0.057	4	64	2388	3	KED
Zn	66	0.723	ug/L	0.042	5	59	400	6	KED
Zn	67	2.172	ug/L	0.062	2	9	184	3	KED
As	75	2.824	ug/L	0.123	4	6	727	3	KED
Se	78	1.081	ug/L	0.145	13	20	41	7	KED
Y	89		ug/L			822262	606853	0	Standard
Kr	83		ug/L			65	6212	9	Standard
> In-1	115		ug/L			51219	32731	0	KED
Cd	111	0.015	ug/L	0.017	116	6	7	59	KED
Cd	114	0.009	ug/L	0.012	129	8	12	69	KED
> In	115		ug/L			2981018	1520026	1	Standard
Ag	107	0.021	ug/L	0.002	9	299	419	5	Standard
Ba	135	37.718	ug/L	0.744	1	206	201878	1	Standard
Ba	137	38.892	ug/L	1.220	3	307	360962	2	Standard
> Tb	159		ug/L			3076406	1969685	1	Standard
Pb	208	0.249	ug/L	0.001	0	1022	20005	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-10
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 21:08:03
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31270	96522	4	Standard
	Cl	37		ug/L			7087560	21829484	2	Standard
>	Sc	45		ug/L			2658271	2476319	1	Standard
	Mg	24	S	ug/L	S	S	16066	S	S	Standard
	Cr	52	3.926	ug/L	0.073	1	27124	128417	0	Standard
	Cr	53	28.999	ug/L	0.488	1	372	90401	1	Standard
	Fe	54	6035.612	ug/L	60.956	1	135554	22347908	0	Standard
	Fe	57	6070.711	ug/L	94.990	1	43975	10182278	2	Standard
	Mn	55	107.000	ug/L	2.028	1	827	4202083	0	Standard
>	Ge	72		ug/L			120171	92594	1	KED
	Ni	60	0.377	ug/L	0.024	6	18	620	7	KED
	Ni	62	2.327	ug/L	0.174	7	3	616	5	KED
	Cu	63	0.322	ug/L	0.007	2	169	1618	2	KED
	Cu	65	0.192	ug/L	0.026	13	64	486	10	KED
	Zn	66	0.529	ug/L	0.076	14	59	359	11	KED
	Zn	67	1.279	ug/L	0.096	7	9	132	5	KED
	As	75	0.319	ug/L	0.036	11	6	102	10	KED
	Se	78	0.559	ug/L	0.115	20	20	33	10	KED
	Y	89		ug/L			822262	672196	0	Standard
	Kr	83		ug/L			65	1767	7	Standard
>	In-1	115		ug/L			51219	39091	1	KED
	Cd	111	0.004	ug/L	0.006	150	6	6	36	KED
	Cd	114	-0.003	ug/L	0.005	193	8	4	111	KED
>	In	115		ug/L			2981018	1949286	0	Standard
	Ag	107	-0.004	ug/L	0.001	15	299	125	8	Standard
	Ba	135	12.587	ug/L	0.196	1	206	86497	1	Standard
	Ba	137	12.687	ug/L	0.159	1	307	151151	0	Standard
>	Tb	159		ug/L			3076406	2302373	1	Standard
	Pb	208	0.626	ug/L	0.009	1	1022	57706	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-12
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 21:12:51
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31270	87826	0	Standard
	Cl	37		ug/L			7087560	7618614	2	Standard
>	Sc	45		ug/L			2658271	2687103	3	Standard
	Mg	24	23549.352	ug/L	632.527	2	16066	780153841	0	Standard
	Cr	52	3.617	ug/L	0.154	4	27124	130453	0	Standard
	Cr	53	4.799	ug/L	0.068	1	372	16544	1	Standard
	Fe	54	17207.563	ug/L	548.147	3	135554	68840919	0	Standard
	Fe	57	18472.920	ug/L	410.622	2	43975	33512188	1	Standard
	Mn	55	416.089	ug/L	13.013	3	827	17719842	0	Standard
>	Ge	72		ug/L			120171	109768	0	KED
	Ni	60	18.029	ug/L	0.430	2	18	34391	2	KED
	Ni	62	19.116	ug/L	0.547	2	3	5987	2	KED
	Cu	63	4.023	ug/L	0.044	1	169	22221	0	KED
	Cu	65	4.052	ug/L	0.081	1	64	11006	1	KED
	Zn	66	11.035	ug/L	0.164	1	59	7833	1	KED
	Zn	67	14.597	ug/L	0.529	3	9	1697	3	KED
	As	75	71.919	ug/L	1.207	1	6	25916	1	KED
	Se	78	0.330	ug/L	0.095	28	20	31	10	KED
	Y	89		ug/L			822262	813356	0	Standard
	Kr	83		ug/L			65	290	2	Standard
>	In-1	115		ug/L			51219	47560	1	KED
	Cd	111	0.088	ug/L	0.009	10	6	41	8	KED
	Cd	114	0.076	ug/L	0.010	13	8	87	12	KED
>	In	115		ug/L			2981018	2413812	2	Standard
	Ag	107	0.016	ug/L	0.002	13	299	568	5	Standard
	Ba	135	65.140	ug/L	1.954	2	206	553394	2	Standard
	Ba	137	65.269	ug/L	2.257	3	307	961357	0	Standard
>	Tb	159		ug/L			3076406	2728664	1	Standard
	Pb	208	0.346	ug/L	0.010	2	1022	38127	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-08
Sample Dil Factor: 20
Comments:
Sample Date/Time: Tuesday, March 30, 2021 21:18:40
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31270	89185	2	Standard
	Cl	**37**		ug/L			7087560	9160797	3	Standard
>	**Sc**	**45**		ug/L			2658271	2790547	0	Standard
	Mg	**24**	**7678.716**	ug/L	126.462	1	16066	264352225	2	Standard
	Cr	**52**	**2.436**	ug/L	0.028	1	27124	100585	0	Standard
	Cr	**53**	**3.828**	ug/L	0.094	2	372	13785	1	Standard
	Fe	**54**	**9301.907**	ug/L	121.237	1	135554	38736784	1	Standard
	Fe	**57**	**9354.675**	ug/L	176.357	1	43975	17653439	1	Standard
	Mn	**55**	**96.529**	ug/L	2.162	2	827	4272161	1	Standard
>	**Ge**	**72**		ug/L			120171	118472	0	KED
	Ni	**60**	**0.176**	ug/L	0.015	8	18	380	8	KED
	Ni	**62**	**0.590**	ug/L	0.057	9	3	202	9	KED
	Cu	**63**	**0.076**	ug/L	0.002	2	169	619	1	KED
	Cu	**65**	**0.071**	ug/L	0.006	8	64	271	6	KED
	Zn	**66**	**0.472**	ug/L	0.012	2	59	417	2	KED
	Zn	**67**	**0.556**	ug/L	0.066	11	9	78	9	KED
	As	**75**	**2.285**	ug/L	0.030	1	6	895	1	KED
	Se	**78**	**0.441**	ug/L	0.106	24	20	38	12	KED
	Y	**89**		ug/L			822262	835653	1	Standard
	Kr	**83**		ug/L			65	188	7	Standard
>	**In-1**	**115**		ug/L			51219	49230	1	KED
	Cd	**111**	**-0.000**	ug/L	0.006	2387	6	5	44	KED
	Cd	**114**	**-0.000**	ug/L	0.004	981	8	7	62	KED
>	**In**	**115**		ug/L			2981018	2501479	1	Standard
	Ag	**107**	**-0.008**	ug/L	0.001	7	299	83	15	Standard
	Ba	**135**	**1.483**	ug/L	0.033	2	206	13227	1	Standard
	Ba	**137**	**1.494**	ug/L	0.028	1	307	23063	1	Standard
>	**Tb**	**159**		ug/L			3076406	2831627	1	Standard
	Pb	**208**	**0.003**	ug/L	0.000	18	1022	1244	5	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-11
Sample Dil Factor: 20
Comments:
Sample Date/Time: Tuesday, March 30, 2021 21:25:49
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31270	92341	0	Standard
	Cl	**37**		ug/L			7087560	9178414	2	Standard
>	**Sc**	**45**		ug/L			2658271	2912811	1	Standard
	Mg	**24**	**5783.028**	ug/L	132.949	2	16066	207791608	2	Standard
	Cr	**52**	**1.512**	ug/L	0.050	3	27124	76433	1	Standard
	Cr	**53**	**2.682**	ug/L	0.062	2	372	10205	1	Standard
	Fe	**54**	**6007.587**	ug/L	70.829	1	135554	26167081	1	Standard
	Fe	**57**	**6175.704**	ug/L	189.278	3	43975	12180074	2	Standard
	Mn	**55**	**42.738**	ug/L	0.805	1	827	1974901	1	Standard
>	**Ge**	**72**		ug/L			120171	116534	3	KED
	Ni	**60**	**0.165**	ug/L	0.006	3	18	351	3	KED
	Ni	**62**	**0.450**	ug/L	0.045	10	3	152	6	KED
	Cu	**63**	**0.083**	ug/L	0.010	12	169	646	7	KED
	Cu	**65**	**0.085**	ug/L	0.002	2	64	307	3	KED
	Zn	**66**	**0.387**	ug/L	0.028	7	59	346	7	KED
	Zn	**67**	**1.003**	ug/L	0.102	10	9	132	12	KED
	As	**75**	**1.050**	ug/L	0.043	4	6	407	1	KED
	Se	**78**	**0.306**	ug/L	0.033	10	20	32	3	KED
	Y	**89**		ug/L			822262	845804	0	Standard
	Kr	**83**		ug/L			65	147	16	Standard
>	**In-1**	**115**		ug/L			51219	51544	1	KED
	Cd	**111**	**-0.004**	ug/L	0.001	37	6	4	12	KED
	Cd	**114**	**-0.003**	ug/L	0.003	132	8	5	65	KED
>	**In**	**115**		ug/L			2981018	2713222	1	Standard
	Ag	**107**	**-0.009**	ug/L	0.000	5	299	71	13	Standard
	Ba	**135**	**8.275**	ug/L	0.222	2	206	79186	0	Standard
	Ba	**137**	**8.352**	ug/L	0.188	2	307	138575	0	Standard
>	**Tb**	**159**		ug/L			3076406	2912086	0	Standard
	Pb	**208**	**0.012**	ug/L	0.000	2	1022	2304	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IBL6
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 21:33:39
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31270	32516	3	Standard
	Cl	37		ug/L			7087560	7167188	3	Standard
>	Sc	45		ug/L			2658271	2794041	1	Standard
	Mg	24	1.794	ug/L	0.200	11	16066	78760	9	Standard
	Cr	52	0.044	ug/L	0.015	33	27124	29827	1	Standard
	Cr	53	0.655	ug/L	0.024	3	372	2684	2	Standard
	Fe	54	0.006	ug/L	0.297	5334	135554	142491	0	Standard
	Fe	57	-2.107	ug/L	0.023	1	43975	42250	1	Standard
	Mn	55	0.007	ug/L	0.001	15	827	1179	2	Standard
>	Ge	72		ug/L			120171	121394	1	KED
	Ni	60	0.004	ug/L	0.001	30	18	27	10	KED
	Ni	62	0.156	ug/L	0.047	30	3	57	28	KED
	Cu	63	0.001	ug/L	0.005	625	169	176	19	KED
	Cu	65	0.004	ug/L	0.005	124	64	77	19	KED
	Zn	66	0.032	ug/L	0.024	75	59	84	22	KED
	Zn	67	0.059	ug/L	0.014	23	9	17	11	KED
	As	75	-0.002	ug/L	0.003	139	6	6	20	KED
	Se	78	0.021	ug/L	0.022	103	20	22	3	KED
	Y	89		ug/L			822262	833776	1	Standard
	Kr	83		ug/L			65	87	13	Standard
>	In-1	115		ug/L			51219	52916	1	KED
	Cd	111	-0.005	ug/L	0.002	41	6	3	25	KED
	Cd	114	-0.003	ug/L	0.003	89	8	5	58	KED
>	In	115		ug/L			2981018	2702022	2	Standard
	Ag	107	-0.009	ug/L	0.000	2	299	59	6	Standard
	Ba	135	-0.007	ug/L	0.001	12	206	116	5	Standard
	Ba	137	-0.004	ug/L	0.001	33	307	220	11	Standard
>	Tb	159		ug/L			3076406	2896237	1	Standard
	Pb	208	-0.001	ug/L	0.001	81	1022	857	10	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-02
Sample Dil Factor: 2
Comments:
Sample Date/Time: Tuesday, March 30, 2021 21:39:29
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31270	75341	1	Standard
	Cl	37		ug/L			7087560	7636096	1	Standard
>	Sc	45		ug/L			2658271	2632790	8	Standard
	Mg	24	**22141.614**	ug/L	1763.408	7	16066	715846079	1	Standard
	Cr	52	**2.534**	ug/L	0.229	9	27124	97281	2	Standard
	Cr	53	**3.210**	ug/L	0.257	7	372	10918	1	Standard
	Fe	54	**9100.054**	ug/L	697.220	7	135554	35602835	1	Standard
	Fe	57	**9865.198**	ug/L	859.654	8	43975	17476351	0	Standard
	Mn	55	**794.320**	ug/L	72.281	9	827	32995641	1	Standard
>	Ge	72		ug/L			120171	105871	2	KED
	Ni	60	**0.774**	ug/L	0.069	8	18	1438	7	KED
	Ni	62	**0.795**	ug/L	0.066	8	3	242	6	KED
	Cu	63	**0.129**	ug/L	0.006	4	169	831	4	KED
	Cu	65	**0.124**	ug/L	0.008	6	64	380	5	KED
	Zn	66	**0.362**	ug/L	0.002	0	59	298	2	KED
	Zn	67	**4.367**	ug/L	0.274	6	9	495	4	KED
	As	75	**2.050**	ug/L	0.020	0	6	718	1	KED
	Se	78	**0.414**	ug/L	0.052	12	20	33	5	KED
	Y	89		ug/L			822262	755903	6	Standard
	Kr	83		ug/L			65	172	2	Standard
>	In-1	115		ug/L			51219	47524	1	KED
	Cd	111	**0.004**	ug/L	0.002	36	6	7	7	KED
	Cd	114	**0.001**	ug/L	0.005	765	8	8	56	KED
>	In	115		ug/L			2981018	2102883	6	Standard
	Ag	107	**-0.006**	ug/L	0.002	29	299	105	21	Standard
	Ba	135	**74.794**	ug/L	5.806	7	206	551785	0	Standard
	Ba	137	**76.833**	ug/L	6.574	8	307	982647	1	Standard
>	Tb	159		ug/L			3076406	2593954	6	Standard
	Pb	208	**0.008**	ug/L	0.001	15	1022	1669	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0228-12
Sample Dil Factor: 2
Comments:
Sample Date/Time: Tuesday, March 30, 2021 21:45:18
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31270	62531	2	Standard
	Cl	37		ug/L			7087560	6872132	1	Standard
>	Sc	45		ug/L			2658271	3143742	2	Standard
	Mg	24	843.485	ug/L	22.671	2	16066	32716654	0	Standard
	Cr	52	10.496	ug/L	0.252	2	27124	382083	0	Standard
	Cr	53	11.438	ug/L	0.361	3	372	45519	1	Standard
	Fe	54	7789.776	ug/L	152.257	1	135554	36564153	1	Standard
	Fe	57	8121.189	ug/L	185.393	2	43975	17269517	1	Standard
	Mn	55	45.727	ug/L	1.843	4	827	2279478	2	Standard
>	Ge	72		ug/L			120171	121023	1	KED
	Ni	60	8.298	ug/L	0.190	2	18	17460	1	KED
	Ni	62	8.730	ug/L	0.348	3	3	3015	2	KED
	Cu	63	52.569	ug/L	1.611	3	169	317948	1	KED
	Cu	65	52.842	ug/L	2.086	3	64	157396	2	KED
	Zn	66	11.780	ug/L	0.253	2	59	9215	2	KED
	Zn	67	13.406	ug/L	0.315	2	9	1719	2	KED
	As	75	6.086	ug/L	0.268	4	6	2423	2	KED
	Se	78	2.346	ug/L	0.295	12	20	116	8	KED
	Y	89		ug/L			822262	1152038	1	Standard
	Kr	83		ug/L			65	128	4	Standard
>	In-1	115		ug/L			51219	52190	1	KED
	Cd	111	0.022	ug/L	0.009	39	6	15	24	KED
	Cd	114	0.021	ug/L	0.008	39	8	33	28	KED
>	In	115		ug/L			2981018	2596730	2	Standard
	Ag	107	0.089	ug/L	0.004	4	299	2207	4	Standard
	Ba	135	31.804	ug/L	0.514	1	206	290778	1	Standard
	Ba	137	32.023	ug/L	1.054	3	307	507552	0	Standard
>	Tb	159		ug/L			3076406	2916621	1	Standard
	Pb	208	1.883	ug/L	0.032	1	1022	217754	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0228-14
Sample Dil Factor: 2
Comments:
Sample Date/Time: Tuesday, March 30, 2021 21:51:06
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31270	64736	2	Standard
	Cl	37		ug/L			7087560	7015547	1	Standard
>	Sc	45		ug/L			2658271	3085684	1	Standard
	Mg	24	892.398	ug/L	17.962	2	16066	33981302	0	Standard
	Cr	52	11.036	ug/L	0.469	4	27124	392701	2	Standard
	Cr	53	11.537	ug/L	0.183	1	372	45075	0	Standard
	Fe	54	8273.853	ug/L	119.825	1	135554	38115225	0	Standard
	Fe	57	8333.908	ug/L	7.292	0	43975	17397898	1	Standard
	Mn	55	50.138	ug/L	1.176	2	827	2454030	1	Standard
>	Ge	72		ug/L			120171	120538	2	KED
	Ni	60	8.596	ug/L	0.334	3	18	18006	1	KED
	Ni	62	8.686	ug/L	0.390	4	3	2988	3	KED
	Cu	63	52.699	ug/L	1.623	3	169	317429	0	KED
	Cu	65	52.705	ug/L	1.141	2	64	156369	0	KED
	Zn	66	12.238	ug/L	0.264	2	59	9533	2	KED
	Zn	67	13.734	ug/L	0.280	2	9	1753	0	KED
	As	75	6.450	ug/L	0.162	2	6	2558	1	KED
	Se	78	2.106	ug/L	0.228	10	20	106	10	KED
	Y	89		ug/L			822262	1168353	1	Standard
	Kr	83		ug/L			65	111	1	Standard
>	In-1	115		ug/L			51219	50690	0	KED
	Cd	111	0.025	ug/L	0.005	18	6	16	11	KED
	Cd	114	0.027	ug/L	0.005	18	8	38	14	KED
>	In	115		ug/L			2981018	2595802	1	Standard
	Ag	107	0.085	ug/L	0.001	1	299	2127	1	Standard
	Ba	135	32.883	ug/L	0.838	2	206	300557	1	Standard
	Ba	137	32.914	ug/L	0.262	0	307	521763	0	Standard
>	Tb	159		ug/L			3076406	2941960	1	Standard
	Pb	208	1.959	ug/L	0.009	0	1022	228496	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IBL7
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 21:58:56
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31270	32944	2	Standard
	Cl	37		ug/L			7087560	6799456	1	Standard
>	Sc	45		ug/L			2658271	2738146	1	Standard
	Mg	24	0.715	ug/L	0.209	29	16066	40773	18	Standard
	Cr	52	0.024	ug/L	0.020	82	27124	28625	0	Standard
	Cr	53	0.591	ug/L	0.007	1	372	2414	1	Standard
	Fe	54	0.319	ug/L	0.639	200	135554	140899	0	Standard
	Fe	57	-2.475	ug/L	0.520	21	43975	40720	2	Standard
	Mn	55	0.008	ug/L	0.002	21	827	1203	7	Standard
>	Ge	72		ug/L			120171	118582	1	KED
	Ni	60	0.006	ug/L	0.003	53	18	29	19	KED
	Ni	62	0.030	ug/L	0.017	56	3	13	42	KED
	Cu	63	-0.000	ug/L	0.005	2253	169	166	19	KED
	Cu	65	0.008	ug/L	0.002	22	64	88	4	KED
	Zn	66	0.046	ug/L	0.011	23	59	93	7	KED
	Zn	67	0.032	ug/L	0.056	175	9	13	51	KED
	As	75	0.001	ug/L	0.004	514	6	7	17	KED
	Se	78	0.048	ug/L	0.133	277	20	22	25	KED
	Y	89		ug/L			822262	824498	0	Standard
	Kr	83		ug/L			65	64	17	Standard
>	In-1	115		ug/L			51219	52508	0	KED
	Cd	111	0.000	ug/L	0.010	2451	6	6	70	KED
	Cd	114	-0.001	ug/L	0.002	310	8	8	35	KED
>	In	115		ug/L			2981018	2677998	1	Standard
	Ag	107	-0.010	ug/L	0.000	2	299	42	11	Standard
	Ba	135	-0.007	ug/L	0.003	44	206	119	25	Standard
	Ba	137	-0.004	ug/L	0.001	17	307	213	5	Standard
>	Tb	159		ug/L			3076406	2866735	0	Standard
	Pb	208	-0.003	ug/L	0.000	9	1022	645	4	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCV6
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 22:07:46
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31270	32341	4	Standard
	Cl	**37**		ug/L			7087560	7123796	3	Standard
⌈>	**Sc**	**45**		ug/L			2658271	2773655	2	Standard
|	**Mg**	**24**	**4848.874**	ug/L	141.510	2	16066	165841683	0	Standard
|	**Cr**	**52**	**52.050**	ug/L	1.482	2	27124	1559477	0	Standard
|	**Cr**	**53**	**51.417**	ug/L	2.106	4	372	179178	3	Standard
|	**Fe**	**54**	**4795.444**	ug/L	96.652	2	135554	19914312	1	Standard
|	**Fe**	**57**	**4757.544**	ug/L	92.068	1	43975	8944925	1	Standard
⌊	**Mn**	**55**	**51.072**	ug/L	1.190	2	827	2246535	0	Standard
⌈>	**Ge**	**72**		ug/L			120171	120600	2	KED
|	**Ni**	**60**	**50.796**	ug/L	1.230	2	18	106389	1	KED
|	**Ni**	**62**	**50.776**	ug/L	1.129	2	3	17464	0	KED
|	**Cu**	**63**	**51.071**	ug/L	1.110	2	169	307838	1	KED
|	**Cu**	**65**	**50.891**	ug/L	1.017	1	64	151072	1	KED
|	**Zn**	**66**	**50.685**	ug/L	1.261	2	59	39320	3	KED
|	**Zn**	**67**	**51.266**	ug/L	1.317	2	9	6522	0	KED
|	**As**	**75**	**50.065**	ug/L	0.647	1	6	19820	1	KED
⌊	**Se**	**78**	**49.882**	ug/L	1.341	2	20	2049	2	KED
	Y	**89**		ug/L			822262	847917	0	Standard
	Kr	**83**		ug/L			65	72	13	Standard
⌈>	**In-1**	**115**		ug/L			51219	53090	2	KED
|	**Cd**	**111**	**49.570**	ug/L	0.241	0	6	22393	1	KED
⌊	**Cd**	**114**	**49.438**	ug/L	0.733	1	8	57975	1	KED
⌈>	**In**	**115**		ug/L			2981018	2676988	1	Standard
|	**Ag**	**107**	**48.656**	ug/L	0.786	1	299	1097907	1	Standard
|	**Ba**	**135**	**48.013**	ug/L	1.518	3	206	452404	1	Standard
⌊	**Ba**	**137**	**49.034**	ug/L	1.184	2	307	801378	1	Standard
⌈>	**Tb**	**159**		ug/L			3076406	2864957	1	Standard
⌊	**Pb**	**208**	**51.290**	ug/L	0.933	1	1022	5801494	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCB6
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 22:14:56
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31270	32441	0	Standard
	Cl	**37**		ug/L			7087560	6830773	1	Standard
⌈>	**Sc**	**45**		ug/L			2658271	2726616	0	Standard
|	**Mg**	**24**	**-0.125**	ug/L	0.154	123	16066	12298	42	Standard
|	**Cr**	**52**	**0.040**	ug/L	0.007	17	27124	28982	1	Standard
|	**Cr**	**53**	**0.388**	ug/L	0.004	1	372	1709	0	Standard
|	**Fe**	**54**	**1.964**	ug/L	0.594	30	135554	146991	1	Standard
|	**Fe**	**57**	**0.332**	ug/L	0.602	181	43975	45720	3	Standard
⌊	**Mn**	**55**	**0.000**	ug/L	0.001	180	827	867	4	Standard
⌈>	**Ge**	**72**		ug/L			120171	117399	0	KED
|	**Ni**	**60**	**-0.002**	ug/L	0.004	173	18	13	62	KED
|	**Ni**	**62**	**0.025**	ug/L	0.006	23	3	11	16	KED
|	**Cu**	**63**	**0.004**	ug/L	0.004	111	169	186	12	KED
|	**Cu**	**65**	**0.007**	ug/L	0.005	74	64	84	18	KED
|	**Zn**	**66**	**0.020**	ug/L	0.012	60	59	73	12	KED
|	**Zn**	**67**	**0.022**	ug/L	0.046	210	9	12	48	KED
|	**As**	**75**	**0.004**	ug/L	0.007	173	6	8	33	KED
⌊	**Se**	**78**	**0.242**	ug/L	0.188	77	20	30	24	KED
	Y	**89**		ug/L			822262	826686	0	Standard
	Kr	**83**		ug/L			65	62	8	Standard
⌈>	**In-1**	**115**		ug/L			51219	53221	1	KED
|	**Cd**	**111**	**-0.003**	ug/L	0.007	220	6	4	72	KED
⌊	**Cd**	**114**	**-0.004**	ug/L	0.003	62	8	4	66	KED
⌈>	**In**	**115**		ug/L			2981018	2624079	2	Standard
|	**Ag**	**107**	**-0.005**	ug/L	0.001	27	299	156	16	Standard
|	**Ba**	**135**	**-0.006**	ug/L	0.003	42	206	123	23	Standard
⌊	**Ba**	**137**	**-0.006**	ug/L	0.001	8	307	168	6	Standard
⌈>	**Tb**	**159**		ug/L			3076406	2885924	0	Standard
⌊	**Pb**	**208**	**-0.002**	ug/L	0.000	5	1022	721	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 22:19:21
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L				31999	2	Standard
	Cl	37		ug/L				6841818	0	Standard
>	Sc	45		ug/L				2712572	0	Standard
	Mg	24		ug/L				32130	0	Standard
	Cr	52		ug/L				28861	2	Standard
	Cr	53		ug/L				1639	1	Standard
	Fe	54		ug/L				145734	0	Standard
	Fe	57		ug/L				44560	2	Standard
	Mn	55		ug/L				962	6	Standard
>	Ge	72		ug/L				115171	10	KED
	Ni	60		ug/L				10	36	KED
	Ni	62		ug/L				10	28	KED
	Cu	63		ug/L				179	19	KED
	Cu	65		ug/L				66	28	KED
	Zn	66		ug/L				68	22	KED
	Zn	67		ug/L				19	60	KED
	As	75		ug/L				3	28	KED
	Se	78		ug/L				26	7	KED
	Y	89		ug/L				822991	0	Standard
	Kr	83		ug/L				64	4	Standard
>	In-1	115		ug/L				51883	0	KED
	Cd	111		ug/L				5	54	KED
	Cd	114		ug/L				1	105	KED
>	In	115		ug/L				2578919	1	Standard
	Ag	107		ug/L				75	2	Standard
	Ba	135		ug/L				107	4	Standard
	Ba	137		ug/L				179	3	Standard
>	Tb	159		ug/L				2802328	0	Standard
	Pb	208		ug/L				589	3	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCV7
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 22:23:47
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	32595	0	Standard
	Cl	**37**		ug/L			6841818	7181390	2	Standard
⌈>	**Sc**	**45**		ug/L			2712572	2757218	0	Standard
|	**Mg**	**24**	**4825.274**	ug/L	24.468	0	32130	164146778	0	Standard
|	**Cr**	**52**	**51.649**	ug/L	1.328	2	28861	1540245	1	Standard
|	**Cr**	**53**	**50.282**	ug/L	0.446	0	1639	175541	0	Standard
|	**Fe**	**54**	**4787.023**	ug/L	15.878	0	145734	19773404	0	Standard
|	**Fe**	**57**	**4715.777**	ug/L	83.673	1	44560	8815644	1	Standard
⌊	**Mn**	**55**	**50.242**	ug/L	0.431	0	962	2197919	1	Standard
⌈>	**Ge**	**72**		ug/L			115171	120466	1	KED
|	**Ni**	**60**	**49.764**	ug/L	1.011	2	10	104131	0	KED
|	**Ni**	**62**	**49.569**	ug/L	0.682	1	10	17043	1	KED
|	**Cu**	**63**	**50.992**	ug/L	0.752	1	179	307097	1	KED
|	**Cu**	**65**	**50.991**	ug/L	1.035	2	66	151230	1	KED
|	**Zn**	**66**	**50.443**	ug/L	0.622	1	68	39097	1	KED
|	**Zn**	**67**	**51.402**	ug/L	1.374	2	19	6544	1	KED
|	**As**	**75**	**49.917**	ug/L	0.267	0	3	19739	0	KED
⌊	**Se**	**78**	**50.372**	ug/L	0.634	1	26	2074	1	KED
	Y	**89**		ug/L			822991	822108	1	Standard
	Kr	**83**		ug/L			64	73	7	Standard
⌈>	**In-1**	**115**		ug/L			51883	51721	1	KED
|	**Cd**	**111**	**50.056**	ug/L	1.018	2	5	22024	0	KED
⌊	**Cd**	**114**	**49.105**	ug/L	1.244	2	1	56085	0	KED
⌈>	**In**	**115**		ug/L			2578919	2598744	2	Standard
|	**Ag**	**107**	**48.838**	ug/L	0.397	0	75	1069819	2	Standard
|	**Ba**	**135**	**49.026**	ug/L	0.865	1	107	448460	1	Standard
⌊	**Ba**	**137**	**49.837**	ug/L	0.803	1	179	790632	1	Standard
⌈>	**Tb**	**159**		ug/L			2802328	2869251	1	Standard
⌊	**Pb**	**208**	**51.005**	ug/L	0.770	1	589	5777799	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCB7
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 22:30:57
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	32185	2	Standard
	Cl	**37**		ug/L			6841818	7117319	1	Standard
⌈>	**Sc**	**45**		ug/L			2712572	2744100	1	Standard
|	**Mg**	**24**	**-0.131**	ug/L	0.036	27	32130	28066	2	Standard
|	**Cr**	**52**	**0.020**	ug/L	0.018	88	28861	29780	0	Standard
|	**Cr**	**53**	**-0.057**	ug/L	0.011	19	1639	1461	0	Standard
|	**Fe**	**54**	**0.446**	ug/L	0.566	126	145734	149226	0	Standard
|	**Fe**	**57**	**0.187**	ug/L	0.408	218	44560	45418	1	Standard
⌊	**Mn**	**55**	**0.001**	ug/L	0.000	82	962	998	3	Standard
⌈>	**Ge**	**72**		ug/L			115171	119007	0	KED
|	**Ni**	**60**	**0.005**	ug/L	0.002	45	10	21	22	KED
|	**Ni**	**62**	**-0.005**	ug/L	0.012	241	10	8	44	KED
|	**Cu**	**63**	**-0.000**	ug/L	0.003	749	179	182	9	KED
|	**Cu**	**65**	**0.003**	ug/L	0.004	105	66	78	12	KED
|	**Zn**	**66**	**0.001**	ug/L	0.023	2027	68	71	24	KED
|	**Zn**	**67**	**-0.081**	ug/L	0.030	37	19	9	40	KED
|	**As**	**75**	**0.007**	ug/L	0.002	31	3	6	13	KED
⌊	**Se**	**78**	**-0.045**	ug/L	0.093	208	26	26	14	KED
	Y	**89**		ug/L			822991	834271	2	Standard
	Kr	**83**		ug/L			64	53	34	Standard
⌈>	**In-1**	**115**		ug/L			51883	53063	0	KED
|	**Cd**	**111**	**-0.002**	ug/L	0.006	252	5	4	66	KED
⌊	**Cd**	**114**	**0.002**	ug/L	0.002	111	1	3	53	KED
⌈>	**In**	**115**		ug/L			2578919	2648623	1	Standard
|	**Ag**	**107**	**0.004**	ug/L	0.002	57	75	159	30	Standard
|	**Ba**	**135**	**0.000**	ug/L	0.001	725	107	111	5	Standard
⌊	**Ba**	**137**	**0.000**	ug/L	0.000	218	179	187	4	Standard
⌈>	**Tb**	**159**		ug/L			2802328	2876512	1	Standard
⌊	**Pb**	**208**	**0.001**	ug/L	0.000	5	589	727	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0839-BLK1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 22:35:23
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31999	52043	1	Standard
	Cl	37		ug/L			6841818	6972223	2	Standard
>	Sc	45		ug/L			2712572	2749532	1	Standard
	Mg	24	0.548	ug/L	0.036	6	32130	51134	2	Standard
	Cr	52	0.128	ug/L	0.036	27	28861	32996	2	Standard
	Cr	53	-0.017	ug/L	0.021	127	1639	1604	3	Standard
	Fe	54	3.228	ug/L	0.616	19	145734	160899	0	Standard
	Fe	57	1.120	ug/L	0.468	41	44560	47245	2	Standard
	Mn	55	0.081	ug/L	0.002	2	962	4505	0	Standard
>	Ge	72		ug/L			115171	121474	0	KED
	Ni	60	0.008	ug/L	0.001	18	10	27	10	KED
	Ni	62	-0.007	ug/L	0.011	160	10	8	48	KED
	Cu	63	0.202	ug/L	0.003	1	179	1415	1	KED
	Cu	65	0.213	ug/L	0.007	3	66	707	2	KED
	Zn	66	0.204	ug/L	0.014	6	68	231	4	KED
	Zn	67	0.141	ug/L	0.017	11	19	38	5	KED
	As	75	0.007	ug/L	0.004	61	3	6	26	KED
	Se	78	0.006	ug/L	0.064	1096	26	28	9	KED
	Y	89		ug/L			822991	825214	0	Standard
	Kr	83		ug/L			64	60	29	Standard
>	In-1	115		ug/L			51883	53431	1	KED
	Cd	111	-0.002	ug/L	0.006	255	5	4	66	KED
	Cd	114	0.003	ug/L	0.004	159	1	4	96	KED
>	In	115		ug/L			2578919	2615657	4	Standard
	Ag	107	0.004	ug/L	0.004	102	75	156	50	Standard
	Ba	135	0.048	ug/L	0.002	5	107	546	0	Standard
	Ba	137	0.048	ug/L	0.005	10	179	951	6	Standard
>	Tb	159		ug/L			2802328	2901183	2	Standard
	Pb	208	0.018	ug/L	0.001	4	589	2615	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0839-BS1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 22:39:49
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	51452	3	Standard
	Cl	**37**		ug/L			6841818	6814281	2	Standard
>	**Sc**	**45**		ug/L			2712572	2623803	8	Standard
	Mg	**24**	**0.524**	ug/L	0.118	22	32130	47833	0	Standard
	Cr	**52**	**26.946**	ug/L	1.508	5	28861	775834	3	Standard
	Cr	**53**	**26.717**	ug/L	1.621	6	1639	89219	3	Standard
	Fe	**54**	**6.188**	ug/L	7.342	118	145734	163496	8	Standard
	Fe	**57**	**1.144**	ug/L	1.437	125	44560	44985	3	Standard
	Mn	**55**	**27.205**	ug/L	1.531	5	962	1129373	3	Standard
>	**Ge**	**72**		ug/L			115171	121742	1	KED
	Ni	**60**	**26.012**	ug/L	0.399	1	10	55015	0	KED
	Ni	**62**	**25.772**	ug/L	0.407	1	10	8960	1	KED
	Cu	**63**	**26.802**	ug/L	0.409	1	179	163213	1	KED
	Cu	**65**	**27.099**	ug/L	0.402	1	66	81253	0	KED
	Zn	**66**	**82.275**	ug/L	0.449	0	68	64400	0	KED
	Zn	**67**	**79.322**	ug/L	0.492	0	19	10197	0	KED
	As	**75**	**25.078**	ug/L	0.448	1	3	10023	0	KED
	Se	**78**	**81.147**	ug/L	1.559	1	26	3359	0	KED
	Y	**89**		ug/L			822991	804329	7	Standard
	Kr	**83**		ug/L			64	69	39	Standard
>	**In-1**	**115**		ug/L			51883	53348	3	KED
	Cd	**111**	**25.214**	ug/L	1.182	4	5	11434	1	KED
	Cd	**114**	**24.658**	ug/L	0.961	3	1	29028	0	KED
>	**In**	**115**		ug/L			2578919	2478238	10	Standard
	Ag	**107**	**26.749**	ug/L	1.732	6	75	556357	3	Standard
	Ba	**135**	**26.881**	ug/L	2.113	7	107	233337	2	Standard
	Ba	**137**	**27.457**	ug/L	2.383	8	179	413090	1	Standard
>	**Tb**	**159**		ug/L			2802328	2759423	6	Standard
	Pb	**208**	**27.191**	ug/L	1.059	3	589	2958291	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0228-18
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 22:44:14
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31999	66427	3	Standard
	Cl	37		ug/L			6841818	7099512	1	Standard
>	Sc	45		ug/L			2712572	2837609	1	Standard
	Mg	24	14428.908	ug/L	439.402	3	32130	504929825	1	Standard
	Cr	52	1.448	ug/L	0.005	0	28861	73783	1	Standard
	Cr	53	1.911	ug/L	0.013	0	1639	8515	1	Standard
	Fe	54	25396.880	ug/L	620.264	2	145734	107282665	1	Standard
	Fe	57	26688.965	ug/L	184.353	0	44560	51131810	1	Standard
	Mn	55	1144.015	ug/L	10.643	0	962	51481931	1	Standard
>	Ge	72		ug/L			115171	115513	0	KED
	Ni	60	0.833	ug/L	0.005	0	10	1681	0	KED
	Ni	62	0.840	ug/L	0.099	11	10	286	11	KED
	Cu	63	3.081	ug/L	0.021	0	179	17959	0	KED
	Cu	65	3.101	ug/L	0.034	1	66	8880	1	KED
	Zn	66	2.497	ug/L	0.088	3	68	1921	3	KED
	Zn	67	3.410	ug/L	0.113	3	19	434	3	KED
	As	75	3.602	ug/L	0.129	3	3	1368	3	KED
	Se	78	0.161	ug/L	0.091	56	26	33	10	KED
	Y	89		ug/L			822991	872697	1	Standard
	Kr	83		ug/L			64	100	24	Standard
>	In-1	115		ug/L			51883	49486	1	KED
	Cd	111	0.018	ug/L	0.003	14	5	12	7	KED
	Cd	114	0.019	ug/L	0.006	30	1	22	29	KED
>	In	115		ug/L			2578919	2542607	2	Standard
	Ag	107	0.014	ug/L	0.001	6	75	373	4	Standard
	Ba	135	21.114	ug/L	0.924	4	107	188942	2	Standard
	Ba	137	21.242	ug/L	0.470	2	179	329762	0	Standard
>	Tb	159		ug/L			2802328	2734620	0	Standard
	Pb	208	0.586	ug/L	0.012	2	589	63838	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0228-20
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 22:48:39
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31999	65556	1	Standard
	Cl	37		ug/L			6841818	6807600	1	Standard
>	Sc	45		ug/L			2712572	2837468	1	Standard
	Mg	24	10294.450	ug/L	415.964	4	32130	360178483	2	Standard
	Cr	52	0.466	ug/L	0.015	3	28861	44210	1	Standard
	Cr	53	0.598	ug/L	0.020	3	1639	3843	0	Standard
	Fe	54	447.233	ug/L	10.537	2	145734	2038839	0	Standard
	Fe	57	362.313	ug/L	13.463	3	44560	740103	3	Standard
	Mn	55	48.635	ug/L	0.637	1	962	2189305	1	Standard
>	Ge	72		ug/L			115171	114036	0	KED
	Ni	60	1.309	ug/L	0.046	3	10	2604	3	KED
	Ni	62	1.236	ug/L	0.030	2	10	412	2	KED
	Cu	63	0.798	ug/L	0.019	2	179	4725	2	KED
	Cu	65	0.826	ug/L	0.036	4	66	2384	4	KED
	Zn	66	1.005	ug/L	0.037	3	68	803	3	KED
	Zn	67	1.259	ug/L	0.237	18	19	170	16	KED
	As	75	0.426	ug/L	0.016	3	3	162	3	KED
	Se	78	0.019	ug/L	0.106	571	26	27	14	KED
	Y	89		ug/L			822991	827143	1	Standard
	Kr	83		ug/L			64	50	5	Standard
>	In-1	115		ug/L			51883	49651	2	KED
	Cd	111	0.013	ug/L	0.004	28	5	10	15	KED
	Cd	114	0.024	ug/L	0.005	20	1	28	18	KED
>	In	115		ug/L			2578919	2745254	2	Standard
	Ag	107	0.006	ug/L	0.001	17	75	210	11	Standard
	Ba	135	5.225	ug/L	0.209	4	107	50566	1	Standard
	Ba	137	5.211	ug/L	0.047	0	179	87513	2	Standard
>	Tb	159		ug/L			2802328	2925761	1	Standard
	Pb	208	0.087	ug/L	0.002	2	589	10675	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0228-22
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 22:53:04
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31999	63587	3	Standard
	Cl	37		ug/L			6841818	7593178	0	Standard
>	Sc	45		ug/L			2712572	2769017	1	Standard
	Mg	24	19628.052	ug/L	309.492	1	32130	670402111	0	Standard
	Cr	52	1.330	ug/L	0.049	3	28861	68542	1	Standard
	Cr	53	3.401	ug/L	0.074	2	1639	13483	1	Standard
	Fe	54	2594.950	ug/L	23.704	0	145734	10832520	0	Standard
	Fe	57	2709.354	ug/L	46.099	1	44560	5106155	1	Standard
	Mn	55	295.686	ug/L	3.105	1	962	12984557	0	Standard
>	Ge	72		ug/L			115171	112574	1	KED
	Ni	60	3.645	ug/L	0.076	2	10	7140	3	KED
	Ni	62	3.560	ug/L	0.079	2	10	1153	1	KED
	Cu	63	3.079	ug/L	0.030	0	179	17493	0	KED
	Cu	65	3.205	ug/L	0.035	1	66	8942	1	KED
	Zn	66	4.731	ug/L	0.104	2	68	3487	1	KED
	Zn	67	5.504	ug/L	0.730	13	19	671	11	KED
	As	75	0.899	ug/L	0.044	4	3	335	4	KED
	Se	78	1.033	ug/L	0.204	19	26	65	10	KED
	Y	89		ug/L			822991	854699	1	Standard
	Kr	83		ug/L			64	97	2	Standard
>	In-1	115		ug/L			51883	48942	0	KED
	Cd	111	0.068	ug/L	0.010	14	5	33	11	KED
	Cd	114	0.057	ug/L	0.005	7	1	63	6	KED
>	In	115		ug/L			2578919	2748395	1	Standard
	Ag	107	0.008	ug/L	0.003	36	75	267	26	Standard
	Ba	135	14.612	ug/L	0.521	3	107	141415	2	Standard
	Ba	137	14.905	ug/L	0.410	2	179	250204	2	Standard
>	Tb	159		ug/L			2802328	2924581	2	Standard
	Pb	208	0.499	ug/L	0.012	2	589	58201	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0228-04
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 22:57:53
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31999	66741	0	Standard
	Cl	37		ug/L			6841818	7325835	0	Standard
>	Sc	45		ug/L			2712572	2839890	1	Standard
	Mg	24	15878.279	ug/L	367.222	2	32130	556170734	1	Standard
	Cr	52	1.867	ug/L	0.036	1	28861	86463	1	Standard
	Cr	53	3.527	ug/L	0.123	3	1639	14273	1	Standard
	Fe	54	6809.736	ug/L	253.292	3	145734	28896870	2	Standard
	Fe	57	6901.624	ug/L	62.320	0	44560	13267753	1	Standard
	Mn	55	581.016	ug/L	7.564	1	962	26164950	0	Standard
>	Ge	72		ug/L			115171	111985	0	KED
	Ni	60	2.761	ug/L	0.092	3	10	5380	2	KED
	Ni	62	2.694	ug/L	0.053	1	10	870	1	KED
	Cu	63	5.890	ug/L	0.070	1	179	33131	0	KED
	Cu	65	5.969	ug/L	0.076	1	66	16514	0	KED
	Zn	66	3.095	ug/L	0.105	3	68	2292	2	KED
	Zn	67	3.300	ug/L	0.589	17	19	407	16	KED
	As	75	6.091	ug/L	0.133	2	3	2242	2	KED
	Se	78	0.294	ug/L	0.170	57	26	37	17	KED
	Y	89		ug/L			822991	858902	2	Standard
	Kr	83		ug/L			64	95	12	Standard
>	In-1	115		ug/L			51883	48427	2	KED
	Cd	111	0.019	ug/L	0.004	21	5	12	11	KED
	Cd	114	0.015	ug/L	0.005	34	1	18	31	KED
>	In	115		ug/L			2578919	2671651	0	Standard
	Ag	107	0.016	ug/L	0.002	10	75	444	8	Standard
	Ba	135	5.742	ug/L	0.128	2	107	54107	2	Standard
	Ba	137	5.630	ug/L	0.132	2	179	92002	2	Standard
>	Tb	159		ug/L			2802328	2854590	0	Standard
	Pb	208	0.123	ug/L	0.002	1	589	14466	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0831-DUP1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 23:02:43
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31999	71588	2	Standard
	Cl	37		ug/L			6841818	7358697	2	Standard
>	Sc	45		ug/L			2712572	2804470	1	Standard
	Mg	24	16356.429	ug/L	535.176	3	32130	565682151	1	Standard
	Cr	52	2.173	ug/L	0.030	1	28861	94496	1	Standard
	Cr	53	3.696	ug/L	0.137	3	1639	14691	1	Standard
	Fe	54	6894.016	ug/L	128.233	1	145734	28892881	0	Standard
	Fe	57	7296.676	ug/L	244.617	3	44560	13844861	1	Standard
	Mn	55	597.264	ug/L	10.707	1	962	26560177	0	Standard
>	Ge	72		ug/L			115171	110321	0	KED
	Ni	60	2.880	ug/L	0.059	2	10	5529	2	KED
	Ni	62	2.916	ug/L	0.149	5	10	927	4	KED
	Cu	63	5.982	ug/L	0.086	1	179	33142	0	KED
	Cu	65	6.013	ug/L	0.054	0	66	16387	0	KED
	Zn	66	1.913	ug/L	0.059	3	68	1421	3	KED
	Zn	67	2.279	ug/L	0.157	6	19	283	5	KED
	As	75	6.318	ug/L	0.146	2	3	2291	2	KED
	Se	78	0.338	ug/L	0.069	20	26	38	6	KED
	Y	89		ug/L			822991	840299	1	Standard
	Kr	83		ug/L			64	106	5	Standard
>	In-1	115		ug/L			51883	48107	1	KED
	Cd	111	0.010	ug/L	0.012	124	5	8	55	KED
	Cd	114	0.020	ug/L	0.006	27	1	22	25	KED
>	In	115		ug/L			2578919	2645372	2	Standard
	Ag	107	0.017	ug/L	0.002	10	75	461	8	Standard
	Ba	135	5.733	ug/L	0.240	4	107	53454	1	Standard
	Ba	137	5.795	ug/L	0.147	2	179	93720	0	Standard
>	Tb	159		ug/L			2802328	2816865	1	Standard
	Pb	208	0.132	ug/L	0.003	2	589	15232	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0831-MS1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 23:08:32
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31999	66747	2	Standard
	Cl	37		ug/L			6841818	7159491	0	Standard
>	Sc	45		ug/L			2712572	2710375	1	Standard
	Mg	24	20137.745	ug/L	169.728	0	32130	673329722	1	Standard
	Cr	52	24.963	ug/L	0.349	1	28861	746730	1	Standard
	Cr	53	26.629	ug/L	0.067	0	1639	92157	0	Standard
	Fe	54	10604.218	ug/L	70.899	0	145734	42879267	0	Standard
	Fe	57	11380.661	ug/L	201.472	1	44560	20851895	2	Standard
	Mn	55	591.186	ug/L	11.965	2	962	25408666	1	Standard
>	Ge	72		ug/L			115171	109565	0	KED
	Ni	60	27.231	ug/L	1.050	3	10	51823	2	KED
	Ni	62	27.274	ug/L	0.197	0	10	8533	0	KED
	Cu	63	29.945	ug/L	0.623	2	179	164084	1	KED
	Cu	65	29.995	ug/L	0.450	1	66	80934	0	KED
	Zn	66	76.559	ug/L	0.843	1	68	53934	0	KED
	Zn	67	71.970	ug/L	0.249	0	19	8328	0	KED
	As	75	29.949	ug/L	0.143	0	3	10773	0	KED
	Se	78	74.200	ug/L	2.089	2	26	2767	2	KED
	Y	89		ug/L			822991	838193	1	Standard
	Kr	83		ug/L			64	101	3	Standard
>	In-1	115		ug/L			51883	39967	29	KED
	Cd	111	29.471	ug/L	9.982	33	5	9350	2	KED
	Cd	114	28.829	ug/L	9.108	31	1	23856	3	KED
>	In	115		ug/L			2578919	2569121	2	Standard
	Ag	107	24.032	ug/L	0.666	2	75	520264	1	Standard
	Ba	135	28.752	ug/L	0.935	3	107	259983	1	Standard
	Ba	137	28.854	ug/L	0.779	2	179	452497	0	Standard
>	Tb	159		ug/L			2802328	2788086	0	Standard
	Pb	208	25.435	ug/L	0.293	1	589	2800314	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0831-MSD1
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 23:16:21
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31999	68857	2	Standard
	Cl	37		ug/L			6841818	7111681	3	Standard
>	Sc	45		ug/L			2712572	2740666	0	Standard
	Mg	24	20917.619	ug/L	284.495	1	32130	707196190	1	Standard
	Cr	52	25.586	ug/L	0.686	2	28861	773165	2	Standard
	Cr	53	26.793	ug/L	0.291	1	1639	93749	0	Standard
	Fe	54	10999.435	ug/L	151.813	1	145734	44970891	1	Standard
	Fe	57	11681.629	ug/L	425.727	3	44560	21639830	3	Standard
	Mn	55	603.723	ug/L	9.400	1	962	26240090	1	Standard
>	Ge	72		ug/L			115171	108109	0	KED
	Ni	60	28.247	ug/L	0.299	1	10	53052	0	KED
	Ni	62	28.145	ug/L	0.730	2	10	8687	1	KED
	Cu	63	30.546	ug/L	0.595	1	179	165156	1	KED
	Cu	65	31.148	ug/L	0.033	0	66	82935	0	KED
	Zn	66	77.597	ug/L	0.931	1	68	53939	0	KED
	Zn	67	75.260	ug/L	1.411	1	19	8592	1	KED
	As	75	30.892	ug/L	0.331	1	3	10965	1	KED
	Se	78	75.058	ug/L	0.276	0	26	2761	1	KED
	Y	89		ug/L			822991	858285	1	Standard
	Kr	83		ug/L			64	111	16	Standard
>	In-1	115		ug/L			51883	47096	0	KED
	Cd	111	24.576	ug/L	0.299	1	5	9850	0	KED
	Cd	114	24.177	ug/L	0.207	0	1	25154	1	KED
>	In	115		ug/L			2578919	2591613	1	Standard
	Ag	107	25.436	ug/L	0.208	0	75	555664	1	Standard
	Ba	135	29.647	ug/L	0.566	1	107	270489	0	Standard
	Ba	137	30.098	ug/L	0.175	0	179	476285	1	Standard
>	Tb	159		ug/L			2802328	2834687	1	Standard
	Pb	208	26.047	ug/L	0.589	2	589	2915215	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IBL8
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 23:24:11
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	31382	1	Standard
	Cl	**37**		ug/L			6841818	6667546	0	Standard
⌈>	**Sc**	**45**		ug/L			2712572	2651489	2	Standard
|	**Mg**	**24**	**-0.081**	ug/L	0.153	189	32130	28722	16	Standard
|	**Cr**	**52**	**0.035**	ug/L	0.007	21	28861	29198	1	Standard
|	**Cr**	**53**	**-0.171**	ug/L	0.009	5	1639	1033	0	Standard
|	**Fe**	**54**	**-1.784**	ug/L	0.634	35	145734	135405	2	Standard
|	**Fe**	**57**	**0.667**	ug/L	0.163	24	44560	44749	2	Standard
⌊	**Mn**	**55**	**0.029**	ug/L	0.003	11	962	2139	4	Standard
⌈>	**Ge**	**72**		ug/L			115171	115206	1	KED
|	**Ni**	**60**	**0.013**	ug/L	0.006	47	10	36	31	KED
|	**Ni**	**62**	**-0.008**	ug/L	0.017	223	10	7	75	KED
|	**Cu**	**63**	**-0.002**	ug/L	0.002	110	179	167	7	KED
|	**Cu**	**65**	**0.003**	ug/L	0.003	103	66	75	11	KED
|	**Zn**	**66**	**0.005**	ug/L	0.019	371	68	72	19	KED
|	**Zn**	**67**	**-0.037**	ug/L	0.053	142	19	14	45	KED
|	**As**	**75**	**0.002**	ug/L	0.001	61	3	4	11	KED
⌊	**Se**	**78**	**-0.061**	ug/L	0.124	204	26	24	18	KED
	Y	**89**		ug/L			822991	817927	0	Standard
	Kr	**83**		ug/L			64	53	16	Standard
⌈>	**In-1**	**115**		ug/L			51883	50860	0	KED
|	**Cd**	**111**	**-0.004**	ug/L	0.005	123	5	3	69	KED
⌊	**Cd**	**114**	**0.004**	ug/L	0.004	108	1	6	77	KED
⌈>	**In**	**115**		ug/L			2578919	2809151	0	Standard
|	**Ag**	**107**	**0.001**	ug/L	0.001	77	75	107	17	Standard
|	**Ba**	**135**	**0.001**	ug/L	0.001	87	107	126	7	Standard
⌊	**Ba**	**137**	**-0.000**	ug/L	0.001	1529	179	194	12	Standard
⌈>	**Tb**	**159**		ug/L			2802328	2902868	1	Standard
⌊	**Pb**	**208**	**0.000**	ug/L	0.000	124	589	637	5	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCV8
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 23:30:03
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	33601	0	Standard
	Cl	**37**		ug/L			6841818	7050212	1	Standard
⌈>	**Sc**	**45**		ug/L			2712572	2614235	2	Standard
|	**Mg**	**24**	**4950.508**	ug/L	131.902	2	32130	159598418	0	Standard
|	**Cr**	**52**	**51.662**	ug/L	1.468	2	28861	1460150	1	Standard
|	**Cr**	**53**	**52.107**	ug/L	1.975	3	1639	172323	2	Standard
|	**Fe**	**54**	**4571.686**	ug/L	199.708	4	145734	17896728	1	Standard
|	**Fe**	**57**	**4809.104**	ug/L	41.677	0	44560	8522322	2	Standard
⌊	**Mn**	**55**	**50.877**	ug/L	0.943	1	962	2109590	1	Standard
⌈>	**Ge**	**72**		ug/L			115171	116394	2	KED
|	**Ni**	**60**	**50.401**	ug/L	1.341	2	10	101879	1	KED
|	**Ni**	**62**	**50.750**	ug/L	1.616	3	10	16851	1	KED
|	**Cu**	**63**	**51.436**	ug/L	2.055	3	179	299117	1	KED
|	**Cu**	**65**	**50.876**	ug/L	0.813	1	66	145764	1	KED
|	**Zn**	**66**	**50.815**	ug/L	1.765	3	68	38034	1	KED
|	**Zn**	**67**	**51.586**	ug/L	1.138	2	19	6345	1	KED
|	**As**	**75**	**49.588**	ug/L	1.058	2	3	18940	0	KED
⌊	**Se**	**78**	**49.530**	ug/L	0.347	0	26	1971	1	KED
	Y	**89**		ug/L			822991	795596	2	Standard
	Kr	**83**		ug/L			64	58	8	Standard
⌈>	**In-1**	**115**		ug/L			51883	50427	0	KED
|	**Cd**	**111**	**50.214**	ug/L	0.801	1	5	21545	1	KED
⌊	**Cd**	**114**	**50.582**	ug/L	1.217	2	1	56341	2	KED
⌈>	**In**	**115**		ug/L			2578919	2779859	1	Standard
|	**Ag**	**107**	**51.492**	ug/L	1.368	2	75	1206147	0	Standard
|	**Ba**	**135**	**47.547**	ug/L	1.436	3	107	465246	2	Standard
⌊	**Ba**	**137**	**46.926**	ug/L	1.909	4	179	796152	2	Standard
⌈>	**Tb**	**159**		ug/L			2802328	2879898	0	Standard
⌊	**Pb**	**208**	**52.965**	ug/L	0.927	1	589	6022482	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCB8
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 23:36:43
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	31970	0	Standard
	Cl	**37**		ug/L			6841818	6834242	2	Standard
>	**Sc**	**45**		ug/L			2712572	2550539	1	Standard
	Mg	**24**	**-0.262**	ug/L	0.042	15	32130	21975	5	Standard
	Cr	**52**	**0.007**	ug/L	0.010	138	28861	27340	1	Standard
	Cr	**53**	**-0.206**	ug/L	0.001	0	1639	881	0	Standard
	Fe	**54**	**-0.484**	ug/L	0.470	97	145734	135201	2	Standard
	Fe	**57**	**1.660**	ug/L	0.581	34	44560	44748	1	Standard
	Mn	**55**	**0.007**	ug/L	0.001	7	962	1197	2	Standard
>	**Ge**	**72**		ug/L			115171	116548	0	KED
	Ni	**60**	**0.003**	ug/L	0.004	154	10	16	52	KED
	Ni	**62**	**-0.004**	ug/L	0.012	282	10	8	44	KED
	Cu	**63**	**-0.005**	ug/L	0.001	12	179	149	2	KED
	Cu	**65**	**0.002**	ug/L	0.007	292	66	73	26	KED
	Zn	**66**	**0.016**	ug/L	0.020	124	68	81	17	KED
	Zn	**67**	**-0.090**	ug/L	0.044	49	19	8	66	KED
	As	**75**	**0.005**	ug/L	0.004	76	3	5	26	KED
	Se	**78**	**-0.067**	ug/L	0.047	70	26	24	6	KED
	Y	**89**		ug/L			822991	774095	1	Standard
	Kr	**83**		ug/L			64	50	4	Standard
>	**In-1**	**115**		ug/L			51883	41555	25	KED
	Cd	**111**	**0.009**	ug/L	0.002	19	5	7	19	KED
	Cd	**114**	**0.000**	ug/L	0.002	413	1	1	101	KED
>	**In**	**115**		ug/L			2578919	2842387	0	Standard
	Ag	**107**	**0.002**	ug/L	0.001	58	75	142	24	Standard
	Ba	**135**	**-0.001**	ug/L	0.001	166	107	109	13	Standard
	Ba	**137**	**-0.000**	ug/L	0.000	89	179	191	2	Standard
>	**Tb**	**159**		ug/L			2802328	2858519	0	Standard
	Pb	**208**	**0.000**	ug/L	0.000	91	589	624	3	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0250-01
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 23:40:40
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	54170	3	Standard
	Cl	**37**		ug/L			6841818	6743095	2	Standard
⌈>	**Sc**	**45**		ug/L			2712572	2664579	0	Standard
|	**Mg**	**24**	**5784.333**	ug/L	59.099	1	32130	190169099	1	Standard
|	**Cr**	**52**	**1.059**	ug/L	0.032	2	28861	58285	0	Standard
|	**Cr**	**53**	**0.934**	ug/L	0.041	4	1639	4731	1	Standard
|	**Fe**	**54**	**5.347**	ug/L	0.870	16	145734	164357	2	Standard
|	**Fe**	**57**	**13.239**	ug/L	0.149	1	44560	67568	1	Standard
⌊	**Mn**	**55**	**0.867**	ug/L	0.012	1	962	37569	0	Standard
⌈>	**Ge**	**72**		ug/L			115171	116759	0	KED
|	**Ni**	**60**	**2.020**	ug/L	0.074	3	10	4107	2	KED
|	**Ni**	**62**	**2.004**	ug/L	0.237	11	10	677	11	KED
|	**Cu**	**63**	**0.250**	ug/L	0.002	0	179	1642	0	KED
|	**Cu**	**65**	**0.259**	ug/L	0.013	4	66	810	3	KED
|	**Zn**	**66**	**0.832**	ug/L	0.043	5	68	693	4	KED
|	**Zn**	**67**	**1.163**	ug/L	0.253	21	19	162	19	KED
|	**As**	**75**	**0.192**	ug/L	0.022	11	3	76	10	KED
⌊	**Se**	**78**	**-0.041**	ug/L	0.072	176	26	25	10	KED
	Y	**89**		ug/L			822991	823993	2	Standard
	Kr	**83**		ug/L			64	69	27	Standard
⌈>	**In-1**	**115**		ug/L			51883	49530	2	KED
|	**Cd**	**111**	**0.016**	ug/L	0.004	25	5	11	16	KED
⌊	**Cd**	**114**	**0.006**	ug/L	0.003	42	1	8	33	KED
⌈>	**In**	**115**		ug/L			2578919	2890340	4	Standard
|	**Ag**	**107**	**0.000**	ug/L	0.000	58	75	96	4	Standard
|	**Ba**	**135**	**4.118**	ug/L	0.189	4	107	41952	1	Standard
⌊	**Ba**	**137**	**4.149**	ug/L	0.292	7	179	73238	2	Standard
⌈>	**Tb**	**159**		ug/L			2802328	2903862	1	Standard
⌊	**Pb**	**208**	**0.005**	ug/L	0.000	5	589	1135	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0250-02
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 23:44:35
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	57638	2	Standard
	Cl	**37**		ug/L			6841818	6637638	1	Standard
>	**Sc**	**45**		ug/L			2712572	2652783	1	Standard
	Mg	**24**	**6207.620**	ug/L	137.396	2	32130	203115030	0	Standard
	Cr	**52**	**1.106**	ug/L	0.026	2	28861	59360	1	Standard
	Cr	**53**	**0.973**	ug/L	0.059	6	1639	4837	2	Standard
	Fe	**54**	**5.680**	ug/L	0.949	16	145734	164890	1	Standard
	Fe	**57**	**13.701**	ug/L	2.029	14	44560	68058	3	Standard
	Mn	**55**	**0.434**	ug/L	0.005	1	962	19205	0	Standard
>	**Ge**	**72**		ug/L			115171	116296	1	KED
	Ni	**60**	**2.193**	ug/L	0.064	2	10	4440	1	KED
	Ni	**62**	**2.210**	ug/L	0.045	2	10	743	3	KED
	Cu	**63**	**0.257**	ug/L	0.013	5	179	1672	3	KED
	Cu	**65**	**0.268**	ug/L	0.013	4	66	834	4	KED
	Zn	**66**	**7.696**	ug/L	0.095	1	68	5817	1	KED
	Zn	**67**	**7.584**	ug/L	0.342	4	19	948	3	KED
	As	**75**	**0.208**	ug/L	0.007	3	3	83	3	KED
	Se	**78**	**0.060**	ug/L	0.031	52	26	29	4	KED
	Y	**89**		ug/L			822991	811491	2	Standard
	Kr	**83**		ug/L			64	57	15	Standard
>	**In-1**	**115**		ug/L			51883	49452	0	KED
	Cd	**111**	**0.007**	ug/L	0.001	16	5	7	6	KED
	Cd	**114**	**0.006**	ug/L	0.002	38	1	7	29	KED
>	**In**	**115**		ug/L			2578919	2899190	0	Standard
	Ag	**107**	**-0.000**	ug/L	0.001	172	75	76	19	Standard
	Ba	**135**	**4.305**	ug/L	0.134	3	107	44042	2	Standard
	Ba	**137**	**4.284**	ug/L	0.058	1	179	76013	0	Standard
>	**Tb**	**159**		ug/L			2802328	2933900	1	Standard
	Pb	**208**	**0.011**	ug/L	0.000	4	589	1897	3	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0250-03
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 23:48:31
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	111084	1	Standard
	Cl	**37**		ug/L			6841818	6916581	0	Standard
>	**Sc**	**45**		ug/L			2712572	2510448	0	Standard
	Mg	**24**	**27.804**	ug/L	0.461	1	32130	890729	1	Standard
	Cr	**52**	**1.220**	ug/L	0.068	5	28861	59207	2	Standard
	Cr	**53**	**1.371**	ug/L	0.052	3	1639	5833	2	Standard
	Fe	**54**	**223.313**	ug/L	3.139	1	145734	968473	1	Standard
	Fe	**57**	**195.774**	ug/L	3.807	1	44560	372771	1	Standard
	Mn	**55**	**3.000**	ug/L	0.025	0	962	120327	1	Standard
>	**Ge**	**72**		ug/L			115171	106474	1	KED
	Ni	**60**	**28.289**	ug/L	0.306	1	10	52326	0	KED
	Ni	**62**	**28.045**	ug/L	0.083	0	10	8526	1	KED
	Cu	**63**	**7.150**	ug/L	0.148	2	179	38198	1	KED
	Cu	**65**	**7.430**	ug/L	0.035	0	66	19529	0	KED
	Zn	**66**	**0.657**	ug/L	0.010	1	68	513	2	KED
	Zn	**67**	**0.799**	ug/L	0.021	2	19	107	1	KED
	As	**75**	**21.571**	ug/L	0.219	1	3	7541	1	KED
	Se	**78**	**0.500**	ug/L	0.060	12	26	42	4	KED
	Y	**89**		ug/L			822991	787678	2	Standard
	Kr	**83**		ug/L			64	65	33	Standard
>	**In-1**	**115**		ug/L			51883	46387	1	KED
	Cd	**111**	**0.037**	ug/L	0.007	19	5	19	15	KED
	Cd	**114**	**0.032**	ug/L	0.005	16	1	34	15	KED
>	**In**	**115**		ug/L			2578919	2690956	3	Standard
	Ag	**107**	**0.008**	ug/L	0.000	4	75	262	6	Standard
	Ba	**135**	**4.098**	ug/L	0.142	3	107	38887	0	Standard
	Ba	**137**	**4.064**	ug/L	0.163	4	179	66878	0	Standard
>	**Tb**	**159**		ug/L			2802328	2840107	1	Standard
	Pb	**208**	**1.221**	ug/L	0.025	2	589	137488	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0250-04
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 23:52:25
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	68096	1	Standard
	Cl	**37**		ug/L			6841818	6893395	1	Standard
>	**Sc**	**45**		ug/L			2712572	2679341	1	Standard
	Mg	**24**	**13908.747**	ug/L	210.278	1	32130	459666183	0	Standard
	Cr	**52**	**0.175**	ug/L	0.011	6	28861	33478	0	Standard
	Cr	**53**	**0.441**	ug/L	0.018	3	1639	3101	1	Standard
	Fe	**54**	**4.519**	ug/L	1.036	22	145734	161917	1	Standard
	Fe	**57**	**34.996**	ug/L	2.962	8	44560	107225	4	Standard
	Mn	**55**	**71.000**	ug/L	1.826	2	962	3017158	1	Standard
>	**Ge**	**72**		ug/L			115171	113481	0	KED
	Ni	**60**	**17.597**	ug/L	0.308	1	10	34698	1	KED
	Ni	**62**	**17.539**	ug/L	0.172	0	10	5687	1	KED
	Cu	**63**	**0.774**	ug/L	0.022	2	179	4565	2	KED
	Cu	**65**	**0.818**	ug/L	0.029	3	66	2348	3	KED
	Zn	**66**	**1.212**	ug/L	0.070	5	68	951	5	KED
	Zn	**67**	**1.483**	ug/L	0.050	3	19	196	3	KED
	As	**75**	**0.390**	ug/L	0.016	4	3	148	3	KED
	Se	**78**	**-0.024**	ug/L	0.055	224	26	25	8	KED
	Y	**89**		ug/L			822991	834983	1	Standard
	Kr	**83**		ug/L			64	71	14	Standard
>	**In-1**	**115**		ug/L			51883	48822	1	KED
	Cd	**111**	**0.042**	ug/L	0.010	23	5	22	17	KED
	Cd	**114**	**0.054**	ug/L	0.005	8	1	59	7	KED
>	**In**	**115**		ug/L			2578919	2844546	4	Standard
	Ag	**107**	**-0.001**	ug/L	0.001	103	75	66	28	Standard
	Ba	**135**	**8.008**	ug/L	0.243	3	107	80222	2	Standard
	Ba	**137**	**7.832**	ug/L	0.311	3	179	136029	0	Standard
>	**Tb**	**159**		ug/L			2802328	2984143	1	Standard
	Pb	**208**	**0.004**	ug/L	0.001	14	589	1041	4	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0250-05
Sample Dil Factor:
Comments:
Sample Date/Time: Tuesday, March 30, 2021 23:56:20
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	60602	1	Standard
	Cl	**37**		ug/L			6841818	7460930	2	Standard
>	**Sc**	**45**		ug/L			2712572	2561286	1	Standard
	Mg	**24**	**14884.064**	ug/L	540.939	3	32130	470067326	1	Standard
	Cr	**52**	**0.592**	ug/L	0.024	4	28861	43323	1	Standard
	Cr	**53**	**1.673**	ug/L	0.033	1	1639	6922	2	Standard
	Fe	**54**	**4.165**	ug/L	0.228	5	145734	153465	2	Standard
	Fe	**57**	**32.404**	ug/L	2.104	6	44560	98020	2	Standard
	Mn	**55**	**3.269**	ug/L	0.037	1	962	133693	2	Standard
>	**Ge**	**72**		ug/L			115171	112973	1	KED
	Ni	**60**	**6.021**	ug/L	0.056	0	10	11824	0	KED
	Ni	**62**	**6.025**	ug/L	0.095	1	10	1951	1	KED
	Cu	**63**	**0.482**	ug/L	0.024	5	179	2897	6	KED
	Cu	**65**	**0.505**	ug/L	0.007	1	66	1468	0	KED
	Zn	**66**	**2.388**	ug/L	0.055	2	68	1799	1	KED
	Zn	**67**	**2.801**	ug/L	0.214	7	19	352	8	KED
	As	**75**	**0.168**	ug/L	0.001	0	3	65	0	KED
	Se	**78**	**-0.095**	ug/L	0.045	47	26	22	6	KED
	Y	**89**		ug/L			822991	795083	1	Standard
	Kr	**83**		ug/L			64	67	20	Standard
>	**In-1**	**115**		ug/L			51883	48460	2	KED
	Cd	**111**	**0.016**	ug/L	0.007	40	5	11	25	KED
	Cd	**114**	**0.019**	ug/L	0.010	50	1	21	44	KED
>	**In**	**115**		ug/L			2578919	2725086	2	Standard
	Ag	**107**	**-0.000**	ug/L	0.000	33	75	68	4	Standard
	Ba	**135**	**9.012**	ug/L	0.221	2	107	86525	0	Standard
	Ba	**137**	**8.987**	ug/L	0.228	2	179	149620	0	Standard
>	**Tb**	**159**		ug/L			2802328	2938994	2	Standard
	Pb	**208**	**0.008**	ug/L	0.001	8	589	1563	3	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0250-06
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 00:00:15
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31999	52085	4	Standard
	Cl	37		ug/L			6841818	6687155	1	Standard
>	Sc	45		ug/L			2712572	2555565	1	Standard
	Mg	24	11852.362	ug/L	106.944	0	32130	373646670	1	Standard
	Cr	52	0.165	ug/L	0.011	6	28861	31658	1	Standard
	Cr	53	0.613	ug/L	0.011	1	1639	3508	1	Standard
	Fe	54	4.936	ug/L	1.535	31	145734	156014	3	Standard
	Fe	57	24.047	ug/L	0.538	2	44560	83445	2	Standard
	Mn	55	8.998	ug/L	0.155	1	962	365571	2	Standard
>	Ge	72		ug/L			115171	109806	0	KED
	Ni	60	9.588	ug/L	0.082	0	10	18299	0	KED
	Ni	62	9.527	ug/L	0.306	3	10	2993	3	KED
	Cu	63	0.464	ug/L	0.009	1	179	2714	1	KED
	Cu	65	0.473	ug/L	0.012	2	66	1342	2	KED
	Zn	66	0.807	ug/L	0.027	3	68	634	3	KED
	Zn	67	1.297	ug/L	0.209	16	19	168	14	KED
	As	75	0.430	ug/L	0.036	8	3	158	8	KED
	Se	78	0.022	ug/L	0.014	61	26	26	1	KED
	Y	89		ug/L			822991	778225	1	Standard
	Kr	83		ug/L			64	72	14	Standard
>	In-1	115		ug/L			51883	47277	2	KED
	Cd	111	0.024	ug/L	0.011	45	5	14	29	KED
	Cd	114	0.019	ug/L	0.007	36	1	21	34	KED
>	In	115		ug/L			2578919	2743713	1	Standard
	Ag	107	-0.001	ug/L	0.000	66	75	67	12	Standard
	Ba	135	8.502	ug/L	0.191	2	107	82215	2	Standard
	Ba	137	8.634	ug/L	0.015	0	179	144796	1	Standard
>	Tb	159		ug/L			2802328	2883750	1	Standard
	Pb	208	0.001	ug/L	0.000	28	589	704	5	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0250-07
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 00:04:35
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	57944	4	Standard
	Cl	**37**		ug/L			6841818	6571466	0	Standard
>	**Sc**	**45**		ug/L			2712572	2474879	0	Standard
	Mg	**24**	**12529.666**	ug/L	469.158	3	32130	382606711	4	Standard
	Cr	**52**	**0.183**	ug/L	0.033	17	28861	31137	3	Standard
	Cr	**53**	**0.478**	ug/L	0.014	2	1639	2978	0	Standard
	Fe	**54**	**1623.255**	ug/L	19.818	1	145734	6106207	0	Standard
	Fe	**57**	**1822.175**	ug/L	22.633	1	44560	3082585	0	Standard
	Mn	**55**	**302.714**	ug/L	2.344	0	962	11881568	0	Standard
>	**Ge**	**72**		ug/L			115171	110226	0	KED
	Ni	**60**	**1.014**	ug/L	0.030	2	10	1952	2	KED
	Ni	**62**	**0.888**	ug/L	0.058	6	10	288	6	KED
	Cu	**63**	**0.018**	ug/L	0.003	15	179	269	5	KED
	Cu	**65**	**0.024**	ug/L	0.008	32	66	129	16	KED
	Zn	**66**	**0.587**	ug/L	0.023	3	68	481	3	KED
	Zn	**67**	**1.040**	ug/L	0.033	3	19	139	2	KED
	As	**75**	**1.120**	ug/L	0.026	2	3	408	1	KED
	Se	**78**	**-0.078**	ug/L	0.115	147	26	22	18	KED
	Y	**89**		ug/L			822991	785564	1	Standard
	Kr	**83**		ug/L			64	85	11	Standard
>	**In-1**	**115**		ug/L			51883	47967	0	KED
	Cd	**111**	**0.002**	ug/L	0.005	283	5	5	36	KED
	Cd	**114**	**0.001**	ug/L	0.003	214	1	3	95	KED
>	**In**	**115**		ug/L			2578919	2730271	0	Standard
	Ag	**107**	**-0.001**	ug/L	0.001	62	75	55	27	Standard
	Ba	**135**	**8.789**	ug/L	0.134	1	107	84568	1	Standard
	Ba	**137**	**8.685**	ug/L	0.167	1	179	144936	2	Standard
>	**Tb**	**159**		ug/L			2802328	2857688	2	Standard
	Pb	**208**	**0.010**	ug/L	0.000	1	589	1740	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0250-08
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 00:08:54
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	59997	1	Standard
	Cl	**37**		ug/L			6841818	6654943	1	Standard
⌈>	**Sc**	**45**		ug/L			2712572	2509297	0	Standard
|	**Mg**	**24**	**11655.262**	ug/L	206.178	1	32130	360764901	0	Standard
|	**Cr**	**52**	**0.117**	ug/L	0.016	13	28861	29823	0	Standard
|	**Cr**	**53**	**0.443**	ug/L	0.025	5	1639	2911	3	Standard
|	**Fe**	**54**	**17.542**	ug/L	0.874	4	145734	200252	1	Standard
|	**Fe**	**57**	**47.224**	ug/L	1.581	3	44560	121157	2	Standard
⌊	**Mn**	**55**	**262.889**	ug/L	6.951	2	962	10461301	2	Standard
⌈>	**Ge**	**72**		ug/L			115171	107371	2	KED
|	**Ni**	**60**	**1.489**	ug/L	0.035	2	10	2785	2	KED
|	**Ni**	**62**	**1.446**	ug/L	0.063	4	10	452	2	KED
|	**Cu**	**63**	**0.402**	ug/L	0.020	4	179	2320	2	KED
|	**Cu**	**65**	**0.434**	ug/L	0.008	1	66	1208	3	KED
|	**Zn**	**66**	**1.207**	ug/L	0.034	2	68	895	1	KED
|	**Zn**	**67**	**1.500**	ug/L	0.183	12	19	187	9	KED
|	**As**	**75**	**0.135**	ug/L	0.018	13	3	50	12	KED
⌊	**Se**	**78**	**-0.088**	ug/L	0.101	114	26	21	14	KED
	Y	**89**		ug/L			822991	779095	1	Standard
	Kr	**83**		ug/L			64	75	2	Standard
⌈>	**In-1**	**115**		ug/L			51883	46612	1	KED
|	**Cd**	**111**	**-0.001**	ug/L	0.005	482	5	4	48	KED
⌊	**Cd**	**114**	**0.002**	ug/L	0.003	126	1	4	74	KED
⌈>	**In**	**115**		ug/L			2578919	2728448	2	Standard
|	**Ag**	**107**	**-0.000**	ug/L	0.000	112	75	73	9	Standard
|	**Ba**	**135**	**5.964**	ug/L	0.141	2	107	57367	0	Standard
⌊	**Ba**	**137**	**5.915**	ug/L	0.220	3	179	98660	1	Standard
⌈>	**Tb**	**159**		ug/L			2802328	2889993	0	Standard
⌊	**Pb**	**208**	**0.003**	ug/L	0.000	6	589	963	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0250-09
Sample Dil Factor:
Comments:

DEL

Sample Date/Time: Wednesday, March 31, 2021 00:14:13
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	59149	1	Standard
	Cl	**37**		ug/L			6841818	6979473	1	Standard
⌈>	**Sc**	**45**		ug/L			2712572	2509022	0	Standard
|	**Mg**	**24**	**23145.926**	ug/L	565.317	2	32130	716382282	2	Standard
|	**Cr**	**52**	**0.363**	ug/L	0.001	0	28861	36365	0	Standard
|	**Cr**	**53**	**0.339**	ug/L	0.006	1	1639	2584	0	Standard
|	**Fe**	**54**	**11000.240**	ug/L	192.668	1	145734	41172528	1	Standard
|	**Fe**	**57**	**12077.378**	ug/L	99.125	0	44560	20482110	0	Standard
⌊	**Mn**	**55**	**2198.383**	ug/L	12.846	0	962	87474567	0	Standard
⌈>	**Ge**	**72**		ug/L			115171	100465	9	KED
|	**Ni**	**60**	**2.348**	ug/L	0.177	7	10	4088	2	KED
|	**Ni**	**62**	**2.275**	ug/L	0.096	4	10	659	5	KED
|	**Cu**	**63**	**0.089**	ug/L	0.013	14	179	598	6	KED
|	**Cu**	**65**	**0.107**	ug/L	0.019	17	66	319	5	KED
|	**Zn**	**66**	**1.854**	ug/L	0.227	12	68	1247	2	KED
|	**Zn**	**67**	**2.700**	ug/L	0.551	20	19	299	10	KED
|	**As**	**75**	**2.224**	ug/L	0.223	10	3	731	0	KED
⌊	**Se**	**78**	**0.044**	ug/L	0.224	513	26	24	28	KED
	Y	**89**		ug/L			822991	761051	1	Standard
	Kr	**83**		ug/L			64	80	16	Standard
⌈>	**In-1**	**115**		ug/L			51883	45977	0	KED
|	**Cd**	**111**	**0.002**	ug/L	0.001	62	5	5	10	KED
⌊	**Cd**	**114**	**0.005**	ug/L	0.007	153	1	6	114	KED
⌈>	**In**	**115**		ug/L			2578919	2598296	1	Standard
|	**Ag**	**107**	**-0.000**	ug/L	0.001	207	75	70	16	Standard
|	**Ba**	**135**	**10.847**	ug/L	0.365	3	107	99290	2	Standard
⌊	**Ba**	**137**	**10.856**	ug/L	0.173	1	179	172341	1	Standard
⌈>	**Tb**	**159**		ug/L			2802328	2782937	2	Standard
⌊	**Pb**	**208**	**0.016**	ug/L	0.000	1	589	2325	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IBL9
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 00:21:32
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	30744	2	Standard
	Cl	**37**		ug/L			6841818	6639359	2	Standard
⌈>	**Sc**	**45**		ug/L			2712572	2427372	1	Standard
|	**Mg**	**24**	**-0.214**	ug/L	0.035	16	32130	22350	5	Standard
|	**Cr**	**52**	**0.010**	ug/L	0.018	182	28861	26077	0	Standard
|	**Cr**	**53**	**-0.272**	ug/L	0.009	3	1639	639	3	Standard
|	**Fe**	**54**	**-3.004**	ug/L	0.148	4	145734	119564	0	Standard
|	**Fe**	**57**	**-2.010**	ug/L	0.565	28	44560	36577	1	Standard
⌊	**Mn**	**55**	**0.045**	ug/L	0.002	4	962	2599	1	Standard
⌈>	**Ge**	**72**		ug/L			115171	111757	1	KED
|	**Ni**	**60**	**0.011**	ug/L	0.007	58	10	32	38	KED
|	**Ni**	**62**	**-0.009**	ug/L	0.004	42	10	6	15	KED
|	**Cu**	**63**	**-0.003**	ug/L	0.002	55	179	156	5	KED
|	**Cu**	**65**	**0.004**	ug/L	0.005	131	66	74	20	KED
|	**Zn**	**66**	**0.033**	ug/L	0.029	88	68	90	22	KED
|	**Zn**	**67**	**-0.044**	ug/L	0.032	73	19	13	28	KED
|	**As**	**75**	**-0.001**	ug/L	0.004	376	3	3	50	KED
⌊	**Se**	**78**	**-0.080**	ug/L	0.065	81	26	23	8	KED
	Y	**89**		ug/L			822991	782876	1	Standard
	Kr	**83**		ug/L			64	55	9	Standard
⌈>	**In-1**	**115**		ug/L			51883	49563	0	KED
|	**Cd**	**111**	**-0.004**	ug/L	0.007	178	5	3	96	KED
⌊	**Cd**	**114**	**0.005**	ug/L	0.001	22	1	6	16	KED
⌈>	**In**	**115**		ug/L			2578919	2826142	2	Standard
|	**Ag**	**107**	**-0.001**	ug/L	0.000	33	75	55	16	Standard
|	**Ba**	**135**	**-0.001**	ug/L	0.000	55	107	109	4	Standard
⌊	**Ba**	**137**	**-0.000**	ug/L	0.002	384	179	188	15	Standard
⌈>	**Tb**	**159**		ug/L			2802328	2887003	0	Standard
⌊	**Pb**	**208**	**-0.001**	ug/L	0.000	17	589	501	4	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCV9
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 00:26:52
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	30656	1	Standard
	Cl	**37**		ug/L			6841818	6823821	2	Standard
⌈>	**Sc**	**45**		ug/L			2712572	2396862	1	Standard
|	**Mg**	**24**	**5072.515**	ug/L	140.593	2	32130	149971311	1	Standard
|	**Cr**	**52**	**51.742**	ug/L	1.713	3	28861	1341066	2	Standard
|	**Cr**	**53**	**51.283**	ug/L	1.049	2	1639	155586	0	Standard
|	**Fe**	**54**	**4469.684**	ug/L	157.935	3	145734	16054464	2	Standard
|	**Fe**	**57**	**4775.135**	ug/L	147.997	3	44560	7758004	1	Standard
⌊	**Mn**	**55**	**51.370**	ug/L	0.259	0	962	1953406	0	Standard
⌈>	**Ge**	**72**		ug/L			115171	112016	0	KED
|	**Ni**	**60**	**50.976**	ug/L	0.813	1	10	99197	1	KED
|	**Ni**	**62**	**50.875**	ug/L	1.389	2	10	16265	2	KED
|	**Cu**	**63**	**50.641**	ug/L	0.893	1	179	283606	1	KED
|	**Cu**	**65**	**51.509**	ug/L	2.072	4	66	142057	3	KED
|	**Zn**	**66**	**50.981**	ug/L	1.577	3	68	36742	2	KED
|	**Zn**	**67**	**50.999**	ug/L	0.519	1	19	6039	1	KED
|	**As**	**75**	**49.515**	ug/L	0.240	0	3	18208	0	KED
⌊	**Se**	**78**	**49.373**	ug/L	0.193	0	26	1891	0	KED
	Y	**89**		ug/L			822991	787822	2	Standard
	Kr	**83**		ug/L			64	73	10	Standard
⌈>	**In-1**	**115**		ug/L			51883	47827	1	KED
|	**Cd**	**111**	**50.914**	ug/L	1.447	2	5	20714	1	KED
⌊	**Cd**	**114**	**51.223**	ug/L	0.295	0	1	54112	0	KED
⌈>	**In**	**115**		ug/L			2578919	2734631	2	Standard
|	**Ag**	**107**	**54.723**	ug/L	1.271	2	75	1260883	0	Standard
|	**Ba**	**135**	**46.185**	ug/L	1.653	3	107	444422	1	Standard
⌊	**Ba**	**137**	**46.645**	ug/L	1.101	2	179	778571	1	Standard
⌈>	**Tb**	**159**		ug/L			2802328	2882329	1	Standard
⌊	**Pb**	**208**	**53.229**	ug/L	1.165	2	589	6056782	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCB9
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 00:33:32
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	30761	0	Standard
	Cl	**37**		ug/L			6841818	6729070	1	Standard
⌈>	**Sc**	**45**		ug/L			2712572	2423699	0	Standard
|	**Mg**	**24**	**-0.388**	ug/L	0.016	4	32130	17099	2	Standard
|	**Cr**	**52**	**-0.025**	ug/L	0.005	21	28861	25144	0	Standard
|	**Cr**	**53**	**-0.301**	ug/L	0.007	2	1639	550	3	Standard
|	**Fe**	**54**	**-2.398**	ug/L	0.442	18	145734	121571	1	Standard
|	**Fe**	**57**	**-0.029**	ug/L	0.810	2749	44560	39771	3	Standard
⌊	**Mn**	**55**	**0.007**	ug/L	0.001	13	962	1139	3	Standard
⌈>	**Ge**	**72**		ug/L			115171	110948	1	KED
|	**Ni**	**60**	**-0.000**	ug/L	0.001	1122	10	10	28	KED
|	**Ni**	**62**	**-0.001**	ug/L	0.010	1050	10	9	34	KED
|	**Cu**	**63**	**-0.006**	ug/L	0.001	19	179	138	2	KED
|	**Cu**	**65**	**0.001**	ug/L	0.002	161	66	67	7	KED
|	**Zn**	**66**	**-0.013**	ug/L	0.020	152	68	56	23	KED
|	**Zn**	**67**	**-0.070**	ug/L	0.043	61	19	10	47	KED
|	**As**	**75**	**0.004**	ug/L	0.001	14	3	4	5	KED
⌊	**Se**	**78**	**-0.091**	ug/L	0.030	32	26	22	6	KED
	Y	**89**		ug/L			822991	764049	0	Standard
	Kr	**83**		ug/L			64	57	18	Standard
⌈>	**In-1**	**115**		ug/L			51883	46587	5	KED
|	**Cd**	**111**	**-0.008**	ug/L	0.001	14	5	1	43	KED
⌊	**Cd**	**114**	**0.005**	ug/L	0.003	69	1	6	57	KED
⌈>	**In**	**115**		ug/L			2578919	2835776	3	Standard
|	**Ag**	**107**	**0.003**	ug/L	0.001	26	75	160	14	Standard
|	**Ba**	**135**	**-0.002**	ug/L	0.002	75	107	93	15	Standard
⌊	**Ba**	**137**	**-0.001**	ug/L	0.002	142	179	172	19	Standard
⌈>	**Tb**	**159**		ug/L			2802328	2874159	1	Standard
⌊	**Pb**	**208**	**0.000**	ug/L	0.000	125	589	611	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0837-BLK1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 00:37:29
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31999	51099	5	Standard
	Cl	37		ug/L			6841818	6542940	0	Standard
>	Sc	45		ug/L			2712572	2352368	1	Standard
	Mg	24	-0.118	ug/L	0.070	59	32130	24445	8	Standard
	Cr	52	0.136	ug/L	0.013	9	28861	28416	1	Standard
	Cr	53	-0.227	ug/L	0.004	1	1639	752	2	Standard
	Fe	54	-0.649	ug/L	0.105	16	145734	124109	1	Standard
	Fe	57	1.015	ug/L	0.484	47	44560	40259	3	Standard
	Mn	55	0.021	ug/L	0.003	12	962	1611	5	Standard
>	Ge	72		ug/L			115171	111129	1	KED
	Ni	60	0.004	ug/L	0.003	77	10	19	36	KED
	Ni	62	-0.021	ug/L	0.009	44	10	3	91	KED
	Cu	63	0.011	ug/L	0.003	29	179	234	6	KED
	Cu	65	0.015	ug/L	0.006	40	66	104	14	KED
	Zn	66	0.095	ug/L	0.021	22	68	133	12	KED
	Zn	67	-0.016	ug/L	0.046	283	19	16	33	KED
	As	75	0.006	ug/L	0.007	122	3	5	47	KED
	Se	78	-0.004	ug/L	0.110	2956	26	25	16	KED
	Y	89		ug/L			822991	766355	2	Standard
	Kr	83		ug/L			64	60	20	Standard
>	In-1	115		ug/L			51883	48775	0	KED
	Cd	111	-0.004	ug/L	0.001	33	5	3	17	KED
	Cd	114	0.002	ug/L	0.002	99	1	3	51	KED
>	In	115		ug/L			2578919	2779104	2	Standard
	Ag	107	0.001	ug/L	0.001	81	75	106	18	Standard
	Ba	135	0.001	ug/L	0.001	90	107	125	9	Standard
	Ba	137	0.003	ug/L	0.001	26	179	236	3	Standard
>	Tb	159		ug/L			2802328	2879083	0	Standard
	Pb	208	0.002	ug/L	0.000	7	589	878	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0837-BS1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 00:41:23
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
C	13		ug/L			31999	53324	1	Standard
Cl	37		ug/L			6841818	6551383	2	Standard
Sc	45		ug/L			2712572	2424120	0	Standard
Mg	24	-0.131	ug/L	0.044	33	32130	24799	5	Standard
Cr	52	25.606	ug/L	0.331	1	28861	684399	0	Standard
Cr	53	24.726	ug/L	0.203	0	1639	76641	1	Standard
Fe	54	-1.040	ug/L	0.845	81	145734	126489	2	Standard
Fe	57	1.113	ug/L	0.342	30	44560	41641	0	Standard
Mn	55	26.321	ug/L	0.092	0	962	1012755	0	Standard
Ge	72		ug/L			115171	110989	1	KED
Ni	60	26.017	ug/L	0.694	2	10	50160	1	KED
Ni	62	26.059	ug/L	1.095	4	10	8257	3	KED
Cu	63	26.619	ug/L	0.444	1	179	147773	0	KED
Cu	65	27.203	ug/L	0.964	3	66	74344	2	KED
Zn	66	83.933	ug/L	2.925	3	68	59877	2	KED
Zn	67	80.072	ug/L	1.739	2	19	9384	2	KED
As	75	24.435	ug/L	0.553	2	3	8903	1	KED
Se	78	80.367	ug/L	1.455	1	26	3033	0	KED
Y	89		ug/L			822991	769123	1	Standard
Kr	83		ug/L			64	62	7	Standard
In-1	115		ug/L			51883	47390	0	KED
Cd	111	25.955	ug/L	0.269	1	5	10468	0	KED
Cd	114	26.010	ug/L	0.426	1	1	27228	1	KED
In	115		ug/L			2578919	2827678	0	Standard
Ag	107	28.170	ug/L	0.652	2	75	671468	2	Standard
Ba	135	22.830	ug/L	0.449	1	107	227345	2	Standard
Ba	137	22.856	ug/L	0.234	1	179	394719	1	Standard
Tb	159		ug/L			2802328	2878741	2	Standard
Pb	208	28.381	ug/L	0.746	2	589	3225172	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0250-10
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 00:45:19
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31999	54430	0	Standard
	Cl	37		ug/L			6841818	6603963	2	Standard
>	Sc	45		ug/L			2712572	2461722	1	Standard
	Mg	24	10641.208	ug/L	124.320	1	32130	323149267	0	Standard
	Cr	52	0.087	ug/L	0.013	14	28861	28474	2	Standard
	Cr	53	0.549	ug/L	0.023	4	1639	3182	1	Standard
	Fe	54	3.921	ug/L	0.369	9	145734	146611	1	Standard
	Fe	57	22.256	ug/L	0.687	3	44560	77391	0	Standard
	Mn	55	73.199	ug/L	1.403	1	962	2858176	0	Standard
>	Ge	72		ug/L			115171	108189	0	KED
	Ni	60	1.082	ug/L	0.041	3	10	2044	4	KED
	Ni	62	1.142	ug/L	0.020	1	10	361	1	KED
	Cu	63	0.333	ug/L	0.020	6	179	1966	5	KED
	Cu	65	0.345	ug/L	0.019	5	66	979	5	KED
	Zn	66	1.731	ug/L	0.030	1	68	1267	1	KED
	Zn	67	1.977	ug/L	0.332	16	19	243	15	KED
	As	75	0.210	ug/L	0.020	9	3	77	9	KED
	Se	78	0.006	ug/L	0.081	1443	26	25	11	KED
	Y	89		ug/L			822991	792454	0	Standard
	Kr	83		ug/L			64	63	22	Standard
>	In-1	115		ug/L			51883	47782	1	KED
	Cd	111	0.003	ug/L	0.001	41	5	6	9	KED
	Cd	114	0.008	ug/L	0.003	34	1	10	29	KED
>	In	115		ug/L			2578919	2746923	1	Standard
	Ag	107	0.007	ug/L	0.001	19	75	246	12	Standard
	Ba	135	5.466	ug/L	0.043	0	107	52963	1	Standard
	Ba	137	5.486	ug/L	0.131	2	179	92168	1	Standard
>	Tb	159		ug/L			2802328	2912917	1	Standard
	Pb	208	0.009	ug/L	0.001	5	589	1657	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0250-11
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 00:49:13
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	54288	3	Standard
	Cl	**37**		ug/L			6841818	6498058	0	Standard
⌈>	**Sc**	**45**		ug/L			2712572	2470264	1	Standard
|	**Mg**	**24**	**10180.528**	ug/L	201.867	1	32130	310187230	0	Standard
|	**Cr**	**52**	**0.056**	ug/L	0.012	22	28861	27749	0	Standard
|	**Cr**	**53**	**0.474**	ug/L	0.028	5	1639	2961	1	Standard
|	**Fe**	**54**	**2.091**	ug/L	0.501	23	145734	140388	1	Standard
|	**Fe**	**57**	**19.693**	ug/L	1.010	5	44560	73382	1	Standard
⌊	**Mn**	**55**	**73.685**	ug/L	0.391	0	962	2887559	1	Standard
⌈>	**Ge**	**72**		ug/L			115171	110050	2	KED
|	**Ni**	**60**	**1.109**	ug/L	0.101	9	10	2128	6	KED
|	**Ni**	**62**	**1.083**	ug/L	0.048	4	10	349	5	KED
|	**Cu**	**63**	**0.309**	ug/L	0.005	1	179	1870	2	KED
|	**Cu**	**65**	**0.314**	ug/L	0.018	5	66	913	4	KED
|	**Zn**	**66**	**0.859**	ug/L	0.078	9	68	672	6	KED
|	**Zn**	**67**	**0.939**	ug/L	0.105	11	19	126	8	KED
|	**As**	**75**	**0.213**	ug/L	0.001	0	3	80	2	KED
⌊	**Se**	**78**	**0.007**	ug/L	0.080	1129	26	25	12	KED
	Y	**89**		ug/L			822991	803902	1	Standard
	Kr	**83**		ug/L			64	58	3	Standard
⌈>	**In-1**	**115**		ug/L			51883	46721	1	KED
|	**Cd**	**111**	**0.004**	ug/L	0.005	131	5	6	32	KED
⌊	**Cd**	**114**	**0.004**	ug/L	0.004	101	1	5	70	KED
⌈>	**In**	**115**		ug/L			2578919	2764697	1	Standard
|	**Ag**	**107**	**0.000**	ug/L	0.001	1027	75	82	19	Standard
|	**Ba**	**135**	**5.439**	ug/L	0.149	2	107	53031	2	Standard
⌊	**Ba**	**137**	**5.361**	ug/L	0.025	0	179	90678	1	Standard
⌈>	**Tb**	**159**		ug/L			2802328	2902674	0	Standard
⌊	**Pb**	**208**	**0.004**	ug/L	0.000	9	589	1124	4	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0250-12
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 00:53:08
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	58800	2	Standard
	Cl	**37**		ug/L			6841818	6437957	1	Standard
⌈>	**Sc**	**45**		ug/L			2712572	2410845	2	Standard
|	**Mg**	**24**	**14560.721**	ug/L	382.706	2	32130	432824540	0	Standard
|	**Cr**	**52**	**0.382**	ug/L	0.032	8	28861	35409	1	Standard
|	**Cr**	**53**	**0.412**	ug/L	0.029	7	1639	2702	1	Standard
|	**Fe**	**54**	**21.792**	ug/L	1.211	5	145734	207566	1	Standard
|	**Fe**	**57**	**40.847**	ug/L	1.660	4	44560	105985	1	Standard
⌊	**Mn**	**55**	**223.371**	ug/L	3.064	1	962	8538750	1	Standard
⌈>	**Ge**	**72**		ug/L			115171	106340	2	KED
|	**Ni**	**60**	**2.947**	ug/L	0.132	4	10	5449	2	KED
|	**Ni**	**62**	**2.866**	ug/L	0.143	4	10	878	2	KED
|	**Cu**	**63**	**1.570**	ug/L	0.060	3	179	8500	1	KED
|	**Cu**	**65**	**1.571**	ug/L	0.074	4	66	4172	4	KED
|	**Zn**	**66**	**0.647**	ug/L	0.084	12	68	504	9	KED
|	**Zn**	**67**	**1.054**	ug/L	0.130	12	19	135	12	KED
|	**As**	**75**	**0.325**	ug/L	0.010	2	3	116	4	KED
⌊	**Se**	**78**	**-0.069**	ug/L	0.044	63	26	22	5	KED
	Y	**89**		ug/L			822991	775952	1	Standard
	Kr	**83**		ug/L			64	80	14	Standard
⌈>	**In-1**	**115**		ug/L			51883	45823	0	KED
|	**Cd**	**111**	**0.006**	ug/L	0.006	114	5	6	37	KED
⌊	**Cd**	**114**	**0.015**	ug/L	0.005	31	1	16	28	KED
⌈>	**In**	**115**		ug/L			2578919	2656257	3	Standard
|	**Ag**	**107**	**0.000**	ug/L	0.000	84	75	86	8	Standard
|	**Ba**	**135**	**6.232**	ug/L	0.352	5	107	58313	3	Standard
⌊	**Ba**	**137**	**6.378**	ug/L	0.302	4	179	103483	1	Standard
⌈>	**Tb**	**159**		ug/L			2802328	2879098	1	Standard
⌊	**Pb**	**208**	**0.004**	ug/L	0.000	5	589	1016	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0250-13
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 00:57:02
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	55847	4	Standard
	Cl	**37**		ug/L			6841818	6619858	0	Standard
>	**Sc**	**45**		ug/L			2712572	2315010	1	Standard
	Mg	**24**	**11426.861**	ug/L	171.309	1	32130	326365452	2	Standard
	Cr	**52**	**0.261**	ug/L	0.022	8	28861	31039	0	Standard
	Cr	**53**	**0.606**	ug/L	0.017	2	1639	3159	2	Standard
	Fe	**54**	**5.594**	ug/L	0.050	0	145734	143629	0	Standard
	Fe	**57**	**25.224**	ug/L	0.300	1	44560	77417	0	Standard
	Mn	**55**	**116.467**	ug/L	0.815	0	962	4276479	0	Standard
>	**Ge**	**72**		ug/L			115171	104603	0	KED
	Ni	**60**	**1.346**	ug/L	0.019	1	10	2455	1	KED
	Ni	**62**	**1.377**	ug/L	0.054	3	10	420	4	KED
	Cu	**63**	**1.931**	ug/L	0.012	0	179	10253	1	KED
	Cu	**65**	**1.933**	ug/L	0.029	1	66	5036	0	KED
	Zn	**66**	**0.719**	ug/L	0.025	3	68	545	3	KED
	Zn	**67**	**0.885**	ug/L	0.142	16	19	114	13	KED
	As	**75**	**0.459**	ug/L	0.025	5	3	160	4	KED
	Se	**78**	**0.012**	ug/L	0.092	741	26	24	13	KED
	Y	**89**		ug/L			822991	753694	1	Standard
	Kr	**83**		ug/L			64	62	38	Standard
>	**In-1**	**115**		ug/L			51883	45049	1	KED
	Cd	**111**	**-0.002**	ug/L	0.005	218	5	3	56	KED
	Cd	**114**	**0.008**	ug/L	0.006	68	1	9	58	KED
>	**In**	**115**		ug/L			2578919	2572576	0	Standard
	Ag	**107**	**-0.000**	ug/L	0.000	63	75	65	10	Standard
	Ba	**135**	**5.855**	ug/L	0.106	1	107	53122	1	Standard
	Ba	**137**	**5.759**	ug/L	0.131	2	179	90607	2	Standard
>	**Tb**	**159**		ug/L			2802328	2799625	1	Standard
	Pb	**208**	**0.014**	ug/L	0.001	6	589	2091	3	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0250-15
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 01:01:21
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	76110	0	Standard
	Cl	**37**		ug/L			6841818	6428051	0	Standard
>	**Sc**	**45**		ug/L			2712572	2319682	2	Standard
	Mg	**24**	**19459.700**	ug/L	1088.452	5	32130	556374411	3	Standard
	Cr	**52**	**1.379**	ug/L	0.072	5	28861	58587	0	Standard
	Cr	**53**	**1.254**	ug/L	0.045	3	1639	5047	0	Standard
	Fe	**54**	**28.199**	ug/L	1.838	6	145734	221785	0	Standard
	Fe	**57**	**64.315**	ug/L	2.782	4	44560	138674	0	Standard
	Mn	**55**	**148.575**	ug/L	5.547	3	962	5463204	1	Standard
>	**Ge**	**72**		ug/L			115171	102179	1	KED
	Ni	**60**	**8.012**	ug/L	0.246	3	10	14226	1	KED
	Ni	**62**	**8.062**	ug/L	0.214	2	10	2358	1	KED
	Cu	**63**	**5.591**	ug/L	0.054	0	179	28705	1	KED
	Cu	**65**	**5.607**	ug/L	0.110	1	66	14155	0	KED
	Zn	**66**	**1.797**	ug/L	0.116	6	68	1239	4	KED
	Zn	**67**	**3.380**	ug/L	0.242	7	19	380	7	KED
	As	**75**	**0.468**	ug/L	0.011	2	3	160	3	KED
	Se	**78**	**0.127**	ug/L	0.088	69	26	28	9	KED
	Y	**89**		ug/L			822991	792152	1	Standard
	Kr	**83**		ug/L			64	68	21	Standard
>	**In-1**	**115**		ug/L			51883	44391	1	KED
	Cd	**111**	**0.023**	ug/L	0.015	64	5	13	42	KED
	Cd	**114**	**0.041**	ug/L	0.006	14	1	41	13	KED
>	**In**	**115**		ug/L			2578919	2644836	1	Standard
	Ag	**107**	**0.001**	ug/L	0.000	45	75	99	9	Standard
	Ba	**135**	**26.902**	ug/L	0.468	1	107	250515	0	Standard
	Ba	**137**	**26.890**	ug/L	0.843	3	179	434240	2	Standard
>	**Tb**	**159**		ug/L			2802328	2849511	0	Standard
	Pb	**208**	**0.008**	ug/L	0.000	3	589	1505	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0762-DUP1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 01:05:39
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			31999	76480	2	Standard
	Cl	37		ug/L			6841818	6549770	1	Standard
>	Sc	45		ug/L			2712572	2324297	0	Standard
	Mg	24	19492.979	ug/L	490.060	2	32130	558914565	2	Standard
	Cr	52	1.276	ug/L	0.033	2	28861	56208	1	Standard
	Cr	53	1.220	ug/L	0.017	1	1639	4962	0	Standard
	Fe	54	28.302	ug/L	0.770	2	145734	222684	1	Standard
	Fe	57	66.214	ug/L	3.012	4	44560	141990	3	Standard
	Mn	55	148.481	ug/L	1.553	1	962	5473960	1	Standard
>	Ge	72		ug/L			115171	102199	0	KED
	Ni	60	8.020	ug/L	0.090	1	10	14247	2	KED
	Ni	62	7.918	ug/L	0.248	3	10	2317	2	KED
	Cu	63	5.534	ug/L	0.143	2	179	28416	1	KED
	Cu	65	5.542	ug/L	0.030	0	66	13999	1	KED
	Zn	66	1.920	ug/L	0.136	7	68	1321	7	KED
	Zn	67	3.314	ug/L	0.123	3	19	373	4	KED
	As	75	0.475	ug/L	0.038	8	3	162	7	KED
	Se	78	0.084	ug/L	0.112	133	26	26	15	KED
	Y	89		ug/L			822991	793695	1	Standard
	Kr	83		ug/L			64	67	16	Standard
>	In-1	115		ug/L			51883	44077	1	KED
	Cd	111	0.039	ug/L	0.011	27	5	19	22	KED
	Cd	114	0.041	ug/L	0.009	21	1	40	19	KED
>	In	115		ug/L			2578919	2689762	1	Standard
	Ag	107	0.001	ug/L	0.000	47	75	99	8	Standard
	Ba	135	26.570	ug/L	0.385	1	107	251672	2	Standard
	Ba	137	26.483	ug/L	0.400	1	179	435055	2	Standard
>	Tb	159		ug/L			2802328	2861136	1	Standard
	Pb	208	0.011	ug/L	0.001	5	589	1797	4	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0762-MS1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 01:10:58
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	74082	4	Standard
	Cl	**37**		ug/L			6841818	6531571	1	Standard
⌈>	**Sc**	**45**		ug/L			2712572	2352085	1	Standard
|	**Mg**	**24**	**18882.039**	ug/L	248.374	1	32130	547809428	0	Standard
|	**Cr**	**52**	**25.256**	ug/L	0.448	1	28861	655252	0	Standard
|	**Cr**	**53**	**25.300**	ug/L	0.361	1	1639	76046	0	Standard
|	**Fe**	**54**	**27.788**	ug/L	1.192	4	145734	223572	2	Standard
|	**Fe**	**57**	**65.086**	ug/L	3.198	4	44560	141860	2	Standard
⌊	**Mn**	**55**	**166.641**	ug/L	0.522	0	962	6216585	1	Standard
⌈>	**Ge**	**72**		ug/L			115171	102613	2	KED
|	**Ni**	**60**	**33.301**	ug/L	0.332	0	10	59359	1	KED
|	**Ni**	**62**	**32.946**	ug/L	0.461	1	10	9650	1	KED
|	**Cu**	**63**	**31.108**	ug/L	0.172	0	179	159663	2	KED
|	**Cu**	**65**	**30.932**	ug/L	0.462	1	66	78158	0	KED
|	**Zn**	**66**	**78.349**	ug/L	1.891	2	68	51681	1	KED
|	**Zn**	**67**	**77.727**	ug/L	1.415	1	19	8420	0	KED
|	**As**	**75**	**25.234**	ug/L	0.363	1	3	8500	1	KED
⌊	**Se**	**78**	**75.989**	ug/L	0.570	0	26	2653	1	KED
	Y	**89**		ug/L			822991	807912	2	Standard
	Kr	**83**		ug/L			64	88	8	Standard
⌈>	**In-1**	**115**		ug/L			51883	44393	1	KED
|	**Cd**	**111**	**25.313**	ug/L	0.608	2	5	9561	1	KED
⌊	**Cd**	**114**	**24.969**	ug/L	0.575	2	1	24479	0	KED
⌈>	**In**	**115**		ug/L			2578919	2606566	3	Standard
|	**Ag**	**107**	**28.795**	ug/L	1.447	5	75	632105	3	Standard
|	**Ba**	**135**	**51.128**	ug/L	1.672	3	107	468852	0	Standard
⌊	**Ba**	**137**	**51.307**	ug/L	1.492	2	179	816001	0	Standard
⌈>	**Tb**	**159**		ug/L			2802328	2818107	3	Standard
⌊	**Pb**	**208**	**27.854**	ug/L	0.661	2	589	3098213	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IBLA
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 01:18:19
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	27924	3	Standard
	Cl	**37**		ug/L			6841818	6542087	2	Standard
⌈>	**Sc**	**45**		ug/L			2712572	2188481	0	Standard
|	**Mg**	**24**	**-0.380**	ug/L	0.016	4	32130	15652	2	Standard
|	**Cr**	**52**	**-0.023**	ug/L	0.005	23	28861	22746	0	Standard
|	**Cr**	**53**	**-0.315**	ug/L	0.012	3	1639	457	6	Standard
|	**Fe**	**54**	**-4.307**	ug/L	0.176	4	145734	103561	0	Standard
|	**Fe**	**57**	**-0.514**	ug/L	0.704	136	44560	35191	2	Standard
⌊	**Mn**	**55**	**0.029**	ug/L	0.001	4	962	1789	2	Standard
⌈>	**Ge**	**72**		ug/L			115171	102904	2	KED
|	**Ni**	**60**	**0.011**	ug/L	0.004	35	10	29	22	KED
|	**Ni**	**62**	**0.010**	ug/L	0.007	73	10	12	18	KED
|	**Cu**	**63**	**-0.001**	ug/L	0.005	627	179	155	16	KED
|	**Cu**	**65**	**0.005**	ug/L	0.006	116	66	72	21	KED
|	**Zn**	**66**	**0.016**	ug/L	0.017	107	68	71	16	KED
|	**Zn**	**67**	**-0.022**	ug/L	0.040	182	19	14	27	KED
|	**As**	**75**	**0.004**	ug/L	0.007	152	3	4	48	KED
⌊	**Se**	**78**	**-0.147**	ug/L	0.152	103	26	19	29	KED
	Y	**89**		ug/L			822991	741624	0	Standard
	Kr	**83**		ug/L			64	52	13	Standard
⌈>	**In-1**	**115**		ug/L			51883	45291	1	KED
|	**Cd**	**111**	**-0.002**	ug/L	0.007	309	5	3	78	KED
⌊	**Cd**	**114**	**0.005**	ug/L	0.001	21	1	6	17	KED
⌈>	**In**	**115**		ug/L			2578919	2646309	0	Standard
|	**Ag**	**107**	**0.000**	ug/L	0.001	307	75	82	19	Standard
|	**Ba**	**135**	**-0.001**	ug/L	0.001	108	107	102	9	Standard
⌊	**Ba**	**137**	**0.000**	ug/L	0.000	84	179	192	2	Standard
⌈>	**Tb**	**159**		ug/L			2802328	2759850	1	Standard
⌊	**Pb**	**208**	**-0.001**	ug/L	0.000	59	589	519	5	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCVA
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 01:23:39
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	28851	2	Standard
	Cl	**37**		ug/L			6841818	6655526	2	Standard
>	**Sc**	**45**		ug/L			2712572	2232924	2	Standard
	Mg	**24**	**4925.440**	ug/L	154.505	3	32130	135626380	0	Standard
	Cr	**52**	**51.233**	ug/L	1.833	3	28861	1236970	1	Standard
	Cr	**53**	**50.366**	ug/L	1.462	2	1639	142335	0	Standard
	Fe	**54**	**4270.932**	ug/L	58.317	1	145734	14296985	1	Standard
	Fe	**57**	**4745.654**	ug/L	60.637	1	44560	7183598	1	Standard
	Mn	**55**	**51.844**	ug/L	0.796	1	962	1836211	0	Standard
>	**Ge**	**72**		ug/L			115171	104637	0	KED
	Ni	**60**	**50.455**	ug/L	0.719	1	10	91718	1	KED
	Ni	**62**	**50.828**	ug/L	1.054	2	10	15180	2	KED
	Cu	**63**	**50.924**	ug/L	0.385	0	179	266404	0	KED
	Cu	**65**	**51.757**	ug/L	1.229	2	66	133349	2	KED
	Zn	**66**	**50.884**	ug/L	0.646	1	68	34256	0	KED
	Zn	**67**	**49.852**	ug/L	1.137	2	19	5514	1	KED
	As	**75**	**49.341**	ug/L	0.255	0	3	16949	0	KED
	Se	**78**	**48.686**	ug/L	0.777	1	26	1742	1	KED
	Y	**89**		ug/L			822991	758010	2	Standard
	Kr	**83**		ug/L			64	37	45	Standard
>	**In-1**	**115**		ug/L			51883	44186	0	KED
	Cd	**111**	**51.083**	ug/L	0.596	1	5	19207	1	KED
	Cd	**114**	**52.310**	ug/L	0.548	1	1	51054	0	KED
>	**In**	**115**		ug/L			2578919	2624697	2	Standard
	Ag	**107**	**57.571**	ug/L	2.709	4	75	1272758	2	Standard
	Ba	**135**	**45.362**	ug/L	2.032	4	107	418841	1	Standard
	Ba	**137**	**46.263**	ug/L	1.240	2	179	741031	0	Standard
>	**Tb**	**159**		ug/L			2802328	2803291	0	Standard
	Pb	**208**	**55.607**	ug/L	1.089	1	589	6154977	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCBA
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 01:30:18
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			31999	29549	2	Standard
	Cl	**37**		ug/L			6841818	6629087	1	Standard
⌈>	**Sc**	**45**		ug/L			2712572	2215934	0	Standard
|	**Mg**	**24**	**-0.594**	ug/L	0.020	3	32130	10017	6	Standard
|	**Cr**	**52**	**-0.021**	ug/L	0.026	122	28861	23072	1	Standard
|	**Cr**	**53**	**-0.336**	ug/L	0.011	3	1639	405	8	Standard
|	**Fe**	**54**	**-3.227**	ug/L	0.415	12	145734	108423	1	Standard
|	**Fe**	**57**	**0.121**	ug/L	0.765	635	44560	36580	2	Standard
⌊	**Mn**	**55**	**-0.000**	ug/L	0.001	159	962	774	3	Standard
⌈>	**Ge**	**72**		ug/L			115171	104657	0	KED
|	**Ni**	**60**	**0.002**	ug/L	0.001	38	10	12	8	KED
|	**Ni**	**62**	**-0.012**	ug/L	0.019	163	10	5	100	KED
|	**Cu**	**63**	**-0.001**	ug/L	0.001	102	179	158	3	KED
|	**Cu**	**65**	**0.008**	ug/L	0.011	146	66	80	36	KED
|	**Zn**	**66**	**-0.005**	ug/L	0.029	584	68	59	32	KED
|	**Zn**	**67**	**-0.042**	ug/L	0.043	103	19	12	37	KED
|	**As**	**75**	**0.008**	ug/L	0.007	85	3	6	40	KED
⌊	**Se**	**78**	**-0.086**	ug/L	0.121	141	26	21	19	KED
	Y	**89**		ug/L			822991	738722	1	Standard
	Kr	**83**		ug/L			64	45	17	Standard
⌈>	**In-1**	**115**		ug/L			51883	45812	0	KED
|	**Cd**	**111**	**0.001**	ug/L	0.004	596	5	4	34	KED
⌊	**Cd**	**114**	**0.005**	ug/L	0.004	85	1	6	63	KED
⌈>	**In**	**115**		ug/L			2578919	2797740	3	Standard
|	**Ag**	**107**	**0.004**	ug/L	0.001	33	75	178	21	Standard
|	**Ba**	**135**	**-0.001**	ug/L	0.001	103	107	102	15	Standard
⌊	**Ba**	**137**	**-0.001**	ug/L	0.001	62	179	170	11	Standard
⌈>	**Tb**	**159**		ug/L			2802328	2877957	2	Standard
⌊	**Pb**	**208**	**0.001**	ug/L	0.000	55	589	685	6	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 01:34:13
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L				28398	2	Standard
	Cl	37		ug/L				6531923	1	Standard
>	Sc	45		ug/L				2130484	7	Standard
	Mg	24		ug/L				13273	5	Standard
	Cr	52		ug/L				22458	3	Standard
	Cr	53		ug/L				390	7	Standard
	Fe	54		ug/L				111906	3	Standard
	Fe	57		ug/L				35584	6	Standard
	Mn	55		ug/L				842	3	Standard
>	Ge	72		ug/L				105584	2	KED
	Ni	60		ug/L				13	41	KED
	Ni	62		ug/L				4	137	KED
	Cu	63		ug/L				146	21	KED
	Cu	65		ug/L				72	2	KED
	Zn	66		ug/L				55	23	KED
	Zn	67		ug/L				11	44	KED
	As	75		ug/L				3	20	KED
	Se	78		ug/L				18	8	KED
	Y	89		ug/L				740265	5	Standard
	Kr	83		ug/L				60	44	Standard
>	In-1	115		ug/L				46344	1	KED
	Cd	111		ug/L				7	30	KED
	Cd	114		ug/L				10	28	KED
>	In	115		ug/L				2585266	9	Standard
	Ag	107		ug/L				107	18	Standard
	Ba	135		ug/L				102	15	Standard
	Ba	137		ug/L				182	10	Standard
>	Tb	159		ug/L				2722979	4	Standard
	Pb	208		ug/L				692	9	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCVB
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 01:38:08
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	28991	0	Standard
	Cl	37		ug/L			6531923	6754912	1	Standard
>	Sc	45		ug/L			2130484	2254639	0	Standard
	Mg	24	5094.573	ug/L	136.749	2	13273	141686045	1	Standard
	Cr	52	51.138	ug/L	0.922	1	22458	1247053	1	Standard
	Cr	53	51.752	ug/L	0.845	1	390	146742	0	Standard
	Fe	54	4327.574	ug/L	89.805	2	111906	14625566	1	Standard
	Fe	57	4864.690	ug/L	224.514	4	35584	7434635	3	Standard
	Mn	55	52.095	ug/L	1.115	2	842	1863573	2	Standard
>	Ge	72		ug/L			105584	106409	1	KED
	Ni	60	50.675	ug/L	0.702	1	13	93673	0	KED
	Ni	62	51.250	ug/L	1.655	3	4	15556	1	KED
	Cu	63	52.494	ug/L	0.470	0	146	279240	1	KED
	Cu	65	52.054	ug/L	1.234	2	72	136363	1	KED
	Zn	66	51.235	ug/L	0.401	0	55	35069	1	KED
	Zn	67	51.081	ug/L	1.574	3	11	5739	2	KED
	As	75	49.545	ug/L	0.824	1	3	17306	1	KED
	Se	78	49.004	ug/L	2.192	4	18	1777	3	KED
	Y	89		ug/L			740265	791772	1	Standard
	Kr	83		ug/L			60	65	14	Standard
>	In-1	115		ug/L			46344	46340	1	KED
	Cd	111	50.313	ug/L	0.948	1	7	19838	0	KED
	Cd	114	51.133	ug/L	2.030	3	10	52335	3	KED
>	In	115		ug/L			2585266	2662259	1	Standard
	Ag	107	58.353	ug/L	0.294	0	107	1309462	1	Standard
	Ba	135	45.642	ug/L	0.390	0	102	427825	1	Standard
	Ba	137	46.776	ug/L	1.079	2	182	760207	1	Standard
>	Tb	159		ug/L			2722979	2898729	0	Standard
	Pb	208	55.350	ug/L	0.433	0	692	6335210	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCBB
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 01:44:48
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			28398	27233	4	Standard
	Cl	**37**		ug/L			6531923	6509617	2	Standard
⌈>	**Sc**	**45**		ug/L			2130484	2147387	1	Standard
|	**Mg**	**24**	**-0.099**	ug/L	0.014	14	13273	10767	3	Standard
|	**Cr**	**52**	**-0.026**	ug/L	0.010	37	22458	22053	1	Standard
|	**Cr**	**53**	**-0.009**	ug/L	0.006	59	390	368	5	Standard
|	**Fe**	**54**	**-3.557**	ug/L	0.414	11	111906	101429	1	Standard
|	**Fe**	**57**	**-0.404**	ug/L	0.404	100	35584	35275	0	Standard
⌊	**Mn**	**55**	**-0.003**	ug/L	0.000	8	842	751	2	Standard
⌈>	**Ge**	**72**		ug/L			105584	102872	0	KED
|	**Ni**	**60**	**0.001**	ug/L	0.003	243	13	15	34	KED
|	**Ni**	**62**	**0.000**	ug/L	0.014	3268	4	4	89	KED
|	**Cu**	**63**	**-0.002**	ug/L	0.001	51	146	130	5	KED
|	**Cu**	**65**	**-0.001**	ug/L	0.004	369	72	67	14	KED
|	**Zn**	**66**	**-0.029**	ug/L	0.006	20	55	35	11	KED
|	**Zn**	**67**	**-0.027**	ug/L	0.020	76	11	8	26	KED
|	**As**	**75**	**0.008**	ug/L	0.004	46	3	6	19	KED
⌊	**Se**	**78**	**0.076**	ug/L	0.036	47	18	21	5	KED
	Y	**89**		ug/L			740265	737406	1	Standard
	Kr	**83**		ug/L			60	64	16	Standard
⌈>	**In-1**	**115**		ug/L			46344	44381	1	KED
|	**Cd**	**111**	**-0.007**	ug/L	0.003	41	7	4	24	KED
⌊	**Cd**	**114**	**-0.003**	ug/L	0.004	134	10	6	57	KED
⌈>	**In**	**115**		ug/L			2585266	2594937	3	Standard
|	**Ag**	**107**	**0.003**	ug/L	0.000	8	107	175	2	Standard
|	**Ba**	**135**	**0.000**	ug/L	0.001	220	102	104	1	Standard
⌊	**Ba**	**137**	**-0.001**	ug/L	0.001	60	182	165	3	Standard
⌈>	**Tb**	**159**		ug/L			2722979	2811670	1	Standard
⌊	**Pb**	**208**	**-0.001**	ug/L	0.000	34	692	586	8	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0250-14
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 01:48:43
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	52394	2	Standard
	Cl	37		ug/L			6531923	6570518	1	Standard
>	Sc	45		ug/L			2130484	2202746	2	Standard
	Mg	24	4656.490	ug/L	122.537	2	13273	126483853	1	Standard
	Cr	52	0.714	ug/L	0.069	9	22458	39880	1	Standard
	Cr	53	1.376	ug/L	0.006	0	390	4205	2	Standard
	Fe	54	4.392	ug/L	0.888	20	111906	130047	1	Standard
	Fe	57	24.989	ug/L	2.407	9	35584	73894	4	Standard
	Mn	55	0.633	ug/L	0.026	4	842	22974	1	Standard
>	Ge	72		ug/L			105584	102183	0	KED
	Ni	60	1.249	ug/L	0.034	2	13	2230	2	KED
	Ni	62	1.355	ug/L	0.061	4	4	399	4	KED
	Cu	63	0.611	ug/L	0.029	4	146	3263	4	KED
	Cu	65	0.622	ug/L	0.011	1	72	1634	1	KED
	Zn	66	0.691	ug/L	0.078	11	55	507	10	KED
	Zn	67	1.206	ug/L	0.138	11	11	140	10	KED
	As	75	0.107	ug/L	0.010	9	3	39	8	KED
	Se	78	0.147	ug/L	0.094	63	18	23	13	KED
	Y	89		ug/L			740265	769420	4	Standard
	Kr	83		ug/L			60	64	9	Standard
>	In-1	115		ug/L			46344	44185	0	KED
	Cd	111	-0.004	ug/L	0.010	229	7	5	66	KED
	Cd	114	-0.000	ug/L	0.004	11551	10	9	39	KED
>	In	115		ug/L			2585266	2647128	1	Standard
	Ag	107	-0.000	ug/L	0.001	388	107	103	21	Standard
	Ba	135	10.584	ug/L	0.338	3	102	98692	2	Standard
	Ba	137	10.665	ug/L	0.220	2	182	172473	0	Standard
>	Tb	159		ug/L			2722979	2832054	1	Standard
	Pb	208	0.003	ug/L	0.001	23	692	1021	5	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0252-10
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 01:53:02
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	55208	3	Standard
	Cl	37		ug/L			6531923	6856670	2	Standard
>	Sc	45		ug/L			2130484	2329567	1	Standard
	Mg	24	5953.431	ug/L	148.213	2	13273	171062185	1	Standard
	Cr	52	1.212	ug/L	0.014	1	22458	54519	0	Standard
	Cr	53	2.538	ug/L	0.076	2	390	7839	2	Standard
	Fe	54	31.427	ug/L	1.210	3	111906	231198	1	Standard
	Fe	57	40.472	ug/L	1.800	4	35584	102504	2	Standard
	Mn	55	6.349	ug/L	0.023	0	842	235468	1	Standard
>	Ge	72		ug/L			105584	100215	1	KED
	Ni	60	1.785	ug/L	0.111	6	13	3119	5	KED
	Ni	62	1.823	ug/L	0.144	7	4	525	9	KED
	Cu	63	3.920	ug/L	0.103	2	146	19762	1	KED
	Cu	65	4.005	ug/L	0.003	0	72	9946	1	KED
	Zn	66	0.717	ug/L	0.028	3	55	514	2	KED
	Zn	67	1.082	ug/L	0.102	9	11	125	7	KED
	As	75	1.073	ug/L	0.071	6	3	356	5	KED
	Se	78	1.055	ug/L	0.042	4	18	53	1	KED
	Y	89		ug/L			740265	790210	3	Standard
	Kr	83		ug/L			60	53	14	Standard
>	In-1	115		ug/L			46344	41497	6	KED
	Cd	111	0.021	ug/L	0.005	24	7	13	10	KED
	Cd	114	0.021	ug/L	0.010	46	10	28	24	KED
>	In	115		ug/L			2585266	2574830	1	Standard
	Ag	107	0.002	ug/L	0.001	74	107	148	19	Standard
	Ba	135	7.657	ug/L	0.038	0	102	69494	1	Standard
	Ba	137	7.586	ug/L	0.239	3	182	119386	1	Standard
>	Tb	159		ug/L			2722979	2810194	3	Standard
	Pb	208	0.023	ug/L	0.001	5	692	3289	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0252-12
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 01:56:56
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	56685	1	Standard
	Cl	37		ug/L			6531923	6581860	1	Standard
>	Sc	45		ug/L			2130484	2308882	0	Standard
	Mg	24	5642.586	ug/L	46.053	0	13273	160722847	1	Standard
	Cr	52	0.782	ug/L	0.025	3	22458	43503	0	Standard
	Cr	53	1.667	ug/L	0.027	1	390	5250	0	Standard
	Fe	54	394.276	ug/L	6.359	1	111906	1474966	2	Standard
	Fe	57	354.134	ug/L	8.737	2	35584	590107	2	Standard
	Mn	55	23.266	ug/L	0.265	1	842	852767	0	Standard
>	Ge	72		ug/L			105584	101999	1	KED
	Ni	60	0.471	ug/L	0.011	2	13	848	3	KED
	Ni	62	0.518	ug/L	0.029	5	4	154	4	KED
	Cu	63	4.336	ug/L	0.116	2	146	22233	1	KED
	Cu	65	4.503	ug/L	0.106	2	72	11372	2	KED
	Zn	66	3.208	ug/L	0.049	1	55	2155	3	KED
	Zn	67	3.523	ug/L	0.148	4	11	389	5	KED
	As	75	0.765	ug/L	0.023	2	3	259	2	KED
	Se	78	0.413	ug/L	0.066	16	18	32	5	KED
	Y	89		ug/L			740265	811871	1	Standard
	Kr	83		ug/L			60	57	20	Standard
>	In-1	115		ug/L			46344	44201	0	KED
	Cd	111	0.008	ug/L	0.008	106	7	9	31	KED
	Cd	114	0.012	ug/L	0.010	85	10	21	45	KED
>	In	115		ug/L			2585266	2669534	0	Standard
	Ag	107	0.004	ug/L	0.001	28	107	208	12	Standard
	Ba	135	5.226	ug/L	0.040	0	102	49214	1	Standard
	Ba	137	5.188	ug/L	0.080	1	182	84726	0	Standard
>	Tb	159		ug/L			2722979	2896672	0	Standard
	Pb	208	0.222	ug/L	0.002	0	692	26091	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0252-14
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 02:00:51
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
C	13		ug/L			28398	50371	3	Standard
Cl	37		ug/L			6531923	10767010	4	Standard
> Sc	45		ug/L			2130484	2103381	3	Standard
Mg	24	13352.333	ug/L	270.534	2	13273	346342808	2	Standard
Cr	52	0.233	ug/L	0.046	19	22458	27351	0	Standard
Cr	53	12.044	ug/L	0.311	2	390	32140	0	Standard
Fe	54	6295.978	ug/L	213.879	3	111906	19789948	2	Standard
Fe	57	7229.902	ug/L	256.584	3	35584	10286184	1	Standard
Mn	55	121.428	ug/L	3.412	2	842	4048937	0	Standard
> Ge	72		ug/L			105584	92646	1	KED
Ni	60	0.861	ug/L	0.012	1	13	1396	0	KED
Ni	62	0.844	ug/L	0.151	17	4	226	16	KED
Cu	63	0.483	ug/L	0.014	2	146	2362	1	KED
Cu	65	0.455	ug/L	0.010	2	72	1099	2	KED
Zn	66	1.843	ug/L	0.050	2	55	1146	4	KED
Zn	67	1.902	ug/L	0.154	8	11	195	5	KED
As	75	10.055	ug/L	0.289	2	3	3059	0	KED
Se	78	0.072	ug/L	0.095	131	18	18	17	KED
Y	89		ug/L			740265	746065	0	Standard
Kr	83		ug/L			60	86	5	Standard
> In-1	115		ug/L			46344	40393	0	KED
Cd	111	0.044	ug/L	0.017	39	7	21	26	KED
Cd	114	0.029	ug/L	0.009	32	10	34	24	KED
> In	115		ug/L			2585266	2311703	2	Standard
Ag	107	-0.000	ug/L	0.001	176	107	87	18	Standard
Ba	135	5.075	ug/L	0.107	2	102	41376	0	Standard
Ba	137	5.155	ug/L	0.115	2	182	72881	0	Standard
> Tb	159		ug/L			2722979	2632914	0	Standard
Pb	208	0.029	ug/L	0.001	3	692	3661	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0252-16
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 02:04:46
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
C	13		ug/L			28398	35520	2	Standard
Cl	37		ug/L			6531923	64664280	3	Standard
> Sc	45		ug/L			2130484	1520829	1	Standard
Mg	24	S	ug/L	S	S	13273	S	S	Standard
Cr	52	1.544	ug/L	0.036	2	22458	40947	0	Standard
Cr	53	86.964	ug/L	0.530	0	390	166158	1	Standard
Fe	54	4078.388	ug/L	69.429	1	111906	9302249	2	Standard
Fe	57	4909.566	ug/L	39.468	0	35584	5062468	2	Standard
Mn	55	397.183	ug/L	5.965	1	842	9579946	2	Standard
> Ge	72		ug/L			105584	56091	1	KED
Ni	60	7.791	ug/L	0.126	1	13	7596	0	KED
Ni	62	8.493	ug/L	0.201	2	4	1361	3	KED
Cu	63	1.413	ug/L	0.058	4	146	4034	2	KED
Cu	65	1.374	ug/L	0.038	2	72	1934	0	KED
Zn	66	1.993	ug/L	0.089	4	55	747	3	KED
Zn	67	9.706	ug/L	0.544	5	11	579	5	KED
As	75	1.129	ug/L	0.043	3	3	209	2	KED
Se	78	0.995	ug/L	0.097	9	18	28	6	KED
Y	89		ug/L			740265	484432	2	Standard
Kr	83		ug/L			60	8808	2	Standard
> In-1	115		ug/L			46344	24319	1	KED
Cd	111	0.049	ug/L	0.021	42	7	13	30	KED
Cd	114	0.039	ug/L	0.011	26	10	26	20	KED
> In	115		ug/L			2585266	1220497	2	Standard
Ag	107	0.001	ug/L	0.001	79	107	65	19	Standard
Ba	135	272.912	ug/L	4.926	1	102	1172150	1	Standard
Ba	137	267.754	ug/L	6.099	2	182	1994158	0	Standard
> Tb	159		ug/L			2722979	1632522	0	Standard
Pb	208	0.027	ug/L	0.001	2	692	2156	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0252-19
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 02:09:05
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	44827	1	Standard
	Cl	37		ug/L			6531923	6147780	2	Standard
>	Sc	45		ug/L			2130484	1921260	6	Standard
	Mg	24	5705.667	ug/L	257.119	4	13273	134976513	2	Standard
	Cr	52	1.317	ug/L	0.172	13	22458	46943	1	Standard
	Cr	53	4.239	ug/L	0.311	7	390	10532	0	Standard
	Fe	54	36.508	ug/L	4.416	12	111906	204660	1	Standard
	Fe	57	44.444	ug/L	4.409	9	35584	89438	0	Standard
	Mn	55	6.226	ug/L	0.314	5	842	190045	1	Standard
>	Ge	72		ug/L			105584	93423	0	KED
	Ni	60	1.815	ug/L	0.024	1	13	2958	2	KED
	Ni	62	2.043	ug/L	0.100	4	4	548	5	KED
	Cu	63	5.166	ug/L	0.054	1	146	24244	1	KED
	Cu	65	5.367	ug/L	0.076	1	72	12404	2	KED
	Zn	66	1.880	ug/L	0.036	1	55	1177	2	KED
	Zn	67	2.204	ug/L	0.325	14	11	227	14	KED
	As	75	1.083	ug/L	0.007	0	3	335	1	KED
	Se	78	1.135	ug/L	0.060	5	18	52	3	KED
	Y	89		ug/L			740265	727421	7	Standard
	Kr	83		ug/L			60	92	6	Standard
>	In-1	115		ug/L			46344	38851	0	KED
	Cd	111	0.018	ug/L	0.009	51	7	12	25	KED
	Cd	114	0.021	ug/L	0.010	47	10	26	31	KED
>	In	115		ug/L			2585266	2113230	6	Standard
	Ag	107	0.003	ug/L	0.001	19	107	138	12	Standard
	Ba	135	8.391	ug/L	0.448	5	102	62358	1	Standard
	Ba	137	8.441	ug/L	0.532	6	182	108750	1	Standard
>	Tb	159		ug/L			2722979	2487970	6	Standard
	Pb	208	0.067	ug/L	0.003	3	692	7200	3	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0837-DUP1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 02:13:23
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	43060	1	Standard
	Cl	37		ug/L			6531923	5720191	0	Standard
>	Sc	45		ug/L			2130484	1961525	0	Standard
	Mg	24	5266.301	ug/L	114.032	2	13273	127422488	1	Standard
	Cr	52	1.247	ug/L	0.020	1	22458	46623	1	Standard
	Cr	53	2.768	ug/L	0.029	1	390	7167	0	Standard
	Fe	54	32.714	ug/L	1.192	3	111906	198458	2	Standard
	Fe	57	42.441	ug/L	1.636	3	35584	88924	2	Standard
	Mn	55	5.832	ug/L	0.081	1	842	182168	0	Standard
>	Ge	72		ug/L			105584	88116	1	KED
	Ni	60	1.767	ug/L	0.042	2	13	2715	1	KED
	Ni	62	1.829	ug/L	0.047	2	4	463	2	KED
	Cu	63	5.155	ug/L	0.153	2	146	22811	1	KED
	Cu	65	5.224	ug/L	0.039	0	72	11389	1	KED
	Zn	66	1.869	ug/L	0.074	3	55	1104	4	KED
	Zn	67	1.957	ug/L	0.210	10	11	191	8	KED
	As	75	1.120	ug/L	0.026	2	3	326	0	KED
	Se	78	0.866	ug/L	0.026	2	18	41	2	KED
	Y	89		ug/L			740265	756015	2	Standard
	Kr	83		ug/L			60	69	15	Standard
>	In-1	115		ug/L			46344	37280	1	KED
	Cd	111	0.020	ug/L	0.010	51	7	12	25	KED
	Cd	114	0.014	ug/L	0.003	20	10	19	11	KED
>	In	115		ug/L			2585266	2166162	0	Standard
	Ag	107	0.000	ug/L	0.001	194	107	99	18	Standard
	Ba	135	8.082	ug/L	0.159	1	102	61706	1	Standard
	Ba	137	8.055	ug/L	0.074	0	182	106658	0	Standard
>	Tb	159		ug/L			2722979	2619550	0	Standard
	Pb	208	0.063	ug/L	0.001	0	692	7134	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0837-MS1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 02:18:42
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	45550	2	Standard
	Cl	37		ug/L			6531923	5706572	0	Standard
>	Sc	45		ug/L			2130484	1930661	3	Standard
	Mg	24	5637.810	ug/L	139.963	2	13273	134234332	2	Standard
	Cr	52	23.626	ug/L	0.831	3	22458	503945	0	Standard
	Cr	53	24.721	ug/L	0.610	2	390	60184	1	Standard
	Fe	54	35.304	ug/L	2.941	8	111906	202561	0	Standard
	Fe	57	44.665	ug/L	1.676	3	35584	90387	2	Standard
	Mn	55	29.385	ug/L	0.701	2	842	900055	1	Standard
>	Ge	72		ug/L			105584	85182	0	KED
	Ni	60	27.512	ug/L	0.164	0	13	40719	0	KED
	Ni	62	27.713	ug/L	0.635	2	4	6737	2	KED
	Cu	63	31.251	ug/L	0.497	1	146	133129	1	KED
	Cu	65	31.622	ug/L	0.285	0	72	66349	0	KED
	Zn	66	79.412	ug/L	1.042	1	55	43488	1	KED
	Zn	67	75.650	ug/L	2.387	3	11	6800	3	KED
	As	75	25.746	ug/L	0.246	0	3	7201	0	KED
	Se	78	74.557	ug/L	0.207	0	18	2157	0	KED
	Y	89		ug/L			740265	762066	1	Standard
	Kr	83		ug/L			60	66	6	Standard
>	In-1	115		ug/L			46344	36886	2	KED
	Cd	111	25.547	ug/L	0.692	2	7	8020	1	KED
	Cd	114	25.587	ug/L	1.344	5	10	20840	3	KED
>	In	115		ug/L			2585266	2244250	0	Standard
	Ag	107	29.028	ug/L	0.230	0	107	549179	1	Standard
	Ba	135	31.273	ug/L	0.431	1	102	247117	0	Standard
	Ba	137	31.229	ug/L	0.281	0	182	427980	0	Standard
>	Tb	159		ug/L			2722979	2603203	2	Standard
	Pb	208	28.874	ug/L	0.791	2	692	2967266	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0837-MSD1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 02:26:00
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	46910	2	Standard
	Cl	37		ug/L			6531923	5754341	1	Standard
>	Sc	45		ug/L			2130484	1895491	6	Standard
	Mg	24	5829.674	ug/L	262.067	4	13273	136059467	2	Standard
	Cr	52	24.313	ug/L	1.347	5	22458	507800	1	Standard
	Cr	53	25.422	ug/L	1.136	4	390	60666	2	Standard
	Fe	54	39.035	ug/L	5.225	13	111906	208942	0	Standard
	Fe	57	46.535	ug/L	4.019	8	35584	90944	1	Standard
	Mn	55	30.489	ug/L	1.734	5	842	914993	1	Standard
>	Ge	72		ug/L			105584	86114	2	KED
	Ni	60	27.757	ug/L	0.960	3	13	41523	3	KED
	Ni	62	27.538	ug/L	0.801	2	4	6766	2	KED
	Cu	63	31.515	ug/L	0.307	0	146	135703	1	KED
	Cu	65	31.531	ug/L	0.706	2	72	66871	2	KED
	Zn	66	77.907	ug/L	2.147	2	55	43115	0	KED
	Zn	67	75.525	ug/L	1.174	1	11	6862	1	KED
	As	75	25.972	ug/L	0.368	1	3	7342	1	KED
	Se	78	73.871	ug/L	1.356	1	18	2160	1	KED
	Y	89		ug/L			740265	734377	8	Standard
	Kr	83		ug/L			60	67	28	Standard
>	In-1	115		ug/L			46344	38086	1	KED
	Cd	111	25.333	ug/L	0.692	2	7	8212	2	KED
	Cd	114	25.284	ug/L	0.549	2	10	21273	0	KED
>	In	115		ug/L			2585266	2195109	9	Standard
	Ag	107	29.843	ug/L	2.696	9	107	549077	1	Standard
	Ba	135	32.613	ug/L	2.893	8	102	250694	3	Standard
	Ba	137	32.055	ug/L	3.911	12	182	426333	2	Standard
>	Tb	159		ug/L			2722979	2577942	7	Standard
	Pb	208	29.213	ug/L	1.983	6	692	2963599	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IBLB
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 02:33:21
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			28398	23072	2	Standard
	Cl	**37**		ug/L			6531923	5366850	0	Standard
⌈>	**Sc**	**45**		ug/L			2130484	1936727	1	Standard
|	**Mg**	**24**	**0.459**	ug/L	0.051	11	13273	23014	4	Standard
|	**Cr**	**52**	**-0.124**	ug/L	0.012	9	22458	17860	0	Standard
|	**Cr**	**53**	**0.150**	ug/L	0.005	3	390	718	0	Standard
|	**Fe**	**54**	**-7.816**	ug/L	0.306	3	111906	79216	0	Standard
|	**Fe**	**57**	**-2.253**	ug/L	0.359	15	35584	29407	2	Standard
⌊	**Mn**	**55**	**0.023**	ug/L	0.002	6	842	1478	2	Standard
⌈>	**Ge**	**72**		ug/L			105584	92280	2	KED
|	**Ni**	**60**	**0.011**	ug/L	0.004	40	13	29	20	KED
|	**Ni**	**62**	**0.009**	ug/L	0.011	116	4	6	45	KED
|	**Cu**	**63**	**0.001**	ug/L	0.003	288	146	133	13	KED
|	**Cu**	**65**	**0.002**	ug/L	0.004	169	72	68	12	KED
|	**Zn**	**66**	**0.018**	ug/L	0.029	159	55	59	29	KED
|	**Zn**	**67**	**0.086**	ug/L	0.020	22	11	18	11	KED
|	**As**	**75**	**0.002**	ug/L	0.007	366	3	3	58	KED
⌊	**Se**	**78**	**-0.033**	ug/L	0.084	255	18	15	18	KED
	Y	**89**		ug/L			740265	735811	1	Standard
	Kr	**83**		ug/L			60	55	19	Standard
⌈>	**In-1**	**115**		ug/L			46344	39968	0	KED
|	**Cd**	**111**	**-0.013**	ug/L	0.003	21	7	1	50	KED
⌊	**Cd**	**114**	**-0.006**	ug/L	0.002	35	10	3	52	KED
⌈>	**In**	**115**		ug/L			2585266	2374753	2	Standard
|	**Ag**	**107**	**-0.001**	ug/L	0.001	69	107	81	14	Standard
|	**Ba**	**135**	**0.000**	ug/L	0.001	264	102	97	6	Standard
⌊	**Ba**	**137**	**0.000**	ug/L	0.002	388	182	173	15	Standard
⌈>	**Tb**	**159**		ug/L			2722979	2654161	0	Standard
⌊	**Pb**	**208**	**0.001**	ug/L	0.000	27	692	794	4	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCVC
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 02:38:40
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	23317	3	Standard
	Cl	37		ug/L			6531923	5687830	0	Standard
>	Sc	45		ug/L			2130484	1967952	1	Standard
	Mg	24	4679.140	ug/L	106.871	2	13273	113582636	1	Standard
	Cr	52	48.285	ug/L	0.392	0	22458	1029053	1	Standard
	Cr	53	48.121	ug/L	0.540	1	390	119142	2	Standard
	Fe	54	4075.103	ug/L	75.733	1	111906	12027149	1	Standard
	Fe	57	4751.469	ug/L	201.316	4	35584	6338432	3	Standard
	Mn	55	50.146	ug/L	1.046	2	842	1565542	0	Standard
>	Ge	72		ug/L			105584	93812	0	KED
	Ni	60	52.123	ug/L	0.563	1	13	84947	0	KED
	Ni	62	51.945	ug/L	0.436	0	4	13903	0	KED
	Cu	63	52.749	ug/L	0.739	1	146	247374	0	KED
	Cu	65	52.965	ug/L	1.082	2	72	122338	1	KED
	Zn	66	52.195	ug/L	0.811	1	55	31496	1	KED
	Zn	67	50.622	ug/L	0.800	1	11	5015	2	KED
	As	75	49.382	ug/L	0.380	0	3	15208	1	KED
	Se	78	48.650	ug/L	0.453	0	18	1555	0	KED
	Y	89		ug/L			740265	776944	0	Standard
	Kr	83		ug/L			60	59	11	Standard
>	In-1	115		ug/L			46344	40220	1	KED
	Cd	111	52.541	ug/L	0.958	1	7	17981	1	KED
	Cd	114	52.924	ug/L	0.807	1	10	47025	1	KED
>	In	115		ug/L			2585266	2412925	1	Standard
	Ag	107	61.795	ug/L	2.427	3	107	1256306	2	Standard
	Ba	135	45.902	ug/L	1.002	2	102	389858	1	Standard
	Ba	137	46.133	ug/L	1.148	2	182	679547	2	Standard
>	Tb	159		ug/L			2722979	2695124	0	Standard
	Pb	208	58.816	ug/L	0.512	0	692	6259050	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCBC
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 02:45:49
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			28398	23956	4	Standard
	Cl	**37**		ug/L			6531923	5689578	2	Standard
⌈>	**Sc**	**45**		ug/L			2130484	1966044	1	Standard
|	**Mg**	**24**	**0.257**	ug/L	0.028	10	13273	18484	2	Standard
|	**Cr**	**52**	**-0.065**	ug/L	0.018	27	22458	19374	0	Standard
|	**Cr**	**53**	**0.085**	ug/L	0.014	16	390	568	4	Standard
|	**Fe**	**54**	**-5.341**	ug/L	0.752	14	111906	87647	2	Standard
|	**Fe**	**57**	**2.043**	ug/L	0.806	39	35584	35538	2	Standard
⌊	**Mn**	**55**	**-0.005**	ug/L	0.001	14	842	615	3	Standard
⌈>	**Ge**	**72**		ug/L			105584	95103	3	KED
|	**Ni**	**60**	**-0.001**	ug/L	0.004	306	13	10	56	KED
|	**Ni**	**62**	**0.006**	ug/L	0.001	11	4	5	0	KED
|	**Cu**	**63**	**-0.002**	ug/L	0.003	173	146	123	11	KED
|	**Cu**	**65**	**0.006**	ug/L	0.005	74	72	80	17	KED
|	**Zn**	**66**	**-0.018**	ug/L	0.017	92	55	39	27	KED
|	**Zn**	**67**	**-0.039**	ug/L	0.040	102	11	6	62	KED
|	**As**	**75**	**0.003**	ug/L	0.003	121	3	3	24	KED
⌊	**Se**	**78**	**-0.006**	ug/L	0.037	659	18	16	9	KED
	Y	**89**		ug/L			740265	771351	2	Standard
	Kr	**83**		ug/L			60	49	13	Standard
⌈>	**In-1**	**115**		ug/L			46344	42292	1	KED
|	**Cd**	**111**	**-0.011**	ug/L	0.005	44	7	2	57	KED
⌊	**Cd**	**114**	**-0.005**	ug/L	0.001	23	10	4	22	KED
⌈>	**In**	**115**		ug/L			2585266	2522407	1	Standard
|	**Ag**	**107**	**0.005**	ug/L	0.001	19	107	201	8	Standard
|	**Ba**	**135**	**-0.001**	ug/L	0.001	40	102	86	6	Standard
⌊	**Ba**	**137**	**-0.000**	ug/L	0.001	2217	182	177	7	Standard
⌈>	**Tb**	**159**		ug/L			2722979	2773626	1	Standard
⌊	**Pb**	**208**	**0.000**	ug/L	0.001	179	692	746	9	Standard

BJC0680 **ICP-MS Quantitative Analysis - Summary Report**

Sample ID: ~~BJC0860-~~BLK1
Sample Dil Factor: 200
Comments:
Sample Date/Time: Wednesday, March 31, 2021 02:50:16

MB 3/30/21

Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	40769	4	Standard
	Cl	37		ug/L			6531923	7533796	1	Standard
>	Sc	45		ug/L			2130484	2014477	2	Standard
	Mg	24	0.388	ug/L	0.041	10	13273	22167	1	Standard
	Cr	52	0.052	ug/L	0.003	6	22458	22338	2	Standard
	Cr	53	2.999	ug/L	0.093	3	390	7942	2	Standard
	Fe	54	-3.954	ug/L	1.520	38	111906	93882	2	Standard
	Fe	57	2.623	ug/L	0.352	13	35584	37214	3	Standard
	Mn	55	0.014	ug/L	0.002	10	842	1253	1	Standard
>	Ge	72		ug/L			105584	97719	1	KED
	Ni	60	0.090	ug/L	0.007	8	13	165	6	KED
	Ni	62	0.110	ug/L	0.037	33	4	34	31	KED
	Cu	63	0.003	ug/L	0.005	145	146	151	15	KED
	Cu	65	0.004	ug/L	0.005	125	72	76	15	KED
	Zn	66	0.030	ug/L	0.010	34	55	70	9	KED
	Zn	67	-0.010	ug/L	0.036	342	11	9	40	KED
	As	75	0.004	ug/L	0.004	102	3	4	31	KED
	Se	78	0.072	ug/L	0.109	151	18	19	16	KED
	Y	89		ug/L			740265	768624	1	Standard
	Kr	83		ug/L			60	67	12	Standard
>	In-1	115		ug/L			46344	42047	0	KED
	Cd	111	-0.010	ug/L	0.004	41	7	3	45	KED
	Cd	114	-0.008	ug/L	0.002	24	10	1	104	KED
>	In	115		ug/L			2585266	2552536	2	Standard
	Ag	107	0.002	ug/L	0.000	22	107	150	4	Standard
	Ba	135	0.106	ug/L	0.005	4	102	1052	4	Standard
	Ba	137	0.104	ug/L	0.006	5	182	1792	3	Standard
>	Tb	159		ug/L			2722979	2787627	1	Standard
	Pb	208	0.008	ug/L	0.001	7	692	1579	3	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0265-02
Sample Dil Factor: 200
Comments:
Sample Date/Time: Wednesday, March 31, 2021 02:54:41
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	38222	4	Standard
	Cl	37		ug/L			6531923	7450021	0	Standard
>	Sc	45		ug/L			2130484	1972882	0	Standard
	Mg	24	28.544	ug/L	0.162	0	13273	706927	0	Standard
	Cr	52	0.058	ug/L	0.013	22	22458	22009	0	Standard
	Cr	53	3.660	ug/L	0.096	2	390	9417	2	Standard
	Fe	54	-2.838	ug/L	1.039	36	111906	95300	3	Standard
	Fe	57	3.133	ug/L	1.559	49	35584	37112	4	Standard
	Mn	55	6.329	ug/L	0.066	1	842	198799	1	Standard
>	Ge	72		ug/L			105584	96875	1	KED
	Ni	60	0.120	ug/L	0.009	7	13	215	7	KED
	Ni	62	0.151	ug/L	0.069	45	4	45	39	KED
	Cu	63	0.076	ug/L	0.005	6	146	502	4	KED
	Cu	65	0.086	ug/L	0.004	4	72	270	4	KED
	Zn	66	0.524	ug/L	0.055	10	55	377	8	KED
	Zn	67	0.402	ug/L	0.056	13	11	51	9	KED
	As	75	0.018	ug/L	0.003	17	3	8	11	KED
	Se	78	-0.054	ug/L	0.117	215	18	15	25	KED
	Y	89		ug/L			740265	775320	4	Standard
	Kr	83		ug/L			60	46	26	Standard
>	In-1	115		ug/L			46344	41644	1	KED
	Cd	111	-0.001	ug/L	0.006	388	7	6	32	KED
	Cd	114	0.002	ug/L	0.005	261	10	11	44	KED
>	In	115		ug/L			2585266	2494245	1	Standard
	Ag	107	-0.001	ug/L	0.001	76	107	86	13	Standard
	Ba	135	1.001	ug/L	0.027	2	102	8886	2	Standard
	Ba	137	1.044	ug/L	0.033	3	182	16064	2	Standard
>	Tb	159		ug/L			2722979	2727576	1	Standard
	Pb	208	0.012	ug/L	0.000	3	692	1976	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0680-DUP1
Sample Dil Factor: 200
Comments:
Sample Date/Time: Wednesday, March 31, 2021 02:59:31
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			28398	35838	3	Standard
	Cl	**37**		ug/L			6531923	7192529	1	Standard
⌈>	**Sc**	**45**		ug/L			2130484	1955052	1	Standard
|	**Mg**	**24**	**28.643**	ug/L	0.609	2	13273	702918	2	Standard
|	**Cr**	**52**	**0.025**	ug/L	0.025	100	22458	21129	1	Standard
|	**Cr**	**53**	**3.712**	ug/L	0.087	2	390	9459	2	Standard
|	**Fe**	**54**	**-2.943**	ug/L	0.357	12	111906	94132	1	Standard
|	**Fe**	**57**	**3.511**	ug/L	0.662	18	35584	37277	1	Standard
⌊	**Mn**	**55**	**6.356**	ug/L	0.030	0	842	197843	1	Standard
⌈>	**Ge**	**72**		ug/L			105584	93205	0	KED
|	**Ni**	**60**	**0.133**	ug/L	0.011	8	13	227	7	KED
|	**Ni**	**62**	**0.095**	ug/L	0.034	35	4	29	30	KED
|	**Cu**	**63**	**0.062**	ug/L	0.009	15	146	419	10	KED
|	**Cu**	**65**	**0.062**	ug/L	0.011	17	72	206	11	KED
|	**Zn**	**66**	**0.433**	ug/L	0.072	16	55	308	13	KED
|	**Zn**	**67**	**0.453**	ug/L	0.146	32	11	54	26	KED
|	**As**	**75**	**0.033**	ug/L	0.012	37	3	13	28	KED
⌊	**Se**	**78**	**0.003**	ug/L	0.055	1649	18	16	9	KED
	Y	**89**		ug/L			740265	764019	2	Standard
	Kr	**83**		ug/L			60	59	3	Standard
⌈>	**In-1**	**115**		ug/L			46344	40746	2	KED
|	**Cd**	**111**	**0.005**	ug/L	0.016	287	7	8	63	KED
⌊	**Cd**	**114**	**0.008**	ug/L	0.005	63	10	16	29	KED
⌈>	**In**	**115**		ug/L			2585266	2444350	1	Standard
|	**Ag**	**107**	**-0.003**	ug/L	0.000	7	107	44	9	Standard
|	**Ba**	**135**	**1.023**	ug/L	0.056	5	102	8897	4	Standard
⌊	**Ba**	**137**	**1.003**	ug/L	0.019	1	182	15138	0	Standard
⌈>	**Tb**	**159**		ug/L			2722979	2732981	1	Standard
⌊	**Pb**	**208**	**0.010**	ug/L	0.001	10	692	1771	5	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0680-MS1
Sample Dil Factor: 200
Comments:
Sample Date/Time: Wednesday, March 31, 2021 03:05:19
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	38819	2	Standard
	Cl	37		ug/L			6531923	7966128	0	Standard
>	Sc	45		ug/L			2130484	1965926	1	Standard
	Mg	24	122.052	ug/L	1.240	1	13273	2971813	0	Standard
	Cr	52	4.873	ug/L	0.099	2	22458	122374	2	Standard
	Cr	53	9.434	ug/L	0.042	0	390	23619	1	Standard
	Fe	54	14.695	ug/L	1.569	10	111906	146181	2	Standard
	Fe	57	17.167	ug/L	0.665	3	35584	55593	0	Standard
	Mn	55	11.303	ug/L	0.133	1	842	353130	0	Standard
>	Ge	72		ug/L			105584	94553	2	KED
	Ni	60	5.377	ug/L	0.143	2	13	8842	2	KED
	Ni	62	5.349	ug/L	0.185	3	4	1446	3	KED
	Cu	63	5.407	ug/L	0.063	1	146	25673	1	KED
	Cu	65	5.407	ug/L	0.349	6	72	12636	4	KED
	Zn	66	5.585	ug/L	0.369	6	55	3438	4	KED
	Zn	67	6.424	ug/L	0.383	5	11	650	5	KED
	As	75	19.770	ug/L	0.508	2	3	6136	1	KED
	Se	78	18.647	ug/L	1.195	6	18	611	4	KED
	Y	89		ug/L			740265	777507	1	Standard
	Kr	83		ug/L			60	52	8	Standard
>	In-1	115		ug/L			46344	40673	0	KED
	Cd	111	5.266	ug/L	0.178	3	7	1828	3	KED
	Cd	114	5.268	ug/L	0.052	0	10	4742	1	KED
>	In	115		ug/L			2585266	2430051	0	Standard
	Ag	107	6.095	ug/L	0.187	3	107	124946	3	Standard
	Ba	135	19.239	ug/L	0.266	1	102	164654	1	Standard
	Ba	137	19.437	ug/L	0.579	2	182	288504	3	Standard
>	Tb	159		ug/L			2722979	2754018	0	Standard
	Pb	208	24.158	ug/L	0.548	2	692	2627435	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IBLC
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 03:13:08
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			28398	24322	2	Standard
	Cl	**37**		ug/L			6531923	5527530	1	Standard
⌈>	**Sc**	**45**		ug/L			2130484	1950263	0	Standard
|	**Mg**	**24**	**-0.010**	ug/L	0.010	99	13273	11900	2	Standard
|	**Cr**	**52**	**-0.060**	ug/L	0.023	38	22458	19319	2	Standard
|	**Cr**	**53**	**0.090**	ug/L	0.008	9	390	578	3	Standard
|	**Fe**	**54**	**-6.200**	ug/L	0.676	10	111906	84455	1	Standard
|	**Fe**	**57**	**4.318**	ug/L	0.956	22	35584	38252	3	Standard
⌊	**Mn**	**55**	**0.021**	ug/L	0.002	8	842	1421	3	Standard
⌈>	**Ge**	**72**		ug/L			105584	93659	2	KED
|	**Ni**	**60**	**0.006**	ug/L	0.005	76	13	22	36	KED
|	**Ni**	**62**	**0.009**	ug/L	0.010	117	4	6	45	KED
|	**Cu**	**63**	**0.003**	ug/L	0.004	120	146	144	11	KED
|	**Cu**	**65**	**0.002**	ug/L	0.003	135	72	69	11	KED
|	**Zn**	**66**	**0.034**	ug/L	0.010	30	55	69	10	KED
|	**Zn**	**67**	**0.032**	ug/L	0.057	175	11	13	42	KED
|	**As**	**75**	**0.008**	ug/L	0.004	54	3	5	21	KED
⌊	**Se**	**78**	**0.039**	ug/L	0.085	219	18	17	11	KED
	Y	**89**		ug/L			740265	771612	2	Standard
	Kr	**83**		ug/L			60	49	24	Standard
⌈>	**In-1**	**115**		ug/L			46344	42116	2	KED
|	**Cd**	**111**	**-0.011**	ug/L	0.001	12	7	2	21	KED
⌊	**Cd**	**114**	**-0.006**	ug/L	0.002	34	10	3	52	KED
⌈>	**In**	**115**		ug/L			2585266	2553312	1	Standard
|	**Ag**	**107**	**-0.002**	ug/L	0.001	32	107	68	16	Standard
|	**Ba**	**135**	**-0.002**	ug/L	0.001	43	102	86	7	Standard
⌊	**Ba**	**137**	**0.001**	ug/L	0.001	100	182	194	6	Standard
⌈>	**Tb**	**159**		ug/L			2722979	2784902	1	Standard
⌊	**Pb**	**208**	**0.001**	ug/L	0.000	6	692	855	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0270-12
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 03:18:57
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	44235	1	Standard
	Cl	37		ug/L			6531923	6056104	2	Standard
>	Sc	45		ug/L			2130484	2050884	2	Standard
	Mg	24	11827.167	ug/L	162.000	1	13273	299153443	1	Standard
	Cr	52	0.102	ug/L	0.024	23	22458	23827	1	Standard
	Cr	53	1.894	ug/L	0.017	0	390	5248	3	Standard
	Fe	54	12.843	ug/L	0.766	5	111906	146848	1	Standard
	Fe	57	48.778	ug/L	1.151	2	35584	101715	2	Standard
	Mn	55	9.836	ug/L	0.102	1	842	320651	1	Standard
>	Ge	72		ug/L			105584	91454	1	KED
	Ni	60	3.582	ug/L	0.067	1	13	5702	1	KED
	Ni	62	3.531	ug/L	0.076	2	4	925	2	KED
	Cu	63	2.231	ug/L	0.048	2	146	10320	0	KED
	Cu	65	2.270	ug/L	0.029	1	72	5171	0	KED
	Zn	66	4.290	ug/L	0.099	2	55	2567	0	KED
	Zn	67	4.849	ug/L	0.221	4	11	477	5	KED
	As	75	0.330	ug/L	0.014	4	3	102	4	KED
	Se	78	2.021	ug/L	0.135	6	18	78	4	KED
	Y	89		ug/L			740265	784609	2	Standard
	Kr	83		ug/L			60	53	19	Standard
>	In-1	115		ug/L			46344	39985	3	KED
	Cd	111	0.010	ug/L	0.012	126	7	9	40	KED
	Cd	114	0.011	ug/L	0.001	7	10	18	0	KED
>	In	115		ug/L			2585266	2447469	3	Standard
	Ag	107	-0.001	ug/L	0.000	54	107	84	7	Standard
	Ba	135	18.013	ug/L	0.990	5	102	155096	3	Standard
	Ba	137	18.439	ug/L	0.465	2	182	275510	1	Standard
>	Tb	159		ug/L			2722979	2735521	2	Standard
	Pb	208	0.017	ug/L	0.000	0	692	2510	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0839-DUP1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 03:23:47
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	42786	2	Standard
	Cl	37		ug/L			6531923	6113996	1	Standard
>	Sc	45		ug/L			2130484	2037082	0	Standard
	Mg	24	12352.709	ug/L	202.541	1	13273	310406432	1	Standard
	Cr	52	0.124	ug/L	0.026	21	22458	24158	2	Standard
	Cr	53	1.886	ug/L	0.022	1	390	5190	1	Standard
	Fe	54	14.545	ug/L	1.349	9	111906	151044	2	Standard
	Fe	57	49.747	ug/L	2.997	6	35584	102370	3	Standard
	Mn	55	10.038	ug/L	0.219	2	842	325058	1	Standard
>	Ge	72		ug/L			105584	91867	1	KED
	Ni	60	3.542	ug/L	0.087	2	13	5663	1	KED
	Ni	62	3.589	ug/L	0.121	3	4	944	3	KED
	Cu	63	2.270	ug/L	0.037	1	146	10548	2	KED
	Cu	65	2.365	ug/L	0.020	0	72	5411	2	KED
	Zn	66	0.526	ug/L	0.038	7	55	358	6	KED
	Zn	67	1.504	ug/L	0.105	6	11	155	6	KED
	As	75	0.323	ug/L	0.031	9	3	100	9	KED
	Se	78	2.116	ug/L	0.134	6	18	81	4	KED
	Y	89		ug/L			740265	784284	2	Standard
	Kr	83		ug/L			60	73	18	Standard
>	In-1	115		ug/L			46344	39987	0	KED
	Cd	111	0.012	ug/L	0.006	47	7	10	18	KED
	Cd	114	0.011	ug/L	0.005	43	10	18	23	KED
>	In	115		ug/L			2585266	2404796	2	Standard
	Ag	107	-0.002	ug/L	0.000	23	107	59	16	Standard
	Ba	135	18.859	ug/L	1.095	5	102	159577	3	Standard
	Ba	137	18.979	ug/L	0.755	3	182	278592	1	Standard
>	Tb	159		ug/L			2722979	2736802	1	Standard
	Pb	208	0.018	ug/L	0.001	5	692	2631	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0839-MS1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 03:28:36
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	45435	6	Standard
	Cl	37		ug/L			6531923	6026955	2	Standard
>	Sc	45		ug/L			2130484	2084219	0	Standard
	Mg	24	12396.253	ug/L	102.833	0	13273	318721045	0	Standard
	Cr	52	22.786	ug/L	0.380	1	22458	525880	1	Standard
	Cr	53	24.667	ug/L	0.313	1	390	64859	1	Standard
	Fe	54	15.130	ug/L	0.120	0	111906	156365	0	Standard
	Fe	57	52.977	ug/L	1.309	2	35584	109289	1	Standard
	Mn	55	33.764	ug/L	0.557	1	842	1116830	1	Standard
>	Ge	72		ug/L			105584	93305	1	KED
	Ni	60	29.260	ug/L	0.537	1	13	47429	1	KED
	Ni	62	29.470	ug/L	1.282	4	4	7843	2	KED
	Cu	63	28.055	ug/L	0.753	2	146	130883	0	KED
	Cu	65	28.079	ug/L	0.573	2	72	64525	0	KED
	Zn	66	77.453	ug/L	2.694	3	55	46444	1	KED
	Zn	67	73.709	ug/L	1.461	1	11	7257	1	KED
	As	75	24.695	ug/L	0.537	2	3	7564	0	KED
	Se	78	75.076	ug/L	1.429	1	18	2379	2	KED
	Y	89		ug/L			740265	800618	1	Standard
	Kr	83		ug/L			60	61	37	Standard
>	In-1	115		ug/L			46344	37554	6	KED
	Cd	111	27.087	ug/L	1.927	7	7	8632	2	KED
	Cd	114	27.492	ug/L	2.539	9	10	22717	2	KED
>	In	115		ug/L			2585266	2452156	2	Standard
	Ag	107	29.815	ug/L	0.921	3	107	615991	0	Standard
	Ba	135	42.301	ug/L	1.873	4	102	364921	1	Standard
	Ba	137	42.656	ug/L	1.396	3	182	638309	0	Standard
>	Tb	159		ug/L			2722979	2788124	1	Standard
	Pb	208	28.622	ug/L	0.543	1	692	3151075	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0839-MSD1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 03:34:26
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	43020	1	Standard
	Cl	37		ug/L			6531923	5975487	1	Standard
>	Sc	45		ug/L			2130484	2094251	1	Standard
	Mg	24	12306.013	ug/L	371.105	3	13273	317831865	1	Standard
	Cr	52	23.018	ug/L	0.455	1	22458	533473	0	Standard
	Cr	53	24.980	ug/L	0.558	2	390	65983	1	Standard
	Fe	54	14.756	ug/L	0.546	3	111906	155946	1	Standard
	Fe	57	51.072	ug/L	0.330	0	35584	107130	1	Standard
	Mn	55	34.191	ug/L	0.700	2	842	1136148	0	Standard
>	Ge	72		ug/L			105584	91021	1	KED
	Ni	60	29.860	ug/L	0.700	2	13	47229	3	KED
	Ni	62	29.995	ug/L	0.272	0	4	7791	1	KED
	Cu	63	28.726	ug/L	0.319	1	146	130769	2	KED
	Cu	65	28.800	ug/L	0.380	1	72	64585	3	KED
	Zn	66	78.871	ug/L	0.585	0	55	46157	2	KED
	Zn	67	75.571	ug/L	1.443	1	11	7257	0	KED
	As	75	25.407	ug/L	0.413	1	3	7594	2	KED
	Se	78	76.705	ug/L	1.377	1	18	2371	3	KED
	Y	89		ug/L			740265	812701	2	Standard
	Kr	83		ug/L			60	74	11	Standard
>	In-1	115		ug/L			46344	40876	1	KED
	Cd	111	25.125	ug/L	0.176	0	7	8742	1	KED
	Cd	114	25.152	ug/L	0.242	0	10	22716	0	KED
>	In	115		ug/L			2585266	2401418	0	Standard
	Ag	107	31.400	ug/L	0.990	3	107	635573	2	Standard
	Ba	135	42.658	ug/L	1.341	3	102	360629	2	Standard
	Ba	137	43.240	ug/L	0.941	2	182	633976	1	Standard
>	Tb	159		ug/L			2722979	2752566	0	Standard
	Pb	208	29.093	ug/L	0.276	0	692	3162311	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IBLD
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 03:42:17
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			28398	23932	4	Standard
	Cl	**37**		ug/L			6531923	5689687	1	Standard
⌈>	**Sc**	**45**		ug/L			2130484	1973758	1	Standard
|	**Mg**	**24**	**-0.002**	ug/L	0.021	899	13273	12239	4	Standard
|	**Cr**	**52**	**-0.058**	ug/L	0.012	20	22458	19579	0	Standard
|	**Cr**	**53**	**0.027**	ug/L	0.002	5	390	428	1	Standard
|	**Fe**	**54**	**-6.729**	ug/L	1.018	15	111906	83900	2	Standard
|	**Fe**	**57**	**-3.193**	ug/L	0.431	13	35584	28716	2	Standard
⌊	**Mn**	**55**	**-0.005**	ug/L	0.001	14	842	608	4	Standard
⌈>	**Ge**	**72**		ug/L			105584	94031	2	KED
|	**Ni**	**60**	**-0.002**	ug/L	0.001	71	13	9	20	KED
|	**Ni**	**62**	**0.004**	ug/L	0.004	96	4	5	21	KED
|	**Cu**	**63**	**0.014**	ug/L	0.004	28	146	194	12	KED
|	**Cu**	**65**	**0.013**	ug/L	0.004	27	72	93	6	KED
|	**Zn**	**66**	**0.031**	ug/L	0.014	43	55	68	12	KED
|	**Zn**	**67**	**-0.019**	ug/L	0.049	250	11	8	58	KED
|	**As**	**75**	**0.009**	ug/L	0.009	100	3	5	49	KED
⌊	**Se**	**78**	**-0.062**	ug/L	0.132	214	18	14	29	KED
	Y	**89**		ug/L			740265	765365	2	Standard
	Kr	**83**		ug/L			60	46	36	Standard
⌈>	**In-1**	**115**		ug/L			46344	42641	3	KED
|	**Cd**	**111**	**-0.011**	ug/L	0.004	35	7	2	57	KED
⌊	**Cd**	**114**	**-0.005**	ug/L	0.001	26	10	4	21	KED
⌈>	**In**	**115**		ug/L			2585266	2514763	1	Standard
|	**Ag**	**107**	**0.000**	ug/L	0.001	1042	107	105	9	Standard
|	**Ba**	**135**	**0.006**	ug/L	0.000	3	102	155	2	Standard
⌊	**Ba**	**137**	**0.005**	ug/L	0.003	55	182	257	16	Standard
⌈>	**Tb**	**159**		ug/L			2722979	2796480	1	Standard
⌊	**Pb**	**208**	**-0.000**	ug/L	0.000	150	692	680	5	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCVD
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 03:48:06
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	24621	1	Standard
	Cl	37		ug/L			6531923	5837939	0	Standard
>	Sc	45		ug/L			2130484	1960093	0	Standard
	Mg	24	4698.588	ug/L	137.796	2	13273	113616264	2	Standard
	Cr	52	49.200	ug/L	1.347	2	22458	1043793	2	Standard
	Cr	53	48.950	ug/L	0.161	0	390	120691	0	Standard
	Fe	54	4133.725	ug/L	61.805	1	111906	12150041	1	Standard
	Fe	57	4728.817	ug/L	82.053	1	35584	6285034	1	Standard
	Mn	55	50.522	ug/L	0.402	0	842	1571180	0	Standard
>	Ge	72		ug/L			105584	93154	1	KED
	Ni	60	52.790	ug/L	0.336	0	13	85435	1	KED
	Ni	62	52.889	ug/L	1.855	3	4	14053	2	KED
	Cu	63	53.406	ug/L	0.909	1	146	248670	1	KED
	Cu	65	53.442	ug/L	0.880	1	72	122560	0	KED
	Zn	66	51.586	ug/L	1.383	2	55	30902	0	KED
	Zn	67	52.199	ug/L	0.547	1	11	5134	0	KED
	As	75	50.202	ug/L	0.186	0	3	15353	2	KED
	Se	78	48.306	ug/L	1.113	2	18	1534	2	KED
	Y	89		ug/L			740265	804020	1	Standard
	Kr	83		ug/L			60	61	17	Standard
>	In-1	115		ug/L			46344	41236	0	KED
	Cd	111	52.140	ug/L	0.073	0	7	18297	1	KED
	Cd	114	52.374	ug/L	0.541	1	10	47715	1	KED
>	In	115		ug/L			2585266	2429539	2	Standard
	Ag	107	63.569	ug/L	1.452	2	107	1301491	1	Standard
	Ba	135	46.711	ug/L	1.257	2	102	399387	0	Standard
	Ba	137	47.706	ug/L	2.001	4	182	707246	2	Standard
>	Tb	159		ug/L			2722979	2738176	0	Standard
	Pb	208	58.480	ug/L	0.200	0	692	6322847	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCBD
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 03:55:15
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			28398	24821	1	Standard
	Cl	**37**		ug/L			6531923	5835121	2	Standard
⌈>	**Sc**	**45**		ug/L			2130484	1983965	1	Standard
|	**Mg**	**24**	**-0.083**	ug/L	0.009	11	13273	10341	3	Standard
|	**Cr**	**52**	**-0.072**	ug/L	0.019	26	22458	19400	1	Standard
|	**Cr**	**53**	**-0.008**	ug/L	0.003	32	390	342	1	Standard
|	**Fe**	**54**	**-5.879**	ug/L	0.558	9	111906	86856	0	Standard
|	**Fe**	**57**	**-0.944**	ug/L	1.025	108	35584	31869	4	Standard
⌊	**Mn**	**55**	**-0.008**	ug/L	0.001	9	842	522	4	Standard
⌈>	**Ge**	**72**		ug/L			105584	96223	0	KED
|	**Ni**	**60**	**0.002**	ug/L	0.004	228	13	15	45	KED
|	**Ni**	**62**	**0.008**	ug/L	0.011	126	4	6	45	KED
|	**Cu**	**63**	**-0.003**	ug/L	0.007	214	146	118	26	KED
|	**Cu**	**65**	**0.006**	ug/L	0.004	72	72	80	13	KED
|	**Zn**	**66**	**-0.002**	ug/L	0.034	1430	55	49	43	KED
|	**Zn**	**67**	**0.016**	ug/L	0.028	172	11	12	24	KED
|	**As**	**75**	**0.006**	ug/L	0.005	97	3	4	33	KED
⌊	**Se**	**78**	**-0.016**	ug/L	0.114	697	18	16	21	KED
	Y	**89**		ug/L			740265	783621	2	Standard
	Kr	**83**		ug/L			60	54	10	Standard
⌈>	**In-1**	**115**		ug/L			46344	42501	2	KED
|	**Cd**	**111**	**-0.012**	ug/L	0.004	34	7	2	57	KED
⌊	**Cd**	**114**	**-0.006**	ug/L	0.002	32	10	3	51	KED
⌈>	**In**	**115**		ug/L			2585266	2582002	1	Standard
|	**Ag**	**107**	**0.004**	ug/L	0.002	49	107	200	22	Standard
|	**Ba**	**135**	**-0.000**	ug/L	0.001	275	102	100	2	Standard
⌊	**Ba**	**137**	**-0.002**	ug/L	0.001	58	182	156	11	Standard
⌈>	**Tb**	**159**		ug/L			2722979	2793157	0	Standard
⌊	**Pb**	**208**	**0.000**	ug/L	0.000	151	692	737	5	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0270-14
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 03:59:42
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			28398	44087	3	Standard
	Cl	**37**		ug/L			6531923	5419498	1	Standard
>	**Sc**	**45**		ug/L			2130484	2133902	2	Standard
	Mg	**24**	**5755.029**	ug/L	201.157	3	13273	151438367	2	Standard
	Cr	**52**	**0.038**	ug/L	0.050	134	22458	23329	3	Standard
	Cr	**53**	**0.198**	ug/L	0.020	9	390	921	3	Standard
	Fe	**54**	**1685.111**	ug/L	59.795	3	111906	5456049	1	Standard
	Fe	**57**	**2010.793**	ug/L	74.569	3	35584	2928590	1	Standard
	Mn	**55**	**61.809**	ug/L	2.086	3	842	2091476	1	Standard
>	**Ge**	**72**		ug/L			105584	96784	1	KED
	Ni	**60**	**0.979**	ug/L	0.047	4	13	1659	5	KED
	Ni	**62**	**0.967**	ug/L	0.056	5	4	271	7	KED
	Cu	**63**	**1.388**	ug/L	0.029	2	146	6847	1	KED
	Cu	**65**	**1.412**	ug/L	0.055	3	72	3428	4	KED
	Zn	**66**	**1.664**	ug/L	0.063	3	55	1085	3	KED
	Zn	**67**	**1.741**	ug/L	0.137	7	11	187	6	KED
	As	**75**	**4.670**	ug/L	0.029	0	3	1486	1	KED
	Se	**78**	**0.209**	ug/L	0.012	5	18	24	1	KED
	Y	**89**		ug/L			740265	812406	2	Standard
	Kr	**83**		ug/L			60	62	12	Standard
>	**In-1**	**115**		ug/L			46344	42069	0	KED
	Cd	**111**	**-0.011**	ug/L	0.010	91	7	2	120	KED
	Cd	**114**	**-0.002**	ug/L	0.001	61	10	7	11	KED
>	**In**	**115**		ug/L			2585266	2595202	1	Standard
	Ag	**107**	**0.003**	ug/L	0.001	26	107	178	9	Standard
	Ba	**135**	**4.755**	ug/L	0.079	1	102	43530	0	Standard
	Ba	**137**	**4.797**	ug/L	0.093	1	182	76164	1	Standard
>	**Tb**	**159**		ug/L			2722979	2859164	0	Standard
	Pb	**208**	**0.075**	ug/L	0.001	1	692	9220	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0270-16
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 04:04:07
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	45750	3	Standard
	Cl	37		ug/L			6531923	6387600	3	Standard
>	Sc	45		ug/L			2130484	2033909	1	Standard
	Mg	24	7832.479	ug/L	240.731	3	13273	196481323	1	Standard
	Cr	52	0.180	ug/L	0.009	4	22458	25331	0	Standard
	Cr	53	1.973	ug/L	0.027	1	390	5404	2	Standard
	Fe	54	2898.221	ug/L	66.480	2	111906	8871116	2	Standard
	Fe	57	3427.514	ug/L	80.317	2	35584	4735721	1	Standard
	Mn	55	77.268	ug/L	0.875	1	842	2493119	1	Standard
>	Ge	72		ug/L			105584	92759	0	KED
	Ni	60	1.697	ug/L	0.027	1	13	2746	1	KED
	Ni	62	1.732	ug/L	0.065	3	4	462	3	KED
	Cu	63	2.283	ug/L	0.061	2	146	10708	1	KED
	Cu	65	2.308	ug/L	0.001	0	72	5331	0	KED
	Zn	66	1.638	ug/L	0.119	7	55	1024	7	KED
	Zn	67	1.774	ug/L	0.182	10	11	183	9	KED
	As	75	2.162	ug/L	0.032	1	3	661	0	KED
	Se	78	0.149	ug/L	0.143	95	18	21	20	KED
	Y	89		ug/L			740265	806223	0	Standard
	Kr	83		ug/L			60	50	21	Standard
>	In-1	115		ug/L			46344	41873	4	KED
	Cd	111	0.008	ug/L	0.018	238	7	9	68	KED
	Cd	114	0.010	ug/L	0.008	77	10	18	41	KED
>	In	115		ug/L			2585266	2503544	1	Standard
	Ag	107	0.000	ug/L	0.000	28	107	111	3	Standard
	Ba	135	5.122	ug/L	0.156	3	102	45215	1	Standard
	Ba	137	5.231	ug/L	0.129	2	182	80102	1	Standard
>	Tb	159		ug/L			2722979	2798181	1	Standard
	Pb	208	0.049	ug/L	0.002	3	692	6160	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0288-14
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 04:08:57
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	49850	1	Standard
	Cl	37		ug/L			6531923	9233460	0	Standard
>	Sc	45		ug/L			2130484	1945804	1	Standard
	Mg	24	11462.979	ug/L	200.176	1	13273	275117441	1	Standard
	Cr	52	1.318	ug/L	0.023	1	22458	47721	1	Standard
	Cr	53	8.139	ug/L	0.010	0	390	20220	1	Standard
	Fe	54	114.617	ug/L	0.645	0	111906	433803	1	Standard
	Fe	57	108.141	ug/L	0.067	0	35584	174441	1	Standard
	Mn	55	43.703	ug/L	0.579	1	842	1349303	1	Standard
>	Ge	72		ug/L			105584	83778	0	KED
	Ni	60	2.836	ug/L	0.111	3	13	4137	3	KED
	Ni	62	2.863	ug/L	0.084	2	4	687	2	KED
	Cu	63	5.834	ug/L	0.052	0	146	24539	0	KED
	Cu	65	6.058	ug/L	0.133	2	72	12548	1	KED
	Zn	66	1.691	ug/L	0.053	3	55	954	3	KED
	Zn	67	1.860	ug/L	0.248	13	11	173	12	KED
	As	75	3.957	ug/L	0.091	2	3	1090	1	KED
	Se	78	0.348	ug/L	0.107	30	18	24	11	KED
	Y	89		ug/L			740265	765688	1	Standard
	Kr	83		ug/L			60	59	4	Standard
>	In-1	115		ug/L			46344	36391	1	KED
	Cd	111	0.013	ug/L	0.010	73	7	9	29	KED
	Cd	114	0.022	ug/L	0.004	19	10	25	14	KED
>	In	115		ug/L			2585266	2127949	1	Standard
	Ag	107	0.009	ug/L	0.002	22	107	248	14	Standard
	Ba	135	9.059	ug/L	0.122	1	102	67931	0	Standard
	Ba	137	9.051	ug/L	0.111	1	182	117711	0	Standard
>	Tb	159		ug/L			2722979	2612918	1	Standard
	Pb	208	0.127	ug/L	0.002	1	692	13749	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0288-17
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 04:13:22
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			28398	43504	1	Standard
	Cl	**37**		ug/L			6531923	10398750	3	Standard
>	**Sc**	**45**		ug/L			2130484	1890828	2	Standard
	Mg	**24**	**17684.835**	ug/L	629.532	3	13273	412307058	1	Standard
	Cr	**52**	**0.391**	ug/L	0.024	6	22458	27780	1	Standard
	Cr	**53**	**11.126**	ug/L	0.166	1	390	26729	2	Standard
	Fe	**54**	**685.317**	ug/L	16.082	2	111906	2025602	1	Standard
	Fe	**57**	**637.993**	ug/L	27.398	4	35584	845040	3	Standard
	Mn	**55**	**25.173**	ug/L	0.186	0	842	755648	2	Standard
>	**Ge**	**72**		ug/L			105584	83964	1	KED
	Ni	**60**	**1.458**	ug/L	0.076	5	13	2137	4	KED
	Ni	**62**	**1.454**	ug/L	0.060	4	4	351	3	KED
	Cu	**63**	**2.627**	ug/L	0.087	3	146	11136	2	KED
	Cu	**65**	**2.628**	ug/L	0.042	1	72	5488	1	KED
	Zn	**66**	**1.671**	ug/L	0.013	0	55	945	0	KED
	Zn	**67**	**1.898**	ug/L	0.266	14	11	177	13	KED
	As	**75**	**2.542**	ug/L	0.078	3	3	703	3	KED
	Se	**78**	**0.100**	ug/L	0.073	73	18	17	11	KED
	Y	**89**		ug/L			740265	724885	1	Standard
	Kr	**83**		ug/L			60	55	11	Standard
>	**In-1**	**115**		ug/L			46344	36016	1	KED
	Cd	**111**	**0.019**	ug/L	0.006	31	7	11	14	KED
	Cd	**114**	**0.033**	ug/L	0.016	47	10	34	37	KED
>	**In**	**115**		ug/L			2585266	2123577	2	Standard
	Ag	**107**	**-0.001**	ug/L	0.001	186	107	79	22	Standard
	Ba	**135**	**7.116**	ug/L	0.106	1	102	53268	1	Standard
	Ba	**137**	**7.174**	ug/L	0.088	1	182	93130	1	Standard
>	**Tb**	**159**		ug/L			2722979	2588635	2	Standard
	Pb	**208**	**0.050**	ug/L	0.003	5	692	5754	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0288-06
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 04:17:47
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			28398	42316	1	Standard
	Cl	**37**		ug/L			6531923	5461331	1	Standard
⌈>	**Sc**	**45**		ug/L			2130484	1948318	1	Standard
|	**Mg**	**24**	**10696.541**	ug/L	467.985	4	13273	257021760	3	Standard
|	**Cr**	**52**	**0.410**	ug/L	0.012	2	22458	29008	1	Standard
|	**Cr**	**53**	**1.081**	ug/L	0.015	1	390	2998	0	Standard
|	**Fe**	**54**	**174.443**	ug/L	5.331	3	111906	607610	1	Standard
|	**Fe**	**57**	**158.820**	ug/L	5.492	3	35584	241224	2	Standard
⌊	**Mn**	**55**	**17.139**	ug/L	0.129	0	842	530297	0	Standard
⌈>	**Ge**	**72**		ug/L			105584	90915	2	KED
|	**Ni**	**60**	**4.419**	ug/L	0.175	3	13	6985	1	KED
|	**Ni**	**62**	**4.490**	ug/L	0.065	1	4	1168	3	KED
|	**Cu**	**63**	**3.503**	ug/L	0.014	0	146	16040	2	KED
|	**Cu**	**65**	**3.536**	ug/L	0.035	0	72	7973	1	KED
|	**Zn**	**66**	**2.006**	ug/L	0.076	3	55	1218	1	KED
|	**Zn**	**67**	**1.837**	ug/L	0.325	17	11	186	17	KED
|	**As**	**75**	**0.851**	ug/L	0.062	7	3	256	4	KED
⌊	**Se**	**78**	**0.562**	ug/L	0.068	12	18	33	3	KED
	Y	**89**		ug/L			740265	828652	3	Standard
	Kr	**83**		ug/L			60	54	7	Standard
⌈>	**In-1**	**115**		ug/L			46344	40304	2	KED
|	**Cd**	**111**	**0.012**	ug/L	0.011	88	7	10	32	KED
⌊	**Cd**	**114**	**0.014**	ug/L	0.018	132	10	21	76	KED
⌈>	**In**	**115**		ug/L			2585266	2466117	2	Standard
|	**Ag**	**107**	**0.000**	ug/L	0.001	181	107	108	9	Standard
|	**Ba**	**135**	**2.707**	ug/L	0.083	3	102	23578	0	Standard
⌊	**Ba**	**137**	**2.785**	ug/L	0.104	3	182	42073	1	Standard
⌈>	**Tb**	**159**		ug/L			2722979	2805108	2	Standard
⌊	**Pb**	**208**	**0.057**	ug/L	0.002	4	692	7008	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0839-DUP2
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 04:22:36
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	44032	4	Standard
	Cl	37		ug/L			6531923	5552424	3	Standard
>	Sc	45		ug/L			2130484	1991727	1	Standard
	Mg	24	10352.964	ug/L	122.301	1	13273	254360353	1	Standard
	Cr	52	0.329	ug/L	0.009	2	22458	27950	1	Standard
	Cr	53	0.844	ug/L	0.012	1	390	2474	1	Standard
	Fe	54	166.410	ug/L	2.866	1	111906	597358	0	Standard
	Fe	57	156.626	ug/L	3.388	2	35584	243686	2	Standard
	Mn	55	16.675	ug/L	0.050	0	842	527490	1	Standard
>	Ge	72		ug/L			105584	86962	9	KED
	Ni	60	4.491	ug/L	0.318	7	13	6767	4	KED
	Ni	62	4.508	ug/L	0.033	0	4	1121	9	KED
	Cu	63	3.446	ug/L	0.241	6	146	15032	3	KED
	Cu	65	3.615	ug/L	0.270	7	72	7760	2	KED
	Zn	66	2.219	ug/L	0.147	6	55	1280	5	KED
	Zn	67	2.159	ug/L	0.299	13	11	205	6	KED
	As	75	0.879	ug/L	0.070	7	3	252	2	KED
	Se	78	0.611	ug/L	0.071	11	18	33	11	KED
	Y	89		ug/L			740265	806218	3	Standard
	Kr	83		ug/L			60	46	31	Standard
>	In-1	115		ug/L			46344	40175	2	KED
	Cd	111	0.009	ug/L	0.012	130	7	9	45	KED
	Cd	114	0.017	ug/L	0.010	57	10	24	36	KED
>	In	115		ug/L			2585266	2441446	0	Standard
	Ag	107	-0.000	ug/L	0.001	607	107	97	25	Standard
	Ba	135	2.686	ug/L	0.020	0	102	23176	1	Standard
	Ba	137	2.710	ug/L	0.086	3	182	40545	2	Standard
>	Tb	159		ug/L			2722979	2829732	0	Standard
	Pb	208	0.053	ug/L	0.002	3	692	6647	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0839-MS2
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 04:27:25
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	45101	4	Standard
	Cl	37		ug/L			6531923	5538222	0	Standard
>	Sc	45		ug/L			2130484	1955185	1	Standard
	Mg	24	10687.387	ug/L	146.899	1	13273	257749951	1	Standard
	Cr	52	24.159	ug/L	0.296	1	22458	521753	0	Standard
	Cr	53	24.406	ug/L	0.312	1	390	60197	0	Standard
	Fe	54	170.871	ug/L	4.176	2	111906	599337	0	Standard
	Fe	57	158.984	ug/L	10.837	6	35584	242190	4	Standard
	Mn	55	41.985	ug/L	0.615	1	842	1302423	0	Standard
>	Ge	72		ug/L			105584	92167	0	KED
	Ni	60	30.200	ug/L	0.264	0	13	48364	1	KED
	Ni	62	30.758	ug/L	0.511	1	4	8091	2	KED
	Cu	63	29.819	ug/L	0.195	0	146	137447	0	KED
	Cu	65	30.432	ug/L	0.356	1	72	69091	1	KED
	Zn	66	82.008	ug/L	2.673	3	55	48600	4	KED
	Zn	67	77.599	ug/L	1.019	1	11	7548	1	KED
	As	75	25.440	ug/L	0.200	0	3	7699	1	KED
	Se	78	74.951	ug/L	0.428	0	18	2346	0	KED
	Y	89		ug/L			740265	814285	2	Standard
	Kr	83		ug/L			60	62	13	Standard
>	In-1	115		ug/L			46344	40916	0	KED
	Cd	111	25.598	ug/L	0.523	2	7	8917	2	KED
	Cd	114	25.981	ug/L	0.860	3	10	23491	3	KED
>	In	115		ug/L			2585266	2386176	1	Standard
	Ag	107	31.501	ug/L	1.247	3	107	633459	2	Standard
	Ba	135	26.894	ug/L	0.175	0	102	225968	1	Standard
	Ba	137	26.665	ug/L	0.247	0	182	388545	0	Standard
>	Tb	159		ug/L			2722979	2770986	1	Standard
	Pb	208	30.469	ug/L	0.810	2	692	3333065	0	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: BJC0839-MSD2
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 04:33:14
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	44336	1	Standard
	Cl	37		ug/L			6531923	5641891	0	Standard
>	Sc	45		ug/L			2130484	1966821	1	Standard
	Mg	24	10733.598	ug/L	292.146	2	13273	260398083	2	Standard
	Cr	52	24.512	ug/L	0.439	1	22458	532220	0	Standard
	Cr	53	24.634	ug/L	0.406	1	390	61119	1	Standard
	Fe	54	169.612	ug/L	3.025	1	111906	599404	2	Standard
	Fe	57	157.635	ug/L	5.312	3	35584	241943	2	Standard
	Mn	55	42.203	ug/L	0.395	0	842	1317184	1	Standard
>	Ge	72		ug/L			105584	90363	1	KED
	Ni	60	30.671	ug/L	0.973	3	13	48142	2	KED
	Ni	62	30.972	ug/L	0.868	2	4	7985	2	KED
	Cu	63	30.230	ug/L	0.676	2	146	136586	0	KED
	Cu	65	30.788	ug/L	0.819	2	72	68518	2	KED
	Zn	66	84.382	ug/L	0.745	0	55	49014	0	KED
	Zn	67	80.653	ug/L	1.189	1	11	7689	0	KED
	As	75	25.889	ug/L	0.586	2	3	7679	0	KED
	Se	78	75.968	ug/L	2.287	3	18	2330	1	KED
	Y	89		ug/L			740265	811020	0	Standard
	Kr	83		ug/L			60	64	17	Standard
>	In-1	115		ug/L			46344	40968	1	KED
	Cd	111	25.271	ug/L	1.425	5	7	8810	4	KED
	Cd	114	25.164	ug/L	1.025	4	10	22772	2	KED
>	In	115		ug/L			2585266	2435346	0	Standard
	Ag	107	31.316	ug/L	0.718	2	107	642866	1	Standard
	Ba	135	26.301	ug/L	0.593	2	102	225542	2	Standard
	Ba	137	26.360	ug/L	0.235	0	182	392030	0	Standard
>	Tb	159		ug/L			2722979	2765426	1	Standard
	Pb	208	30.796	ug/L	0.748	2	692	3362379	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IBLE
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 04:41:03
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			28398	24158	1	Standard
	Cl	**37**		ug/L			6531923	5487323	2	Standard
⌈>	**Sc**	**45**		ug/L			2130484	1932779	0	Standard
|	**Mg**	**24**	**0.018**	ug/L	0.031	172	13273	12465	5	Standard
|	**Cr**	**52**	**-0.062**	ug/L	0.010	16	22458	19099	1	Standard
|	**Cr**	**53**	**-0.005**	ug/L	0.006	102	390	340	3	Standard
|	**Fe**	**54**	**-6.010**	ug/L	0.062	1	111906	84249	0	Standard
|	**Fe**	**57**	**2.368**	ug/L	0.891	37	35584	35370	3	Standard
⌊	**Mn**	**55**	**-0.005**	ug/L	0.001	27	842	621	5	Standard
⌈>	**Ge**	**72**		ug/L			105584	93227	2	KED
|	**Ni**	**60**	**-0.001**	ug/L	0.002	364	13	11	28	KED
|	**Ni**	**62**	**0.002**	ug/L	0.010	570	4	4	65	KED
|	**Cu**	**63**	**0.016**	ug/L	0.005	30	146	202	12	KED
|	**Cu**	**65**	**0.017**	ug/L	0.002	10	72	102	3	KED
|	**Zn**	**66**	**0.047**	ug/L	0.004	7	55	77	3	KED
|	**Zn**	**67**	**0.035**	ug/L	0.089	258	11	13	62	KED
|	**As**	**75**	**0.001**	ug/L	0.006	488	3	3	55	KED
⌊	**Se**	**78**	**0.022**	ug/L	0.125	572	18	17	20	KED
	Y	**89**		ug/L			740265	797034	2	Standard
	Kr	**83**		ug/L			60	41	9	Standard
⌈>	**In-1**	**115**		ug/L			46344	41828	1	KED
|	**Cd**	**111**	**-0.011**	ug/L	0.004	36	7	2	57	KED
⌊	**Cd**	**114**	**-0.008**	ug/L	0.001	15	10	2	45	KED
⌈>	**In**	**115**		ug/L			2585266	2545683	1	Standard
|	**Ag**	**107**	**0.001**	ug/L	0.001	109	107	118	12	Standard
|	**Ba**	**135**	**0.004**	ug/L	0.002	59	102	134	13	Standard
⌊	**Ba**	**137**	**0.006**	ug/L	0.000	3	182	271	2	Standard
⌈>	**Tb**	**159**		ug/L			2722979	2809379	0	Standard
⌊	**Pb**	**208**	**0.000**	ug/L	0.000	88	692	751	4	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCVE
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 04:46:54
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	13		ug/L			28398	23920	5	Standard
	Cl	37		ug/L			6531923	5875111	1	Standard
>	Sc	45		ug/L			2130484	1960675	1	Standard
	Mg	24	4788.127	ug/L	40.631	0	13273	115826877	2	Standard
	Cr	52	48.647	ug/L	0.834	1	22458	1032565	0	Standard
	Cr	53	48.537	ug/L	1.201	2	390	119686	1	Standard
	Fe	54	4077.182	ug/L	97.016	2	111906	11986976	1	Standard
	Fe	57	4803.041	ug/L	37.783	0	35584	6385093	1	Standard
	Mn	55	50.296	ug/L	1.187	2	842	1564328	0	Standard
>	Ge	72		ug/L			105584	93602	0	KED
	Ni	60	52.580	ug/L	0.631	1	13	85503	1	KED
	Ni	62	52.655	ug/L	1.581	3	4	14062	2	KED
	Cu	63	52.978	ug/L	1.317	2	146	247898	2	KED
	Cu	65	52.912	ug/L	0.227	0	72	121952	0	KED
	Zn	66	51.707	ug/L	0.313	0	55	31134	0	KED
	Zn	67	50.645	ug/L	1.760	3	11	5006	3	KED
	As	75	49.692	ug/L	0.811	1	3	15270	1	KED
	Se	78	47.994	ug/L	0.473	0	18	1531	1	KED
	Y	89		ug/L			740265	801293	1	Standard
	Kr	83		ug/L			60	56	20	Standard
>	In-1	115		ug/L			46344	40937	2	KED
	Cd	111	53.098	ug/L	0.549	1	7	18496	1	KED
	Cd	114	53.634	ug/L	0.954	1	10	48495	0	KED
>	In	115		ug/L			2585266	2515721	0	Standard
	Ag	107	63.329	ug/L	0.997	1	107	1342910	1	Standard
	Ba	135	44.853	ug/L	0.314	0	102	397269	0	Standard
	Ba	137	45.682	ug/L	0.571	1	182	701706	1	Standard
>	Tb	159		ug/L			2722979	2784125	0	Standard
	Pb	208	59.736	ug/L	0.970	1	692	6566590	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCBE
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 04:54:04
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			28398	23873	0	Standard
	Cl	**37**		ug/L			6531923	5579080	1	Standard
>	**Sc**	**45**		ug/L			2130484	1939000	1	Standard
	Mg	**24**	**-0.103**	ug/L	0.018	17	13273	9624	3	Standard
	Cr	**52**	**-0.099**	ug/L	0.012	12	22458	18398	0	Standard
	Cr	**53**	**-0.020**	ug/L	0.010	49	390	306	8	Standard
	Fe	**54**	**-6.577**	ug/L	0.524	7	111906	82874	1	Standard
	Fe	**57**	**2.779**	ug/L	0.801	28	35584	36008	1	Standard
	Mn	**55**	**-0.008**	ug/L	0.002	23	842	521	11	Standard
>	**Ge**	**72**		ug/L			105584	91555	1	KED
	Ni	**60**	**-0.002**	ug/L	0.003	207	13	9	52	KED
	Ni	**62**	**0.015**	ug/L	0.020	136	4	7	66	KED
	Cu	**63**	**0.000**	ug/L	0.002	1017	146	128	8	KED
	Cu	**65**	**0.002**	ug/L	0.000	17	72	66	2	KED
	Zn	**66**	**0.169**	ug/L	0.102	60	55	148	41	KED
	Zn	**67**	**0.165**	ug/L	0.146	88	11	26	55	KED
	As	**75**	**0.011**	ug/L	0.006	57	3	6	27	KED
	Se	**78**	**-0.008**	ug/L	0.174	2299	18	16	34	KED
	Y	**89**		ug/L			740265	773754	1	Standard
	Kr	**83**		ug/L			60	50	23	Standard
>	**In-1**	**115**		ug/L			46344	40857	1	KED
	Cd	**111**	**-0.011**	ug/L	0.002	15	7	2	21	KED
	Cd	**114**	**-0.006**	ug/L	0.004	61	10	3	90	KED
>	**In**	**115**		ug/L			2585266	2482260	0	Standard
	Ag	**107**	**0.004**	ug/L	0.002	41	107	181	17	Standard
	Ba	**135**	**0.001**	ug/L	0.001	69	102	109	7	Standard
	Ba	**137**	**-0.001**	ug/L	0.001	112	182	161	8	Standard
>	**Tb**	**159**		ug/L			2722979	2715229	0	Standard
	Pb	**208**	**-0.000**	ug/L	0.000	289	692	677	4	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: RINSE
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 04:58:31
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			28398	28752	3	Standard
	Cl	**37**		ug/L			6531923	5780102	0	Standard
>	**Sc**	**45**		ug/L			2130484	2163510	0	Standard
	Mg	**24**	**-0.419**	ug/L	0.002	0	13273	2297	2	Standard
	Cr	**52**	**-0.067**	ug/L	0.018	26	22458	21261	1	Standard
	Cr	**53**	**-0.020**	ug/L	0.004	19	390	340	3	Standard
	Fe	**54**	**61.145**	ug/L	2.912	4	111906	310314	2	Standard
	Fe	**57**	**4.221**	ug/L	0.230	5	35584	42296	1	Standard
	Mn	**55**	**0.012**	ug/L	0.001	6	842	1267	2	Standard
>	**Ge**	**72**		ug/L			105584	97840	1	KED
	Ni	**60**	**0.013**	ug/L	0.008	64	13	34	40	KED
	Ni	**62**	**0.029**	ug/L	0.041	143	4	12	95	KED
	Cu	**63**	**0.014**	ug/L	0.014	98	146	203	32	KED
	Cu	**65**	**0.012**	ug/L	0.016	133	72	95	40	KED
	Zn	**66**	**0.020**	ug/L	0.022	113	55	64	21	KED
	Zn	**67**	**-0.023**	ug/L	0.020	89	11	8	26	KED
	As	**75**	**0.014**	ug/L	0.010	71	3	7	40	KED
	Se	**78**	**0.008**	ug/L	0.104	1233	18	17	19	KED
	Y	**89**		ug/L			740265	906608	1	Standard
	Kr	**83**		ug/L			60	40	14	Standard
>	**In-1**	**115**		ug/L			46344	45245	1	KED
	Cd	**111**	**-0.010**	ug/L	0.005	51	7	3	62	KED
	Cd	**114**	**-0.009**	ug/L	0.001	12	10	1	94	KED
>	**In**	**115**		ug/L			2585266	2831705	1	Standard
	Ag	**107**	**0.001**	ug/L	0.001	67	107	139	10	Standard
	Ba	**135**	**0.000**	ug/L	0.001	368	102	113	5	Standard
	Ba	**137**	**-0.002**	ug/L	0.000	26	182	168	3	Standard
>	**Tb**	**159**		ug/L			2722979	3015966	0	Standard
	Pb	**208**	**0.003**	ug/L	0.000	17	692	1074	4	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: RINSE
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 05:02:57
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			28398	29058	5	Standard
	Cl	**37**		ug/L			6531923	5833088	3	Standard
⌈>	**Sc**	**45**		ug/L			2130484	2160045	1	Standard
|	**Mg**	**24**	**-0.420**	ug/L	0.002	0	13273	2266	1	Standard
|	**Cr**	**52**	**-0.042**	ug/L	0.014	33	22458	21807	0	Standard
|	**Cr**	**53**	**-0.031**	ug/L	0.008	25	390	311	5	Standard
|	**Fe**	**54**	**63.250**	ug/L	2.046	3	111906	316543	0	Standard
|	**Fe**	**57**	**6.110**	ug/L	0.105	1	35584	44979	1	Standard
⌊	**Mn**	**55**	**0.013**	ug/L	0.000	3	842	1295	2	Standard
⌈>	**Ge**	**72**		ug/L			105584	99981	1	KED
|	**Ni**	**60**	**0.003**	ug/L	0.003	100	13	17	26	KED
|	**Ni**	**62**	**-0.001**	ug/L	0.000	13	4	3	0	KED
|	**Cu**	**63**	**0.003**	ug/L	0.002	60	146	154	4	KED
|	**Cu**	**65**	**0.002**	ug/L	0.004	213	72	73	14	KED
|	**Zn**	**66**	**0.011**	ug/L	0.018	154	55	60	20	KED
|	**Zn**	**67**	**-0.018**	ug/L	0.028	150	11	8	32	KED
|	**As**	**75**	**0.003**	ug/L	0.005	142	3	4	37	KED
⌊	**Se**	**78**	**-0.091**	ug/L	0.090	98	18	14	19	KED
	Y	**89**		ug/L			740265	934071	1	Standard
	Kr	**83**		ug/L			60	53	12	Standard
⌈>	**In-1**	**115**		ug/L			46344	46063	2	KED
|	**Cd**	**111**	**-0.012**	ug/L	0.002	12	7	2	21	KED
⌊	**Cd**	**114**	**-0.008**	ug/L	0.002	21	10	1	107	KED
⌈>	**In**	**115**		ug/L			2585266	2833770	0	Standard
|	**Ag**	**107**	**-0.001**	ug/L	0.000	49	107	104	6	Standard
|	**Ba**	**135**	**0.000**	ug/L	0.003	1116	102	114	21	Standard
⌊	**Ba**	**137**	**0.000**	ug/L	0.001	222	182	206	7	Standard
⌈>	**Tb**	**159**		ug/L			2722979	3133304	1	Standard
⌊	**Pb**	**208**	**0.001**	ug/L	0.000	52	692	890	4	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: RINSE
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 05:07:22
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			28398	29148	1	Standard
	Cl	**37**		ug/L			6531923	5856613	2	Standard
⌈>	**Sc**	**45**		ug/L			2130484	2191174	2	Standard
|	**Mg**	**24**	**-0.422**	ug/L	0.005	1	13273	2257	5	Standard
|	**Cr**	**52**	**-0.088**	ug/L	0.029	32	22458	21053	1	Standard
|	**Cr**	**53**	**-0.032**	ug/L	0.005	14	390	314	3	Standard
|	**Fe**	**54**	**61.916**	ug/L	1.505	2	111906	316755	1	Standard
|	**Fe**	**57**	**5.731**	ug/L	1.469	25	35584	45032	2	Standard
⌊	**Mn**	**55**	**0.013**	ug/L	0.001	9	842	1304	1	Standard
⌈>	**Ge**	**72**		ug/L			105584	99708	0	KED
|	**Ni**	**60**	**0.008**	ug/L	0.005	55	13	27	28	KED
|	**Ni**	**62**	**0.012**	ug/L	0.000	1	4	7	0	KED
|	**Cu**	**63**	**0.002**	ug/L	0.002	93	146	149	6	KED
|	**Cu**	**65**	**-0.003**	ug/L	0.009	318	72	61	36	KED
|	**Zn**	**66**	**-0.011**	ug/L	0.010	93	55	45	15	KED
|	**Zn**	**67**	**-0.012**	ug/L	0.036	300	11	9	40	KED
|	**As**	**75**	**0.005**	ug/L	0.003	54	3	5	19	KED
⌊	**Se**	**78**	**-0.087**	ug/L	0.017	19	18	14	3	KED
	Y	**89**		ug/L			740265	926154	1	Standard
	Kr	**83**		ug/L			60	62	18	Standard
⌈>	**In-1**	**115**		ug/L			46344	47173	2	KED
|	**Cd**	**111**	**-0.011**	ug/L	0.002	19	7	2	33	KED
⌊	**Cd**	**114**	**-0.009**	ug/L	0.000	0	10	1	4	KED
⌈>	**In**	**115**		ug/L			2585266	2789017	1	Standard
|	**Ag**	**107**	**-0.000**	ug/L	0.001	361	107	111	14	Standard
|	**Ba**	**135**	**0.001**	ug/L	0.001	128	102	118	8	Standard
⌊	**Ba**	**137**	**0.000**	ug/L	0.000	155	182	200	4	Standard
⌈>	**Tb**	**159**		ug/L			2722979	3070558	2	Standard
⌊	**Pb**	**208**	**0.000**	ug/L	0.001	778	692	792	10	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: DI
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 05:11:48
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			28398	23885	5	Standard
	Cl	**37**		ug/L			6531923	5217080	1	Standard
⌈>	**Sc**	**45**		ug/L			2130484	1844240	5	Standard
|	**Mg**	**24**	**-0.283**	ug/L	0.086	30	13273	5023	37	Standard
|	**Cr**	**52**	**-0.092**	ug/L	0.033	35	22458	17623	1	Standard
|	**Cr**	**53**	**-0.029**	ug/L	0.004	15	390	270	4	Standard
|	**Fe**	**54**	**-22.899**	ug/L	0.681	2	111906	34023	2	Standard
|	**Fe**	**57**	**5.738**	ug/L	1.477	25	35584	37893	3	Standard
⌊	**Mn**	**55**	**-0.013**	ug/L	0.002	14	842	336	11	Standard
⌈>	**Ge**	**72**		ug/L			105584	94769	1	KED
|	**Ni**	**60**	**-0.001**	ug/L	0.001	63	13	10	10	KED
|	**Ni**	**62**	**-0.008**	ug/L	0.012	158	4	1	173	KED
|	**Cu**	**63**	**-0.002**	ug/L	0.002	127	146	123	8	KED
|	**Cu**	**65**	**-0.003**	ug/L	0.005	167	72	57	21	KED
|	**Zn**	**66**	**-0.012**	ug/L	0.012	101	55	43	17	KED
|	**Zn**	**67**	**-0.007**	ug/L	0.039	539	11	9	40	KED
|	**As**	**75**	**-0.000**	ug/L	0.001	237	3	3	9	KED
⌊	**Se**	**78**	**0.001**	ug/L	0.124	16126	18	16	22	KED
	Y	**89**		ug/L			740265	711400	3	Standard
	Kr	**83**		ug/L			60	57	26	Standard
⌈>	**In-1**	**115**		ug/L			46344	40655	1	KED
|	**Cd**	**111**	**-0.013**	ug/L	0.007	57	7	1	132	KED
⌊	**Cd**	**114**	**-0.007**	ug/L	0.002	34	10	3	71	KED
⌈>	**In**	**115**		ug/L			2585266	2384914	4	Standard
|	**Ag**	**107**	**-0.004**	ug/L	0.000	12	107	26	29	Standard
|	**Ba**	**135**	**-0.005**	ug/L	0.001	28	102	55	15	Standard
⌊	**Ba**	**137**	**-0.004**	ug/L	0.001	21	182	109	10	Standard
⌈>	**Tb**	**159**		ug/L			2722979	2611108	4	Standard
⌊	**Pb**	**208**	**-0.004**	ug/L	0.000	4	692	257	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: DI
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 05:16:14
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			28398	24357	1	Standard
	Cl	**37**		ug/L			6531923	5280514	1	Standard
⎡>	**Sc**	**45**		ug/L			2130484	1818922	2	Standard
⎢	**Mg**	**24**	**-0.249**	ug/L	0.005	1	13273	5740	1	Standard
⎢	**Cr**	**52**	**-0.072**	ug/L	0.017	23	22458	17796	4	Standard
⎢	**Cr**	**53**	**-0.026**	ug/L	0.008	29	390	273	4	Standard
⎢	**Fe**	**54**	**-23.179**	ug/L	0.189	0	111906	32845	0	Standard
⎢	**Fe**	**57**	**6.646**	ug/L	0.271	4	35584	38530	1	Standard
⎣	**Mn**	**55**	**-0.014**	ug/L	0.000	1	842	323	2	Standard
⎡>	**Ge**	**72**		ug/L			105584	90639	1	KED
⎢	**Ni**	**60**	**-0.004**	ug/L	0.001	20	13	6	17	KED
⎢	**Ni**	**62**	**0.005**	ug/L	0.011	229	4	5	57	KED
⎢	**Cu**	**63**	**-0.003**	ug/L	0.002	77	146	114	8	KED
⎢	**Cu**	**65**	**-0.002**	ug/L	0.003	201	72	58	13	KED
⎢	**Zn**	**66**	**-0.026**	ug/L	0.004	14	55	33	6	KED
⎢	**Zn**	**67**	**-0.017**	ug/L	0.069	412	11	8	81	KED
⎢	**As**	**75**	**0.005**	ug/L	0.005	108	3	4	34	KED
⎣	**Se**	**78**	**-0.004**	ug/L	0.026	695	18	16	5	KED
	Y	**89**		ug/L			740265	717871	3	Standard
	Kr	**83**		ug/L			60	62	18	Standard
⎡>	**In-1**	**115**		ug/L			46344	39009	1	KED
⎢	**Cd**	**111**	**-0.009**	ug/L	0.006	68	7	3	62	KED
⎣	**Cd**	**114**	**-0.007**	ug/L	0.003	45	10	2	116	KED
⎡>	**In**	**115**		ug/L			2585266	2269696	2	Standard
⎢	**Ag**	**107**	**-0.004**	ug/L	0.000	8	107	23	24	Standard
⎢	**Ba**	**135**	**-0.003**	ug/L	0.002	59	102	67	17	Standard
⎣	**Ba**	**137**	**-0.003**	ug/L	0.001	30	182	115	9	Standard
⎡>	**Tb**	**159**		ug/L			2722979	2551787	2	Standard
⎣	**Pb**	**208**	**-0.004**	ug/L	0.000	5	692	253	6	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: DI
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 05:20:39
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033021a.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			28398	24021	0	Standard
	Cl	**37**		ug/L			6531923	5332958	2	Standard
>	**Sc**	**45**		ug/L			2130484	1873397	2	Standard
	Mg	**24**	**-0.274**	ug/L	0.014	5	13273	5339	8	Standard
	Cr	**52**	**-0.080**	ug/L	0.020	24	22458	18154	0	Standard
	Cr	**53**	**-0.029**	ug/L	0.002	6	390	275	2	Standard
	Fe	**54**	**-23.525**	ug/L	0.111	0	111906	32866	1	Standard
	Fe	**57**	**6.618**	ug/L	0.377	5	35584	39649	1	Standard
	Mn	**55**	**-0.015**	ug/L	0.001	6	842	305	7	Standard
>	**Ge**	**72**		ug/L			105584	91538	1	KED
	Ni	**60**	**-0.001**	ug/L	0.003	319	13	10	36	KED
	Ni	**62**	**-0.005**	ug/L	0.011	215	4	2	114	KED
	Cu	**63**	**0.001**	ug/L	0.004	398	146	132	14	KED
	Cu	**65**	**-0.001**	ug/L	0.005	931	72	61	17	KED
	Zn	**66**	**-0.013**	ug/L	0.010	77	55	40	15	KED
	Zn	**67**	**-0.044**	ug/L	0.019	44	11	5	33	KED
	As	**75**	**-0.003**	ug/L	0.001	31	3	2	12	KED
	Se	**78**	**-0.035**	ug/L	0.131	370	18	15	25	KED
	Y	**89**		ug/L			740265	752291	3	Standard
	Kr	**83**		ug/L			60	45	29	Standard
>	**In-1**	**115**		ug/L			46344	40633	1	KED
	Cd	**111**	**-0.015**	ug/L	0.003	21	7	1	86	KED
	Cd	**114**	**-0.007**	ug/L	0.002	33	10	2	86	KED
>	**In**	**115**		ug/L			2585266	2413046	2	Standard
	Ag	**107**	**-0.003**	ug/L	0.000	13	107	30	28	Standard
	Ba	**135**	**-0.004**	ug/L	0.002	41	102	62	24	Standard
	Ba	**137**	**-0.003**	ug/L	0.001	42	182	126	17	Standard
>	**Tb**	**159**		ug/L			2722979	2672239	3	Standard
	Pb	**208**	**-0.004**	ug/L	0.000	5	692	239	6	Standard

INITIAL CALIBRATION DATA

EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Calibration: EC00100
Instrument: ICPMS1
Calibration Date: 03/31/2021 12:47

Compound	Level 01		Level 02		Level 03		Level 04		Level 05		Level 06	
		RF		RF		RF		RF		RF		RF
Arsenic-75a, Dissolved	0	0	0.2	490	10	465.7	20	461.9	50	451.68	100	441.66

INITIAL CALIBRATION DATA

EPA 200.8 UCT-KED

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Calibration:	EC00100	Instrument:	ICPMS1
Calibration Date:	03/31/2021 12:47		

COMPOUND	Mean RF	RF RSD	Linear COD	Quad COD	COD Limit	Q
Arsenic-75a, Dissolved	385.1567	49.2	0.9998		0.998	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

ICP/MS - 01 SAMPLE RUN LOG

PE Nexlon ICP-MS Serial No. 85DN5032601

Analysis Date: 3/31/21 **Analyst:** MB **Sequence:** SJCΦ516 **Cal:** ECΦΦ1ΦΦ

All corrections made by analyst unless otherwise noted.

Edit Label	Delete Data	ARI Sample ID	Prep Code	Dilution	Comments
		SEQ-CAL1	J3445		
		-CAL2	J3222		
		-CAL3	J3287		
		-CAL4	J3288		
		-CAL5	J3446		
		-CAL6	J3289		
		-IBL1	—		
		-ICV1	J1792		
		-ICB1	J3445		
		-CCV1	J3446		
		-CCB1	J3445		
		-CRL1	J3222		
		-IFA1	J2773		Cr, Fe ↑
		-IFB1	J329Φ		↓
		-HCV1	J2774		
		-HCV2	J2867		
		-IBL2+3	—		
		-CCV2			
		-CCB2			
		21CΦ227-Φ2	REN	10	Cr, Fe, Mg only
		-Φ1	↓	↓	As, Mg only
		-Φ3			↓
		-Φ5			
		-Φ7	↓	↓	↓

Analytical Resources, Incorporated
Analytical Chemists and Consultants

ICP/MS - 01 SAMPLE RUN LOG

PE Nexion ICP-MS Serial No. 85DN5032601

Analysis Date: 3/31/21 **Analyst:** MB **Sequence:** ——— **Cal:** ———

All corrections made by analyst unless otherwise noted.

Edit Label	Delete Data	ARI Sample ID	Prep Code	Dilution	Comments
		21Cφ227-φ9	REN	10	As, Mg only
		↓ -φ6	↓	↓	Mg only ↓
		↓ -1φ			
		21Cφ25φ-φ9		2	As only
		SEQ-IBL4			
		↓ -CCV3			
		↓ -CCB3			
		Rinse			
				MB 3/31/21	

5078F
Nexion ICP-MS-01 Sample Run Log

Page 2 of 2

Version 001
2/6/19

Performance Check Report

Sample ID: STD Performance Check
Sample Date/Time: Wednesday, March 31, 2021 11:43:01
Sample Description:
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\STD Performance Check.mth
Dataset File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\DataSet\Default\STD Performance Check.10584
MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Conditions File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Dual Detector Mode: Pulse
Acq. Dead Time (ns): 35
Current Dead Time (ns): 35
Torch Z position (mm): 0.00

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD	Mode
	Be	9.0	5557.7	5557.681	59.863	1.1	Standard
	In	114.9	101316.0	-2483950.271	1136.355	0.0	Standard
	U	238.1	129227.6	129227.632	3319.729	2.6	Standard
⎡	CeO	155.9	2998.2	0.019	0.000	1.7	Standard
| >	Ce	139.9	161099.1	161099.072	1702.416	1.1	Standard
⎣	Ce++	70.0	1133.0	0.007	0.000	2.4	Standard
	Bkgd	220.0	2.1	2.067	0.494	23.9	Standard

Current Conditions File Data

Current Value	Description
0.91	Nebulizer Gas Flow STD/KED [NEB]
1.25	Auxiliary Gas Flow
17.50	Plasma Gas Flow
-10.75	Deflector Voltage
1600.00	ICP RF Power
-1787.00	Analog Stage Voltage
1550.00	Pulse Stage Voltage
0.00	Quadrupole Rod Offset STD [QRO]
-17.00	Cell Rod Offset STD [CRO]
14.00	Discriminator Threshold
-2.00	Cell Entrance/Exit Voltage STD
0.00	RPa
0.45	RPq
0.91	DRC Mode NEB
-7.50	DRC Mode QRO
-2.00	DRC Mode CRO
-5.00	DRC Mode Cell Entrance/Exit Voltage
1.00	Cell Gas A
0.00	Cell Gas B
200.00	Axial Field Voltage
-11.00	KED Mode CRO
-12.00	KED Mode QRO
-11.00	KED Mode Cell Entrance Voltage
-33.00	KED Mode Cell Exit Voltage
0.00	KED Cell Gas A
3.00	KED Cell Gas B
0.00	KED RPa
0.25	KED RPq
125.00	KED Mode Axial Field Voltage

SmartTune Wizard - Summary

Optimization Summary

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\ARISmartTuneDailyUCT.swz

Start Time: 3/31/2021 11:42:55 AM
End Time: 3/31/2021 11:50:34 AM

STD Performance Check - [Passed] Optimum value(s): N/A
Obtained Intensity (Be 9): 5557.68
Obtained Intensity (In 115): 101316.04
Obtained Intensity (U 238): 129227.63
Obtained Intensity (Bkgd 220): 2.07
Obtained Formula (Ce++ 70 / Ce 140): 0.007 (=1132.98 / 161099.07)
Obtained Formula (CeO 156 / Ce 140): 0.019 (=2998.25 / 161099.07)
Obtained RSD (Be 9): 0.0108
Obtained RSD (In 115): 0.0005
Obtained RSD (U 238): 0.0257

Torch Alignment - [Passed]

Vertical	Horizontal	Intensity
2.65 mm	0.08 mm	127164.47

Nebulizer Gas Flow STD/KED [NEB] - [Passed] Optimum value(s): 0.91
Obtained Intensity (In 115): 132205.93
Obtained Formula (CeO 156 / Ce 140): 0.0191 (=3768.50 / 196819.55)

Mass Calibration and Resolution - [Passed] Optimum value(s): N/A
Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.713)
Target/Obtained mass (23.985/24.025), Target/Obtained resolution (0.7/0.715)
Target/Obtained mass (114.904/114.875), Target/Obtained resolution (0.7/0.713)
Target/Obtained mass (238.05/238.025), Target/Obtained resolution (0.7/0.707)

QID STD/DRC - Optimum value(s): Correlation Coefficient = 0.974; Intercept = -15.46

KED Mode QID - Optimum value(s): Correlation Coefficient = 0.987; Intercept = -13.76

SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\ARISmartTuneDailyUCT.swz

Optimization Status

Start Time: 3/31/2021 11:42:55 AM

STD Performance Check
	Optimization Settings:
		Method: STD Performance Check.mth.
		Intensity Criterion: Be 9 > 2000
		Intensity Criterion: In 115 > 40000
		Intensity Criterion: U 238 > 30000
		Intensity Criterion: Bkgd 220 <= 5
		Formula Criterion: Ce++ 70 / Ce 140 <= 0.03
		Formula Criterion: CeO 156 / Ce 140 <= 0.025
		RSD Criterion: Be 9.0122 < 5
		RSD Criterion: In 114.904 < 5
		RSD Criterion: U 238.05 < 5

	Optimization Results:
	Initial Try
		Obtained Intensity (Be 9): 5557.68
		Obtained Intensity (In 115): 101316.04
		Obtained Intensity (U 238): 129227.63
		Obtained Intensity (Bkgd 220): 2.07
		Obtained Formula (Ce++ 70 / Ce 140): 0.007 (=1132.98 / 161099.07)
		Obtained Formula (CeO 156 / Ce 140): 0.019 (=2998.25 / 161099.07)
		Obtained RSD (Be 9): 0.0108
		Obtained RSD (In 115): 0.0005
		Obtained RSD (U 238): 0.0257

[Passed] Optimum value(s): N/A

Torch Alignment
	Optimization Settings:
		Method: Torch Alignment.mth.
		Intensity Criterion: In 115 Maximum

	Optimization Results:
		Vertical	Horizontal	Intensity
[Passed]	2.65 mm	0.08 mm	127164.47

Nebulizer Gas Flow STD/KED [NEB]
	Optimization Settings:
		Method: Optimize.mth.
			Initial Try - Start/End/Step: 0.9/0.95/0.01.
		Intensity Criterion: In 115 Maximum
		Formula Criterion: CeO 156 / Ce 140 <= 0.02

	Optimization Results:
	Initial Try

		Obtained Intensity (In 115): 132205.93
		Obtained Formula (CeO 156 / Ce 140): 0.0191 (=3768.50 / 196819.55)
[Passed] Optimum value(s): 0.91

Mass Calibration and Resolution
Optimization Settings:
Method: Tuning.mth.
MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Iterations: 6
Target accuracy (+/- amu): 0.05 for Mass Cal. and 0.03 for Resolution
Peak height (%) for Res. Opt.: 10

Optimization Results:
Initial Try
Target/Obtained mass (7.016/7.025), Target/Obtained resolution (0.7/0.713)
Target/Obtained mass (23.985/24.025), Target/Obtained resolution (0.7/0.715)
Target/Obtained mass (114.904/114.875), Target/Obtained resolution (0.7/0.713)
Target/Obtained mass (238.05/238.025), Target/Obtained resolution (0.7/0.707)
[Passed] Optimum value(s): N/A

QID STD/DRC
Optimization Settings:
Method: QID Calibration.mth.
Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:
Initial Try

Optimum value(s): Correlation Coefficient = 0.974; Intercept = -15.46

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-15	27398.2
Mg	24	41	-14.5	54226.7
In	115	41	-11	140059
Ce	140	41	-11.5	208089
Pb	208	41	-10.5	99936.3
U	238	41	-11	167027

KED Mode QID
Optimization Settings:
Method: QID Calibration.mth.
Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:
Initial Try

Optimum value(s): Correlation Coefficient = 0.987; Intercept = -13.76

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-14	20963.4
Mg	24	41	-13.5	74151.9
In	115	41	-11.5	147348
Ce	140	41	-10.5	139696
Pb	208	41	-10	63203.5
U	238	41	-5	111268

End Time: 3/31/2021 11:50:34 AM

Performance Check Report

Sample ID: STD Performance Check
Sample Date/Time: Wednesday, March 31, 2021 11:53:18
Sample Description:
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\STD Performance Check.mth
Dataset File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\DataSet\Default\STD Performance Check.10592
MassCal File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Conditions File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Dual Detector Mode: Pulse
Acq. Dead Time (ns): 35
Current Dead Time (ns): 35
Torch Z position (mm): 0.00

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD	Mode
	Be	9.0	7242.7	7242.702	104.024	1.4	Standard
	In	114.9	130508.1	130508.088	1540.688	1.2	Standard
	U	238.1	162631.6	162631.559	1731.789	1.1	Standard
⌈	CeO	155.9	3827.0	0.019	0.000	2.0	Standard
| >	Ce	139.9	196430.0	196430.041	1505.748	0.8	Standard
⌊	Ce++	70.0	1479.3	0.008	0.000	1.9	Standard
	Bkgd	220.0	2.1	2.133	0.492	23.0	Standard

Current Conditions File Data

Current Value	Description
0.91	Nebulizer Gas Flow STD/KED [NEB]
1.25	Auxiliary Gas Flow
17.50	Plasma Gas Flow
-10.75	Deflector Voltage
1600.00	ICP RF Power
-1787.00	Analog Stage Voltage
1550.00	Pulse Stage Voltage
0.00	Quadrupole Rod Offset STD [QRO]
-17.00	Cell Rod Offset STD [CRO]
14.00	Discriminator Threshold
-2.00	Cell Entrance/Exit Voltage STD
0.00	RPa
0.45	RPq
0.91	DRC Mode NEB
-7.50	DRC Mode QRO
-2.00	DRC Mode CRO
-5.00	DRC Mode Cell Entrance/Exit Voltage
1.00	Cell Gas A
0.00	Cell Gas B
200.00	Axial Field Voltage
-11.00	KED Mode CRO
-12.00	KED Mode QRO
-11.00	KED Mode Cell Entrance Voltage
-33.00	KED Mode Cell Exit Voltage
0.00	KED Cell Gas A
3.00	KED Cell Gas B
0.00	KED RPa
0.25	KED RPq
125.00	KED Mode Axial Field Voltage

SmartTune Wizard - Summary

Optimization Summary

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\ARISmartTuneDailyUCT.swz

Start Time: 3/31/2021 11:50:42 AM
End Time: 3/31/2021 11:55:22 AM

QID STD/DRC - Optimum value(s): Correlation Coefficient = 0.996; Intercept = -13.94

KED Mode QID - Optimum value(s): Correlation Coefficient = 1.000; Intercept = -13.39

STD Performance Check - [Passed] Optimum value(s): N/A
Obtained Intensity (Be 9): 7242.70
Obtained Intensity (In 115): 130508.09
Obtained Intensity (U 238): 162631.56
Obtained Intensity (Bkgd 220): 2.13
Obtained Formula (Ce++ 70 / Ce 140): 0.008 (=1479.34 / 196430.04)
Obtained Formula (CeO 156 / Ce 140): 0.019 (=3826.98 / 196430.04)
Obtained RSD (Be 9): 0.0144
Obtained RSD (In 115): 0.0118
Obtained RSD (U 238): 0.0106

SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Wizard\SmartTune\ARISmartTuneDailyUCT.swz

Optimization Status

Start Time: 3/31/2021 11:50:42 AM

QID STD/DRC

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 0.996; Intercept = -13.94

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-14	27494.4
Mg	24	41	-14	52612.7
In	115	41	-11	140261
Ce	140	41	-11	200736
Pb	208	41	-11	97547.9
U	238	41	-10.5	169050

KED Mode QID

Optimization Settings:

Method: QID Calibration.mth.

Initial Try - Start/End/Step: -20/0/0.5.

Optimization Results:

Initial Try

Optimum value(s): Correlation Coefficient = 1.000; Intercept = -13.39

Analyte	Mass	Points	DAC	MaxIntensity
Li	7	41	-13.5	22012.9
Mg	24	41	-13.5	76894.4
In	115	41	-11.5	147461
Ce	140	41	-11	140039
Pb	208	41	-10.5	61688.9
U	238	41	-10	116541

STD Performance Check

Optimization Settings:

Method: STD Performance Check.mth.

Intensity Criterion: Be 9 > 2000

Intensity Criterion: In 115 > 40000

Intensity Criterion: U 238 > 30000

Intensity Criterion: Bkgd 220 <= 5

Formula Criterion: Ce++ 70 / Ce 140 <= 0.03

Formula Criterion: CeO 156 / Ce 140 <= 0.025

RSD Criterion: Be 9.0122 < 5

RSD Criterion: In 114.904 < 5

RSD Criterion: U 238.05 < 5

```
        Optimization Results:
        Initial Try
                Obtained Intensity (Be 9): 7242.70
                Obtained Intensity (In 115): 130508.09
                Obtained Intensity (U 238): 162631.56
                Obtained Intensity (Bkgd 220): 2.13
                Obtained Formula (Ce++ 70 / Ce 140): 0.008 (=1479.34 / 196430.04)
                Obtained Formula (CeO 156 / Ce 140): 0.019 (=3826.98 / 196430.04)
                Obtained RSD (Be 9): 0.0144
                Obtained RSD (In 115): 0.0118
                Obtained RSD (U 238): 0.0106

[Passed]  Optimum value(s): N/A

End Time: 3/31/2021 11:55:22 AM
```

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 12:47:52
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L				36306	1	Standard
	Cl	**37**		ug/L				7573664	1	Standard
⎡>	**Sc**	**45**		ug/L				2519968	0	Standard
⎢	**Mg**	**24**		ug/L				3383	0	Standard
⎢	**Cr**	**52**		ug/L				34721	1	Standard
⎢	**Cr**	**53**		ug/L				614	1	Standard
⎢	**Fe**	**54**		ug/L				171813	0	Standard
⎣	**Fe**	**57**		ug/L				57402	0	Standard
⎡>	**Ge**	**72**		ug/L				138951	0	KED
⎣	**As**	**75**		ug/L				5	28	KED
	Y	**89**		ug/L				1040573	0	Standard
	Kr	**83**		ug/L				76	16	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL2
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 12:51:10
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	42447	0	Standard
	Cl	**37**		ug/L			7573664	7582229	1	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2502103	0	Standard
|	**Mg**	**24**	**20.000**	ug/L	0.124	0	3383	775909	0	Standard
|	**Cr**	**52**	**0.500**	ug/L	0.018	3	34721	53750	1	Standard
|	**Cr**	**53**	**0.500**	ug/L	0.010	2	614	2731	2	Standard
|	**Fe**	**54**	**20.000**	ug/L	0.867	4	171813	265778	1	Standard
⌊	**Fe**	**57**	**20.000**	ug/L	0.918	4	57402	87853	2	Standard
⌈>	**Ge**	**72**		ug/L			138951	147961	0	KED
⌊	**As**	**75**	**0.200**	ug/L	0.020	9	5	98	9	KED
	Y	**89**		ug/L			1040573	1054414	0	Standard
	Kr	**83**		ug/L			76	74	6	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL3
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 12:54:28
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	53495	0	Standard
	Cl	**37**		ug/L			7573664	7628060	1	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2641133	1	Standard
|	**Mg**	**24**	**999.968**	ug/L	17.670	1	3383	37730137	0	Standard
|	**Cr**	**52**	**9.998**	ug/L	0.220	2	34721	416522	1	Standard
|	**Cr**	**53**	**9.999**	ug/L	0.074	0	614	44398	1	Standard
|	**Fe**	**54**	**999.959**	ug/L	23.228	2	171813	4735220	1	Standard
⌊	**Fe**	**57**	**999.992**	ug/L	14.018	1	57402	1658129	0	Standard
⌈>	**Ge**	**72**		ug/L			138951	151142	0	KED
⌊	**As**	**75**	**10.000**	ug/L	0.099	0	5	4657	1	KED
	Y	**89**		ug/L			1040573	1075744	1	Standard
	Kr	**83**		ug/L			76	72	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL4
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 12:58:00
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	50533	1	Standard
	Cl	**37**		ug/L			7573664	7842606	1	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2657800	2	Standard
|	**Mg**	**24**	**1995.467**	ug/L	87.208	4	3383	75041668	1	Standard
|	**Cr**	**52**	**19.860**	ug/L	0.933	4	34721	775402	2	Standard
|	**Cr**	**53**	**19.948**	ug/L	0.974	4	614	87518	2	Standard
|	**Fe**	**54**	**1988.084**	ug/L	56.782	2	171813	9080123	0	Standard
⌊	**Fe**	**57**	**2083.047**	ug/L	53.405	2	57402	4076097	1	Standard
⌈>	**Ge**	**72**		ug/L			138951	150042	0	KED
⌊	**As**	**75**	**19.999**	ug/L	0.333	1	5	9238	0	KED
	Y	**89**		ug/L			1040573	1038998	2	Standard
	Kr	**83**		ug/L			76	79	25	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL5
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 13:01:42
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	38989	0	Standard
	Cl	**37**		ug/L			7573664	8136077	0	Standard
⎡>	**Sc**	**45**		ug/L			2519968	2613185	1	Standard
⎢	**Mg**	**24**	**5015.132**	ug/L	92.966	1	3383	188369887	0	Standard
⎢	**Cr**	**52**	**50.154**	ug/L	1.046	2	34721	1900052	1	Standard
⎢	**Cr**	**53**	**50.068**	ug/L	0.325	0	614	216664	2	Standard
⎢	**Fe**	**54**	**5024.825**	ug/L	84.040	1	171813	22864480	2	Standard
⎣	**Fe**	**57**	**5048.313**	ug/L	91.786	1	57402	10114967	0	Standard
⎡>	**Ge**	**72**		ug/L			138951	145661	1	KED
⎣	**As**	**75**	**50.063**	ug/L	0.480	0	5	22584	0	KED
	Y	**89**		ug/L			1040573	1057250	1	Standard
	Kr	**83**		ug/L			76	81	4	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CAL6
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 13:07:03
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	47077	1	Standard
	Cl	**37**		ug/L			7573664	8181759	3	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2553070	2	Standard
|	**Mg**	**24**	**10056.661**	ug/L	237.910	2	3383	376166304	2	Standard
|	**Cr**	**52**	**99.416**	ug/L	0.480	0	34721	3577057	2	Standard
|	**Cr**	**53**	**100.056**	ug/L	1.102	1	614	423117	0	Standard
|	**Fe**	**54**	**10043.366**	ug/L	72.992	0	171813	45126354	1	Standard
⌊	**Fe**	**57**	**10098.875**	ug/L	112.681	1	57402	20387349	2	Standard
⌈>	**Ge**	**72**		ug/L			138951	134522	4	KED
⌊	**As**	**75**	**101.340**	ug/L	1.781	1	5	44166	2	KED
	Y	**89**		ug/L			1040573	1028398	4	Standard
	Kr	**83**		ug/L			76	100	3	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IBL1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 13:13:05
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File:

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	35712	0	Standard
	Cl	**37**		ug/L			7573664	7928428	1	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2657230	2	Standard
|	**Mg**	**24**	**0.382**	ug/L	0.034	8	3383	18442	5	Standard
|	**Cr**	**52**	**-0.033**	ug/L	0.039	116	34721	35359	2	Standard
|	**Cr**	**53**	**-0.017**	ug/L	0.006	36	614	574	4	Standard
|	**Fe**	**54**	**-2.093**	ug/L	0.558	26	171813	171383	1	Standard
⌊	**Fe**	**57**	**-2.966**	ug/L	0.500	16	57402	54298	0	Standard
⌈>	**Ge**	**72**		ug/L			138951	146252	1	KED
⌊	**As**	**75**	**0.005**	ug/L	0.005	89	5	8	25	KED
	Y	**89**		ug/L			1040573	1034994	2	Standard
	Kr	**83**		ug/L			76	81	12	Standard

Sample Information

Sample Date/Time: Wednesday, March 31, 2021 13:07:03
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.m
Mass Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Conditions File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

Calibration

Analyte	Mass	**r Corr Coef**	Slope	Std 1 Conc	Std 2 Conc	Std 3 Conc	Std 4 Conc	Std 5 Conc
C	13							
Cl	37							
Sc	45							
Mg	24	**0.9999**	0.015	20.00	1000	2000	5000	10000
Cr	52	**0.9999**	0.014	0.50	10	20	50	100
Cr	53	**1.0000**	0.002	0.50	10	20	50	100
Fe	54	**1.0000**	0.002	20.00	1000	2000	5000	10000
Fe	57	**0.9997**	0.001	20.00	1000	2000	5000	10000
Ge	72							
As	75	**0.9997**	0.003	0.20	10	20	50	100
Y	89							
Kr	83							

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-ICV1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 13:17:47
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	46930	0	Standard
	Cl	**37**		ug/L			7573664	8217521	0	Standard
⎡>	**Sc**	**45**		ug/L			2519968	2641189	1	Standard
⎢	**Mg**	**24**	**4980.758**	ug/L	226.926	4	3383	192749902	4	Standard
⎢	**Cr**	**52**	**51.379**	ug/L	0.749	1	34721	1929746	1	Standard
⎢	**Cr**	**53**	**51.501**	ug/L	0.546	1	614	225631	0	Standard
⎢	**Fe**	**54**	**5000.217**	ug/L	81.722	1	171813	23329629	0	Standard
⎣	**Fe**	**57**	**4928.595**	ug/L	66.529	1	57402	10321626	0	Standard
⎡>	**Ge**	**72**		ug/L			138951	144575	0	KED
⎣	**As**	**75**	**49.615**	ug/L	0.184	0	5	23255	0	KED
	Y	**89**		ug/L			1040573	1052745	1	Standard
	Kr	**83**		ug/L			76	83	12	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-ICB1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 13:23:49
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	36228	2	Standard
	Cl	**37**		ug/L			7573664	8068021	1	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2629707	1	Standard
|	**Mg**	**24**	**0.249**	ug/L	0.059	23	3383	13091	16	Standard
|	**Cr**	**52**	**-0.023**	ug/L	0.023	102	34721	35396	2	Standard
|	**Cr**	**53**	**-0.022**	ug/L	0.010	46	614	543	7	Standard
|	**Fe**	**54**	**-1.373**	ug/L	1.284	93	171813	172919	2	Standard
⌊	**Fe**	**57**	**-2.761**	ug/L	0.644	23	57402	54164	1	Standard
⌈>	**Ge**	**72**		ug/L			138951	141517	0	KED
⌊	**As**	**75**	**0.006**	ug/L	0.002	29	5	8	9	KED
	Y	**89**		ug/L			1040573	1017580	2	Standard
	Kr	**83**		ug/L			76	75	20	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCV1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 13:27:07
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	37382	1	Standard
	Cl	**37**		ug/L			7573664	8149086	3	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2529447	2	Standard
|	**Mg**	**24**	**4997.098**	ug/L	98.319	1	3383	185182455	1	Standard
|	**Cr**	**52**	**51.956**	ug/L	1.775	3	34721	1867786	1	Standard
|	**Cr**	**53**	**51.326**	ug/L	0.921	1	614	215334	1	Standard
|	**Fe**	**54**	**5080.070**	ug/L	116.465	2	171813	22693620	0	Standard
⌊	**Fe**	**57**	**4943.533**	ug/L	234.740	4	57402	9910562	3	Standard
⌈>	**Ge**	**72**		ug/L			138951	142775	0	KED
⌊	**As**	**75**	**48.594**	ug/L	0.504	1	5	22493	1	KED
	Y	**89**		ug/L			1040573	1023491	3	Standard
	Kr	**83**		ug/L			76	72	27	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCB1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 13:33:09
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	35967	1	Standard
	Cl	**37**		ug/L			7573664	8044116	0	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2623413	1	Standard
|	**Mg**	**24**	**0.115**	ug/L	0.008	6	3383	7938	2	Standard
|	**Cr**	**52**	**-0.019**	ug/L	0.024	128	34721	35450	0	Standard
|	**Cr**	**53**	**-0.023**	ug/L	0.004	16	614	540	4	Standard
|	**Fe**	**54**	**-1.468**	ug/L	0.766	52	171813	172074	0	Standard
⌊	**Fe**	**57**	**-2.767**	ug/L	0.420	15	57402	54027	1	Standard
⌈>	**Ge**	**72**		ug/L			138951	144987	1	KED
⌊	**As**	**75**	**0.001**	ug/L	0.002	301	5	6	18	KED
	Y	**89**		ug/L			1040573	1028900	0	Standard
	Kr	**83**		ug/L			76	76	12	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CRL1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 13:36:26
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	43211	0	Standard
	Cl	**37**		ug/L			7573664	8067696	2	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2599792	0	Standard
|	**Mg**	**24**	**20.652**	ug/L	0.418	2	3383	790207	1	Standard
|	**Cr**	**52**	**0.524**	ug/L	0.020	3	34721	54816	1	Standard
|	**Cr**	**53**	**0.477**	ug/L	0.017	3	614	2686	2	Standard
|	**Fe**	**54**	**19.603**	ug/L	0.788	4	171813	266597	1	Standard
⌊	**Fe**	**57**	**12.824**	ug/L	0.677	5	57402	85508	1	Standard
⌈>	**Ge**	**72**		ug/L			138951	148834	1	KED
⌊	**As**	**75**	**0.188**	ug/L	0.031	16	5	96	16	KED
	Y	**89**		ug/L			1040573	1036687	1	Standard
	Kr	**83**		ug/L			76	80	14	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IFA1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 13:39:43
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	155946	2	Standard
	Cl	**37**		ug/L			7573664	14472412	2	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2312546	0	Standard
|	**Mg**	**24**	**20605.703**	ug/L	123.252	0	3383	698255486	0	Standard
|	**Cr**	**52**	**0.691**	ug/L	0.014	2	34721	54176	1	Standard
|	**Cr**	**53**	**5.386**	ug/L	0.063	1	614	21168	0	Standard
|	**Fe**	**54**	**19885.486**	ug/L	245.371	1	171813	80777966	1	Standard
⌊	**Fe**	**57**	**22199.529**	ug/L	258.289	1	57402	40526803	1	Standard
⌈>	**Ge**	**72**		ug/L			138951	142619	0	KED
⌊	**As**	**75**	**0.023**	ug/L	0.011	46	5	16	30	KED
	Y	**89**		ug/L			1040573	981594	1	Standard
	Kr	**83**		ug/L			76	123	5	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IFB1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 13:43:00
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	144242	1	Standard
	Cl	**37**		ug/L			7573664	13534069	3	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2205224	0	Standard
|	**Mg**	**24**	**20224.535**	ug/L	429.913	2	3383	653577174	2	Standard
|	**Cr**	**52**	**20.615**	ug/L	0.361	1	34721	664704	1	Standard
|	**Cr**	**53**	**24.909**	ug/L	0.205	0	614	91405	1	Standard
|	**Fe**	**54**	**19236.978**	ug/L	158.011	0	171813	74523773	1	Standard
⌊	**Fe**	**57**	**21281.374**	ug/L	203.647	0	57402	37050397	1	Standard
⌈>	**Ge**	**72**		ug/L			138951	134354	2	KED
⌊	**As**	**75**	**18.802**	ug/L	0.323	1	5	8191	1	KED
	Y	**89**		ug/L			1040573	968262	1	Standard
	Kr	**83**		ug/L			76	105	9	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-HCV1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 13:47:12
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	43680	0	Standard
	Cl	**37**		ug/L			7573664	7756297	1	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2214525	2	Standard
|	**Mg**	**24**	**20430.414**	ug/L	246.921	1	3383	662851149	0	Standard
|	**Cr**	**52**	**197.562**	ug/L	2.527	1	34721	6134364	1	Standard
|	**Cr**	**53**	**209.701**	ug/L	1.789	0	614	768689	2	Standard
|	**Fe**	**54**	**20007.052**	ug/L	252.732	1	171813	77827515	2	Standard
⌊	**Fe**	**57**	**21648.748**	ug/L	157.376	0	57402	37849997	2	Standard
⌈>	**Ge**	**72**		ug/L			138951	132952	1	KED
⌊	**As**	**75**	**192.491**	ug/L	3.751	1	5	82938	0	KED
	Y	**89**		ug/L			1040573	932975	1	Standard
	Kr	**83**		ug/L			76	106	8	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-HCV2
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 13:50:30
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	45926	0	Standard
	Cl	**37**		ug/L			7573664	7401710	0	Standard
⎡>	**Sc**	**45**		ug/L			2519968	2190795	0	Standard
⎢	**Mg**	**24**	**29876.842**	ug/L	395.816	1	3383	959102328	1	Standard
⎢	**Cr**	**52**	**289.281**	ug/L	2.749	0	34721	8873495	1	Standard
⎢	**Cr**	**53**	**307.162**	ug/L	7.397	2	614	1113724	2	Standard
⎢	**Fe**	**54**	**30041.448**	ug/L	62.438	0	171813	115532753	0	Standard
⎣	**Fe**	**57**	**31684.142**	ug/L	60.787	0	57402	54774491	0	Standard
⎡>	**Ge**	**72**		ug/L			138951	130220	0	KED
⎣	**As**	**75**	**281.981**	ug/L	1.296	0	5	119018	0	KED
	Y	**89**		ug/L			1040573	926730	0	Standard
	Kr	**83**		ug/L			76	132	1	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IBL2
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 13:56:32
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	43026	4	Standard
	Cl	**37**		ug/L			7573664	7614861	1	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2226072	2	Standard
|	**Mg**	**24**	**1.144**	ug/L	0.047	4	3383	40290	2	Standard
|	**Cr**	**52**	**0.094**	ug/L	0.036	38	34721	33573	0	Standard
|	**Cr**	**53**	**0.018**	ug/L	0.003	17	614	610	3	Standard
|	**Fe**	**54**	**1.265**	ug/L	0.642	50	171813	156677	1	Standard
⌊	**Fe**	**57**	**-0.402**	ug/L	0.529	131	57402	49986	0	Standard
⌈>	**Ge**	**72**		ug/L			138951	138039	1	KED
⌊	**As**	**75**	**0.019**	ug/L	0.005	24	5	14	13	KED
	Y	**89**		ug/L			1040573	952262	0	Standard
	Kr	**83**		ug/L			76	74	17	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IBL3
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 14:01:44
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	42399	2	Standard
	Cl	**37**		ug/L			7573664	7549773	1	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2309852	0	Standard
|	**Mg**	**24**	**0.955**	ug/L	0.077	8	3383	35440	7	Standard
|	**Cr**	**52**	**0.057**	ug/L	0.020	35	34721	33663	1	Standard
|	**Cr**	**53**	**-0.003**	ug/L	0.004	105	614	550	2	Standard
|	**Fe**	**54**	**-0.880**	ug/L	1.169	132	171813	153906	2	Standard
⌊	**Fe**	**57**	**-1.643**	ug/L	0.603	36	57402	49618	1	Standard
⌈>	**Ge**	**72**		ug/L			138951	141412	1	KED
⌊	**As**	**75**	**0.011**	ug/L	0.008	74	5	10	34	KED
	Y	**89**		ug/L			1040573	971010	2	Standard
	Kr	**83**		ug/L			76	72	22	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCV2
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 14:05:03
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	35943	2	Standard
	Cl	**37**		ug/L			7573664	7825369	2	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2370430	2	Standard
|	**Mg**	**24**	**5006.076**	ug/L	129.539	2	3383	173816147	0	Standard
|	**Cr**	**52**	**52.511**	ug/L	1.313	2	34721	1768817	0	Standard
|	**Cr**	**53**	**52.564**	ug/L	1.500	2	614	206620	2	Standard
|	**Fe**	**54**	**4967.548**	ug/L	48.341	0	171813	20803048	1	Standard
⌊	**Fe**	**57**	**5054.230**	ug/L	151.906	3	57402	9497285	2	Standard
⌈>	**Ge**	**72**		ug/L			138951	143253	1	KED
⌊	**As**	**75**	**47.396**	ug/L	0.569	1	5	22010	0	KED
	Y	**89**		ug/L			1040573	970283	0	Standard
	Kr	**83**		ug/L			76	75	29	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCB2
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 14:11:05
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	33930	2	Standard
	Cl	**37**		ug/L			7573664	7864018	3	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2365800	0	Standard
|	**Mg**	**24**	**0.674**	ug/L	0.008	1	3383	26539	1	Standard
|	**Cr**	**52**	**0.025**	ug/L	0.011	43	34721	33432	0	Standard
|	**Cr**	**53**	**-0.023**	ug/L	0.013	58	614	486	10	Standard
|	**Fe**	**54**	**0.834**	ug/L	0.131	15	171813	164760	0	Standard
⌊	**Fe**	**57**	**-2.685**	ug/L	0.237	8	57402	48882	1	Standard
⌈>	**Ge**	**72**		ug/L			138951	141321	0	KED
⌊	**As**	**75**	**0.007**	ug/L	0.004	60	5	8	21	KED
	Y	**89**		ug/L			1040573	978226	0	Standard
	Kr	**83**		ug/L			76	72	13	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-02
Sample Dil Factor: 10
Comments:
Sample Date/Time: Wednesday, March 31, 2021 14:14:23
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	46900	1	Standard
	Cl	**37**		ug/L			7573664	8094907	0	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2344643	0	Standard
|	**Mg**	**24**	**4908.876**	ug/L	107.718	2	3383	168643817	1	Standard
|	**Cr**	**52**	**0.569**	ug/L	0.025	4	34721	50926	1	Standard
|	**Cr**	**53**	**0.603**	ug/L	0.016	2	614	2909	1	Standard
|	**Fe**	**54**	**1977.772**	ug/L	20.687	1	171813	8289505	1	Standard
⌊	**Fe**	**57**	**2212.970**	ug/L	52.256	2	57402	4144371	2	Standard
⌈>	**Ge**	**72**		ug/L			138951	136717	0	KED
⌊	**As**	**75**	**0.415**	ug/L	0.021	5	5	189	4	KED
	Y	**89**		ug/L			1040573	953805	1	Standard
	Kr	**83**		ug/L			76	74	6	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-01
Sample Dil Factor: 10
Comments:
Sample Date/Time: Wednesday, March 31, 2021 14:19:04
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	49009	1	Standard
	Cl	**37**		ug/L			7573664	12097669	4	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2393055	1	Standard
|	**Mg**	**24**	**11478.960**	ug/L	362.008	3	3383	402501148	3	Standard
|	**Cr**	**52**	**0.794**	ug/L	0.028	3	34721	59505	2	Standard
|	**Cr**	**53**	**4.145**	ug/L	0.024	0	614	16992	1	Standard
|	**Fe**	**54**	**4.135**	ug/L	1.118	27	171813	180530	3	Standard
⌊	**Fe**	**57**	**9.041**	ug/L	0.845	9	57402	71568	2	Standard
⌈>	**Ge**	**72**		ug/L			138951	133472	1	KED
⌊	**As**	**75**	**0.041**	ug/L	0.004	9	5	23	5	KED
	Y	**89**		ug/L			1040573	949806	0	Standard
	Kr	**83**		ug/L			76	81	16	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-03
Sample Dil Factor: 10
Comments:
Sample Date/Time: Wednesday, March 31, 2021 14:22:46
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	52469	2	Standard
	Cl	**37**		ug/L			7573664	18740497	2	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2410592	1	Standard
|	**Mg**	**24**	**25800.553**	ug/L	950.987	3	3383	911009119	2	Standard
|	**Cr**	**52**	**0.919**	ug/L	0.056	6	34721	64122	1	Standard
|	**Cr**	**53**	**10.867**	ug/L	0.231	2	614	43913	1	Standard
|	**Fe**	**54**	**77.406**	ug/L	3.089	3	171813	491402	2	Standard
⌊	**Fe**	**57**	**75.462**	ug/L	4.169	5	57402	198252	2	Standard
⌈>	**Ge**	**72**		ug/L			138951	130849	0	KED
⌊	**As**	**75**	**0.072**	ug/L	0.003	4	5	35	3	KED
	Y	**89**		ug/L			1040573	925670	0	Standard
	Kr	**83**		ug/L			76	144	18	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-05
Sample Dil Factor: 10
Comments:
Sample Date/Time: Wednesday, March 31, 2021 14:26:28
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	47625	1	Standard
	Cl	**37**		ug/L			7573664	17986833	0	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2354680	1	Standard
|	**Mg**	**24**	**23824.560**	ug/L	741.449	3	3383	821910685	2	Standard
|	**Cr**	**52**	**0.590**	ug/L	0.039	6	34721	51832	1	Standard
|	**Cr**	**53**	**11.070**	ug/L	0.207	1	614	43685	1	Standard
|	**Fe**	**54**	**1500.245**	ug/L	39.049	2	171813	6352608	1	Standard
⌊	**Fe**	**57**	**1504.462**	ug/L	34.458	2	57402	2846417	2	Standard
⌈>	**Ge**	**72**		ug/L			138951	130251	2	KED
⌊	**As**	**75**	**0.044**	ug/L	0.003	7	5	23	4	KED
	Y	**89**		ug/L			1040573	911884	2	Standard
	Kr	**83**		ug/L			76	301	6	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-07
Sample Dil Factor: 10
Comments:
Sample Date/Time: Wednesday, March 31, 2021 14:30:09
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	53028	4	Standard
	Cl	**37**		ug/L			7573664	17829446	2	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2397864	0	Standard
|	**Mg**	**24**	**22128.785**	ug/L	715.797	3	3383	777426869	2	Standard
|	**Cr**	**52**	**1.190**	ug/L	0.043	3	34721	72859	1	Standard
|	**Cr**	**53**	**12.421**	ug/L	0.144	1	614	49848	0	Standard
|	**Fe**	**54**	**459.687**	ug/L	3.374	0	171813	2095860	0	Standard
⌊	**Fe**	**57**	**376.831**	ug/L	3.291	0	57402	766993	1	Standard
⌈>	**Ge**	**72**		ug/L			138951	130168	1	KED
⌊	**As**	**75**	**0.085**	ug/L	0.007	7	5	41	7	KED
	Y	**89**		ug/L			1040573	943753	3	Standard
	Kr	**83**		ug/L			76	189	6	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-09
Sample Dil Factor: 10
Comments:
Sample Date/Time: Wednesday, March 31, 2021 14:33:51
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	50869	1	Standard
	Cl	**37**		ug/L			7573664	12640052	1	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2335058	1	Standard
|	**Mg**	**24**	**14559.397**	ug/L	258.392	1	3383	498078396	1	Standard
|	**Cr**	**52**	**1.245**	ug/L	0.024	1	34721	72723	1	Standard
|	**Cr**	**53**	**7.732**	ug/L	0.135	1	614	30430	1	Standard
|	**Fe**	**54**	**764.695**	ug/L	8.391	1	171813	3290032	2	Standard
⌊	**Fe**	**57**	**634.526**	ug/L	1.676	0	57402	1221291	1	Standard
⌈>	**Ge**	**72**		ug/L			138951	132202	1	KED
⌊	**As**	**75**	**0.313**	ug/L	0.029	9	5	139	9	KED
	Y	**89**		ug/L			1040573	926670	0	Standard
	Kr	**83**		ug/L			76	150	2	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-06
Sample Dil Factor: 10
Comments:
Sample Date/Time: Wednesday, March 31, 2021 14:37:32
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	59190	2	Standard
	Cl	**37**		ug/L			7573664	14428763	2	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2461534	1	Standard
|	**Mg**	**24**	**16040.889**	ug/L	459.803	2	3383	578464237	1	Standard
|	**Cr**	**52**	**0.971**	ug/L	0.062	6	34721	67252	2	Standard
|	**Cr**	**53**	**10.252**	ug/L	0.133	1	614	42340	1	Standard
|	**Fe**	**54**	**55.821**	ug/L	2.111	3	171813	408660	1	Standard
⌊	**Fe**	**57**	**47.851**	ug/L	0.336	0	57402	148938	1	Standard
⌈>	**Ge**	**72**		ug/L			138951	135338	1	KED
⌊	**As**	**75**	**0.157**	ug/L	0.007	4	5	74	5	KED
	Y	**89**		ug/L			1040573	947697	1	Standard
	Kr	**83**		ug/L			76	107	4	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0227-10
Sample Dil Factor: 10
Comments:
Sample Date/Time: Wednesday, March 31, 2021 14:41:14
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	48647	2	Standard
	Cl	**37**		ug/L			7573664	9740068	3	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2350923	0	Standard
|	**Mg**	**24**	**7973.115**	ug/L	79.916	1	3383	274662608	1	Standard
|	**Cr**	**52**	**0.575**	ug/L	0.005	0	34721	51266	0	Standard
|	**Cr**	**53**	**4.673**	ug/L	0.036	0	614	18747	1	Standard
|	**Fe**	**54**	**764.343**	ug/L	10.832	1	171813	3310423	0	Standard
⌊	**Fe**	**57**	**632.258**	ug/L	20.976	3	57402	1225262	2	Standard
⌈>	**Ge**	**72**		ug/L			138951	135205	1	KED
⌊	**As**	**75**	**0.023**	ug/L	0.005	22	5	15	15	KED
	Y	**89**		ug/L			1040573	952658	0	Standard
	Kr	**83**		ug/L			76	84	16	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 21C0250-09
Sample Dil Factor: 2
Comments:
Sample Date/Time: Wednesday, March 31, 2021 14:44:55
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	52537	1	Standard
	Cl	**37**		ug/L			7573664	8033750	1	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2426875	0	Standard
|	**Mg**	**24**	**12182.819**	ug/L	190.310	1	3383	433229944	1	Standard
|	**Cr**	**52**	**0.230**	ug/L	0.031	13	34721	41238	2	Standard
|	**Cr**	**53**	**0.423**	ug/L	0.009	2	614	2289	1	Standard
|	**Fe**	**54**	**6318.538**	ug/L	135.640	2	171813	27048264	1	Standard
⌊	**Fe**	**57**	**6391.250**	ug/L	123.269	1	57402	12284105	2	Standard
⌈>	**Ge**	**72**		ug/L			138951	138679	2	KED
⌊	**As**	**75**	**1.038**	ug/L	0.017	1	5	472	3	KED
	Y	**89**		ug/L			1040573	968330	1	Standard
	Kr	**83**		ug/L			76	64	17	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-IBL4
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 14:48:49
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	39966	1	Standard
	Cl	**37**		ug/L			7573664	7700804	3	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2356061	0	Standard
|	**Mg**	**24**	**1.035**	ug/L	0.070	6	3383	38886	6	Standard
|	**Cr**	**52**	**0.074**	ug/L	0.033	45	34721	34891	3	Standard
|	**Cr**	**53**	**0.120**	ug/L	0.012	9	614	1042	4	Standard
|	**Fe**	**54**	**-0.717**	ug/L	0.706	98	171813	157673	1	Standard
⌊	**Fe**	**57**	**-4.836**	ug/L	0.799	16	57402	44687	3	Standard
⌈>	**Ge**	**72**		ug/L			138951	140935	1	KED
⌊	**As**	**75**	**-0.000**	ug/L	0.003	1641	5	5	28	KED
	Y	**89**		ug/L			1040573	967414	2	Standard
	Kr	**83**		ug/L			76	73	14	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCV3
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 14:52:31
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	36931	1	Standard
	Cl	**37**		ug/L			7573664	7849504	2	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2392670	0	Standard
|	**Mg**	**24**	**5034.780**	ug/L	85.147	1	3383	176516310	1	Standard
|	**Cr**	**52**	**53.835**	ug/L	0.781	1	34721	1830280	1	Standard
|	**Cr**	**53**	**52.632**	ug/L	0.224	0	614	208898	0	Standard
|	**Fe**	**54**	**4984.074**	ug/L	45.867	0	171813	21069856	0	Standard
⌊	**Fe**	**57**	**4978.573**	ug/L	57.004	1	57402	9445605	0	Standard
⌈>	**Ge**	**72**		ug/L			138951	141337	0	KED
⌊	**As**	**75**	**47.759**	ug/L	0.331	0	5	21884	0	KED
	Y	**89**		ug/L			1040573	984072	0	Standard
	Kr	**83**		ug/L			76	66	13	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: SEQ-CCB3
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 14:58:33
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	35289	2	Standard
	Cl	**37**		ug/L			7573664	7721578	1	Standard
⌈>	**Sc**	**45**		ug/L			2519968	2332084	1	Standard
|	**Mg**	**24**	**0.626**	ug/L	0.022	3	3383	24534	4	Standard
|	**Cr**	**52**	**0.098**	ug/L	0.012	12	34721	35304	0	Standard
|	**Cr**	**53**	**0.070**	ug/L	0.006	7	614	839	3	Standard
|	**Fe**	**54**	**2.020**	ug/L	0.779	38	171813	167271	2	Standard
⌊	**Fe**	**57**	**-3.262**	ug/L	1.250	38	57402	47109	3	Standard
⌈>	**Ge**	**72**		ug/L			138951	138614	0	KED
⌊	**As**	**75**	**0.004**	ug/L	0.003	64	5	7	16	KED
	Y	**89**		ug/L			1040573	970843	0	Standard
	Kr	**83**		ug/L			76	72	10	Standard

ICP-MS Quantitative Analysis - Summary Report

Sample ID: 1
Sample Dil Factor:
Comments:
Sample Date/Time: Wednesday, March 31, 2021 15:02:03
Number of Replicates: 3
Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Method\200.8_DailyMethod_KED_UCT.mth
Tuning File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\MassCal\Default.tun
Optimization File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\Conditions\Default.dac
Calibration File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\System\033121.cal

	Analyte	Mass	Conc. Mean	Units	Conc. SD	Conc. RSD	Blank Intens.	Meas. Intens.	Intens. RSD	Mode
	C	**13**		ug/L			36306	39588	2	Standard
	Cl	**37**		ug/L			7573664	7727094	0	Standard
⌈>	**Sc**	**45**		ug/L			2519968	11514	34	Standard
|	**Mg**	**24**	**151.009**	ug/L	49.220	32	3383	23599	5	Standard
|	**Cr**	**52**	**237.407**	ug/L	78.031	32	34721	35489	0	Standard
|	**Cr**	**53**	**43.882**	ug/L	14.566	33	614	777	1	Standard
|	**Fe**	**54**	**10366.046**	ug/L	3369.725	32	171813	195015	2	Standard
⌊	**Fe**	**57**	**5594.101**	ug/L	2058.388	36	57402	46869	3	Standard
⌈>	**Ge**	**72**		ug/L			138951	138852	4	KED
⌊	**As**	**75**	**-0.005**	ug/L	0.003	55	5	3	32	KED
	Y	**89**		ug/L			1040573	2116	49	Standard
	Kr	**83**		ug/L			76	66	6	Standard

INITIAL AND CONTINUING CALIBRATION CHECK

EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Instrument ID: ICPMS1
Calibration: EC00098
Control Limt: +/- 10.00%
Sequence: SJC0512

Lab Sample ID	Analyte	True	Found	%R	Units	Method
SJC0512-ICV1	Arsenic-75a (dissolved)	50.000	51.6	103	ug/L	EPA 200.8 UCT-KED
SJC0512-CCV1	Arsenic-75a (dissolved)	50.000	50.0	100	ug/L	EPA 200.8 UCT-KED
SJC0512-CCV2	Arsenic-75a (dissolved)	50.000	49.4	98.8	ug/L	EPA 200.8 UCT-KED
SJC0512-CCV3	Arsenic-75a (dissolved)	50.000	49.9	99.8	ug/L	EPA 200.8 UCT-KED
SJC0512-CCV4	Arsenic-75a (dissolved)	50.000	48.9	97.8	ug/L	EPA 200.8 UCT-KED
SJC0512-CCV5	Arsenic-75a (dissolved)	50.000	49.2	98.3	ug/L	EPA 200.8 UCT-KED
SJC0512-CCV6	Arsenic-75a (dissolved)	50.000	50.1	100	ug/L	EPA 200.8 UCT-KED
SJC0512-CCV7	Arsenic-75a (dissolved)	50.000	49.9	99.8	ug/L	EPA 200.8 UCT-KED
SJC0512-CCV8	Arsenic-75a (dissolved)	50.000	49.6	99.2	ug/L	EPA 200.8 UCT-KED
SJC0512-CCV9	Arsenic-75a (dissolved)	50.000	49.5	99.0	ug/L	EPA 200.8 UCT-KED
SJC0512-CCVA	Arsenic-75a (dissolved)	50.000	49.3	98.7	ug/L	EPA 200.8 UCT-KED
SJC0512-CCVB	Arsenic-75a (dissolved)	50.000	49.5	99.1	ug/L	EPA 200.8 UCT-KED
SJC0512-CCVC	Arsenic-75a (dissolved)	50.000	49.4	98.8	ug/L	EPA 200.8 UCT-KED
SJC0512-CCVD	Arsenic-75a (dissolved)	50.000	50.2	100	ug/L	EPA 200.8 UCT-KED
SJC0512-CCVE	Arsenic-75a (dissolved)	50.000	49.7	99.4	ug/L	EPA 200.8 UCT-KED

* Values outside of QC limits

INITIAL AND CONTINUING CALIBRATION CHECK

EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Instrument ID: ICPMS1
Calibration: EC00100
Control Limt: +/- 10.00%
Sequence: SJC0516

Lab Sample ID	Analyte	True	Found	%R	Units	Method
SJC0516-ICV1	Arsenic-75a (dissolved)	50.000	49.6	99.2	ug/L	EPA 200.8 UCT-KED
SJC0516-CCV1	Arsenic-75a (dissolved)	50.000	48.6	97.2	ug/L	EPA 200.8 UCT-KED
SJC0516-CCV2	Arsenic-75a (dissolved)	50.000	47.4	94.8	ug/L	EPA 200.8 UCT-KED
SJC0516-CCV3	Arsenic-75a (dissolved)	50.000	47.8	95.5	ug/L	EPA 200.8 UCT-KED

* Values outside of QC limits

INSTRUMENT BLANKS
EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
Client: Floyd - Snider
Instrument ID: ICPMS1
Sequence: SJC0512

SDG: 21C0250
Project: Lora Lake
Calibration: EC00098
Date Analyzed: 03/30/21 16:57

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C
SJC0512-IBL1	Arsenic-75a (dissolved)	0.00900	0.0373	0.200	ug/L	
SJC0512-ICB1	Arsenic-75a (dissolved)	0.00700	0.0373	0.200	ug/L	
SJC0512-CCB1	Arsenic-75a (dissolved)	0.00800	0.0373	0.200	ug/L	
SJC0512-IBL2	Arsenic-75a (dissolved)	0.0640	0.0373	0.200	ug/L	
SJC0512-IBL3	Arsenic-75a (dissolved)	0.0170	0.0373	0.200	ug/L	
SJC0512-CCB2	Arsenic-75a (dissolved)	0.0220	0.0373	0.200	ug/L	
SJC0512-CCB3	Arsenic-75a (dissolved)	0.00700	0.0373	0.200	ug/L	
SJC0512-IBL4	Arsenic-75a (dissolved)	-0.00500	0.0373	0.200	ug/L	
SJC0512-CCB4	Arsenic-75a (dissolved)	0.00200	0.0373	0.200	ug/L	
SJC0512-IBL5	Arsenic-75a (dissolved)	-0.00400	0.0373	0.200	ug/L	
SJC0512-CCB5	Arsenic-75a (dissolved)	0.00300	0.0373	0.200	ug/L	
SJC0512-IBL6	Arsenic-75a (dissolved)	-0.00200	0.0373	0.200	ug/L	
SJC0512-IBL7	Arsenic-75a (dissolved)	0.00100	0.0373	0.200	ug/L	
SJC0512-CCB6	Arsenic-75a (dissolved)	0.00400	0.0373	0.200	ug/L	
SJC0512-CCB7	Arsenic-75a (dissolved)	0.00700	0.0373	0.200	ug/L	
SJC0512-IBL8	Arsenic-75a (dissolved)	0.00200	0.0373	0.200	ug/L	
SJC0512-CCB8	Arsenic-75a (dissolved)	0.00500	0.0373	0.200	ug/L	
SJC0512-IBL9	Arsenic-75a (dissolved)	-0.00100	0.0373	0.200	ug/L	
SJC0512-CCB9	Arsenic-75a (dissolved)	0.00400	0.0373	0.200	ug/L	
SJC0512-IBLA	Arsenic-75a (dissolved)	0.00400	0.0373	0.200	ug/L	
SJC0512-CCBA	Arsenic-75a (dissolved)	0.00800	0.0373	0.200	ug/L	
SJC0512-CCBB	Arsenic-75a (dissolved)	0.00800	0.0373	0.200	ug/L	
SJC0512-IBLB	Arsenic-75a (dissolved)	0.00200	0.0373	0.200	ug/L	
SJC0512-CCBC	Arsenic-75a (dissolved)	0.00300	0.0373	0.200	ug/L	
SJC0512-IBLC	Arsenic-75a (dissolved)	0.00800	0.0373	0.200	ug/L	
SJC0512-IBLD	Arsenic-75a (dissolved)	0.00900	0.0373	0.200	ug/L	
SJC0512-CCBD	Arsenic-75a (dissolved)	0.00600	0.0373	0.200	ug/L	
SJC0512-IBLE	Arsenic-75a (dissolved)	0.00100	0.0373	0.200	ug/L	
SJC0512-CCBE	Arsenic-75a (dissolved)	0.0110	0.0373	0.200	ug/L	

INSTRUMENT BLANKS
EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Instrument ID: ICPMS1
Calibration: EC00100
Sequence: SJC0516
Date Analyzed: 03/31/21 13:13

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C
SJC0516-IBL1	Arsenic-75a (dissolved)	0.00500	0.0373	0.200	ug/L	
SJC0516-ICB1	Arsenic-75a (dissolved)	0.00600	0.0373	0.200	ug/L	
SJC0516-CCB1	Arsenic-75a (dissolved)	0.00100	0.0373	0.200	ug/L	
SJC0516-IBL2	Arsenic-75a (dissolved)	0.0190	0.0373	0.200	ug/L	
SJC0516-IBL3	Arsenic-75a (dissolved)	0.0110	0.0373	0.200	ug/L	
SJC0516-CCB2	Arsenic-75a (dissolved)	0.00700	0.0373	0.200	ug/L	
SJC0516-IBL4	Arsenic-75a (dissolved)	0.00	0.0373	0.200	ug/L	
SJC0516-CCB3	Arsenic-75a (dissolved)	0.00400	0.0373	0.200	ug/L	

Analytical Resources, Incorporated
Analytical Chemists and Consultants

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
Client: Floyd - Snider
Sequence: SJC0512

SDG: 21C0250
Project: Lora Lake
Instrument: ICPMS1
Calibration: EC00098

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
CAL 0	SJC0512-CAL1	XDT_m1210330A-012	NA	03/30/21 16:25
CAL 1 - LOW CHECK	SJC0512-CAL2	XDT_m1210330A-013	NA	03/30/21 16:30
CAL 2	SJC0512-CAL3	XDT_m1210330A-014	NA	03/30/21 16:34
CAL 3	SJC0512-CAL4	XDT_m1210330A-015	NA	03/30/21 16:39
CAL 4	SJC0512-CAL5	XDT_m1210330A-016	NA	03/30/21 16:44
CAL 5	SJC0512-CAL6	XDT_m1210330A-017	NA	03/30/21 16:50
RINSE	SJC0512-IBL1	XDT_m1210330A-018	NA	03/30/21 16:57
Initial Cal Check	SJC0512-ICV1	XDT_m1210330A-020	NA	03/30/21 17:04
Initial Cal Blank	SJC0512-ICB1	XDT_m1210330A-021	NA	03/30/21 17:11
Calibration Check	SJC0512-CCV1	XDT_m1210330A-022	NA	03/30/21 17:18
Calibration Blank	SJC0512-CCB1	XDT_m1210330A-023	NA	03/30/21 17:25
Instrument RL Check	SJC0512-CRL1	XDT_m1210330A-024	NA	03/30/21 17:30
Interference Check A	SJC0512-IFA1	XDT_m1210330A-025	NA	03/30/21 17:35
Interference Check B	SJC0512-IFB1	XDT_m1210330A-026	NA	03/30/21 17:40
LR200	SJC0512-HCV1	XDT_m1210330A-027	NA	03/30/21 17:44
LR300	SJC0512-HCV2	XDT_m1210330A-028	NA	03/30/21 17:48
Instrument Blank	SJC0512-IBL2	XDT_m1210330A-029	NA	03/30/21 17:55
Instrument Blank	SJC0512-IBL3	XDT_m1210330A-030	NA	03/30/21 18:02
Calibration Check	SJC0512-CCV2	XDT_m1210330A-031	NA	03/30/21 18:08
Calibration Blank	SJC0512-CCB2	XDT_m1210330A-032	NA	03/30/21 18:15
Calibration Check	SJC0512-CCV3	XDT_m1210330A-034	NA	03/30/21 18:26
Calibration Blank	SJC0512-CCB3	XDT_m1210330A-035	NA	03/30/21 18:33
ZZZZZ	21C0412-01	XDT_m1210330A-040	Water	03/30/21 18:59
ZZZZZ	21C0412-01	XDT_m1210330A-040	Water	03/30/21 18:59
ZZZZZ	21C0216-01	XDT_m1210330A-042	Water	03/30/21 19:11
ZZZZZ	21C0216-02	XDT_m1210330A-043	Water	03/30/21 19:19
ZZZZZ	21C0216-03	XDT_m1210330A-044	Water	03/30/21 19:27
Instrument Blank	SJC0512-IBL4	XDT_m1210330A-045	NA	03/30/21 19:36
Calibration Check	SJC0512-CCV4	XDT_m1210330A-046	NA	03/30/21 19:43
Calibration Blank	SJC0512-CCB4	XDT_m1210330A-047	NA	03/30/21 19:50

Analytical Resources, Incorporated
Analytical Chemists and Consultants

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Sequence: SJC0512
Instrument: ICPMS1
Calibration: EC00098

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
Blank	BJC0762-BLK1	XDT_m1210330A-048	Water	03/30/21 19:56
LCS	BJC0762-BS1	XDT_m1210330A-049	Water	03/30/21 20:01
ZZZZZ	21C0415-01	XDT_m1210330A-050	Water	03/30/21 20:05
ZZZZZ	21C0415-01	XDT_m1210330A-050	Water	03/30/21 20:05
ZZZZZ	21C0415-01	XDT_m1210330A-050	Water	03/30/21 20:05
ZZZZZ	21C0415-01	XDT_m1210330A-050	Water	03/30/21 20:05
Instrument Blank	SJC0512-IBL5	XDT_m1210330A-057	NA	03/30/21 20:45
Calibration Check	SJC0512-CCV5	XDT_m1210330A-058	NA	03/30/21 20:51
Calibration Blank	SJC0512-CCB5	XDT_m1210330A-059	NA	03/30/21 20:58
Instrument Blank	SJC0512-IBL6	XDT_m1210330A-065	NA	03/30/21 21:33
Instrument Blank	SJC0512-IBL7	XDT_m1210330A-069	NA	03/30/21 21:58
Calibration Check	SJC0512-CCV6	XDT_m1210330A-070	NA	03/30/21 22:07
Calibration Blank	SJC0512-CCB6	XDT_m1210330A-071	NA	03/30/21 22:14
Calibration Check	SJC0512-CCV7	XDT_m1210330A-073	NA	03/30/21 22:23
Calibration Blank	SJC0512-CCB7	XDT_m1210330A-074	NA	03/30/21 22:30
ZZZZZ	21C0228-04	XDT_m1210330A-080	Water	03/30/21 22:57
ZZZZZ	21C0228-04	XDT_m1210330A-080	Water	03/30/21 22:57
ZZZZZ	21C0228-04	XDT_m1210330A-080	Water	03/30/21 22:57
ZZZZZ	21C0228-04	XDT_m1210330A-080	Water	03/30/21 22:57
Instrument Blank	SJC0512-IBL8	XDT_m1210330A-084	NA	03/30/21 23:24
Calibration Check	SJC0512-CCV8	XDT_m1210330A-085	NA	03/30/21 23:30
Calibration Blank	SJC0512-CCB8	XDT_m1210330A-086	NA	03/30/21 23:36
MW-C3-031621	21C0250-01	XDT_m1210330A-087	Water	03/30/21 23:40
MW-C3-031621-D	21C0250-02	XDT_m1210330A-088	Water	03/30/21 23:44
MW-C2-031621	21C0250-03	XDT_m1210330A-089	Water	03/30/21 23:48
MW-VB3-031621	21C0250-04	XDT_m1210330A-090	Water	03/30/21 23:52
HCOO-B312-031621	21C0250-05	XDT_m1210330A-091	Water	03/30/21 23:56
MW-CP7-031621	21C0250-06	XDT_m1210330A-092	Water	03/31/21 00:00
MW-CP6-031621	21C0250-07	XDT_m1210330A-093	Water	03/31/21 00:04
MW-CP4-031621	21C0250-08	XDT_m1210330A-094	Water	03/31/21 00:08

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Sequence: SJC0512
Instrument: ICPMS1
Calibration: EC00098

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
Instrument Blank	SJC0512-IBL9	XDT_m1210330A-096	NA	03/31/21 00:21
Calibration Check	SJC0512-CCV9	XDT_m1210330A-097	NA	03/31/21 00:26
Calibration Blank	SJC0512-CCB9	XDT_m1210330A-098	NA	03/31/21 00:33
MW-CP2-031721	21C0250-10	XDT_m1210330A-101	Water	03/31/21 00:45
MW-CP2-031721-D	21C0250-11	XDT_m1210330A-102	Water	03/31/21 00:49
MW-CP3-031721	21C0250-12	XDT_m1210330A-103	Water	03/31/21 00:53
MW-CP1-031721	21C0250-13	XDT_m1210330A-104	Water	03/31/21 00:57
MW-VB2-031721	21C0250-15	XDT_m1210330A-105	Water	03/31/21 01:01
MW-VB2-031721	BJC0762-DUP1	XDT_m1210330A-106	Water	03/31/21 01:05
MW-VB2-031721	BJC0762-MS1	XDT_m1210330A-107	Water	03/31/21 01:10
Instrument Blank	SJC0512-IBLA	XDT_m1210330A-108	NA	03/31/21 01:18
Calibration Check	SJC0512-CCVA	XDT_m1210330A-109	NA	03/31/21 01:23
Calibration Blank	SJC0512-CCBA	XDT_m1210330A-110	NA	03/31/21 01:30
Calibration Check	SJC0512-CCVB	XDT_m1210330A-112	NA	03/31/21 01:38
Calibration Blank	SJC0512-CCBB	XDT_m1210330A-113	NA	03/31/21 01:44
MW-C1/VB1-031721	21C0250-14	XDT_m1210330A-114	Water	03/31/21 01:48
Instrument Blank	SJC0512-IBLB	XDT_m1210330A-123	NA	03/31/21 02:33
Calibration Check	SJC0512-CCVC	XDT_m1210330A-124	NA	03/31/21 02:38
Calibration Blank	SJC0512-CCBC	XDT_m1210330A-125	NA	03/31/21 02:45
Instrument Blank	SJC0512-IBLC	XDT_m1210330A-130	NA	03/31/21 03:13
Instrument Blank	SJC0512-IBLD	XDT_m1210330A-135	NA	03/31/21 03:42
Calibration Check	SJC0512-CCVD	XDT_m1210330A-136	NA	03/31/21 03:48
Calibration Blank	SJC0512-CCBD	XDT_m1210330A-137	NA	03/31/21 03:55
Instrument Blank	SJC0512-IBLE	XDT_m1210330A-146	NA	03/31/21 04:41
Calibration Check	SJC0512-CCVE	XDT_m1210330A-147	NA	03/31/21 04:46
Calibration Blank	SJC0512-CCBE	XDT_m1210330A-148	NA	03/31/21 04:54

ANALYSIS BATCH (SEQUENCE) SUMMARY

EPA 200.8 UCT-KED

Laboratory:	Analytical Resources, Inc.	SDG:	21C0250
Client:	Floyd - Snider	Project:	Lora Lake
Sequence:	SJC0516	Instrument:	ICPMS1
		Calibration:	EC00100

Sample Name	Lab Sample ID	Lab File ID	Matrix	Analysis Date/Time
CAL 0	SJC0516-CAL1	XDT_m1210331-007	NA	03/31/21 12:47
CAL 1 - LOW CHECK	SJC0516-CAL2	XDT_m1210331-008	NA	03/31/21 12:51
CAL 2	SJC0516-CAL3	XDT_m1210331-009	NA	03/31/21 12:54
CAL 3	SJC0516-CAL4	XDT_m1210331-010	NA	03/31/21 12:58
CAL 4	SJC0516-CAL5	XDT_m1210331-011	NA	03/31/21 13:01
CAL 5	SJC0516-CAL6	XDT_m1210331-012	NA	03/31/21 13:07
RINSE	SJC0516-IBL1	XDT_m1210331-013	NA	03/31/21 13:13
Initial Cal Check	SJC0516-ICV1	XDT_m1210331-015	NA	03/31/21 13:17
Initial Cal Blank	SJC0516-ICB1	XDT_m1210331-016	NA	03/31/21 13:23
Calibration Check	SJC0516-CCV1	XDT_m1210331-017	NA	03/31/21 13:27
Calibration Blank	SJC0516-CCB1	XDT_m1210331-018	NA	03/31/21 13:33
Instrument RL Check	SJC0516-CRL1	XDT_m1210331-019	NA	03/31/21 13:36
Interference Check A	SJC0516-IFA1	XDT_m1210331-020	NA	03/31/21 13:39
Interference Check B	SJC0516-IFB1	XDT_m1210331-021	NA	03/31/21 13:43
LR200	SJC0516-HCV1	XDT_m1210331-022	NA	03/31/21 13:47
LR300	SJC0516-HCV2	XDT_m1210331-023	NA	03/31/21 13:50
Instrument Blank	SJC0516-IBL2	XDT_m1210331-024	NA	03/31/21 13:56
Instrument Blank	SJC0516-IBL3	XDT_m1210331-025	NA	03/31/21 14:01
Calibration Check	SJC0516-CCV2	XDT_m1210331-026	NA	03/31/21 14:05
Calibration Blank	SJC0516-CCB2	XDT_m1210331-027	NA	03/31/21 14:11
MW-CP5-031621	21C0250-09	XDT_m1210331-036	Water	03/31/21 14:44
Instrument Blank	SJC0516-IBL4	XDT_m1210331-037	NA	03/31/21 14:48
Calibration Check	SJC0516-CCV3	XDT_m1210331-038	NA	03/31/21 14:52
Calibration Blank	SJC0516-CCB3	XDT_m1210331-039	NA	03/31/21 14:58

ICP INTERFERENCE CHECK SAMPLE

EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Instrument ID: ICPMS1
Calibration: EC00098
Sequence: SJC0512
Standard ID: J002773

Lab Sample ID	Analyte	True	Found	%R	Units
SJC0512-IFA1	Arsenic-75a (dissolved)	0	0.0280		ug/L

* Indicates %R outside of QC limits
NOTE: True value and %R are populated only for analytes found in the interference check standards, and will be seen only if those analytes were requested.

ICP INTERFERENCE CHECK SAMPLE

EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Instrument ID: ICPMS1
Calibration: EC00098
Sequence: SJC0512
Standard ID: J002773

Lab Sample ID	Analyte	True	Found	%R	Units
SJC0512-IFB1	Arsenic-75a (dissolved)	20.000	19.403	97.0	ug/L

* Indicates %R outside of QC limits
NOTE: True value and %R are populated only for analytes found in the interference check standards, and will be seen only if those analytes were requested.

ICP INTERFERENCE CHECK SAMPLE

EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Instrument ID: ICPMS1
Calibration: EC00100
Sequence: SJC0516
Standard ID: J002773

Lab Sample ID	Analyte	True	Found	%R	Units
SJC0516-IFA1	Arsenic-75a (dissolved)	0	0.0230		ug/L

* Indicates %R outside of QC limits
NOTE: True value and %R are populated only for analytes found in the interference check standards, and will be seen only if those analytes were requested.

ICP INTERFERENCE CHECK SAMPLE

EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Instrument ID: ICPMS1
Calibration: EC00100
Sequence: SJC0516
Standard ID: J002773

Lab Sample ID	Analyte	True	Found	%R	Units
SJC0516-IFB1	Arsenic-75a (dissolved)	20.000	18.802	94.0	ug/L

* Indicates %R outside of QC limits
NOTE: True value and %R are populated only for analytes found in the interference check standards, and will be seen only if those analytes were requested.

DETECTION LEVEL STANDARD
EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Instrument ID: ICPMS1
Calibration: EC00098
Sequence: SJC0512
Lab Sample ID: SJC0512-CRL1

Analyte	True	Found	%R	Units	QC Limts
Arsenic-75a (dissolved)	0.20000	0.185	92.5	ug/L	50 - 150

* Values outside of QC limits

DETECTION LEVEL STANDARD
EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Instrument ID: ICPMS1
Calibration: EC00100
Sequence: SJC0516
Lab Sample ID: SJC0516-CRL1

Analyte	True	Found	%R	Units	QC Limts
Arsenic-75a (dissolved)	0.20000	0.188	94.0	ug/L	50 - 150

* Values outside of QC limits

HIGH-CONCENTRATION CALIBRATION VERIFICATION

EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Calibration: EC00098
Laboratory ID: SJC0512-HCV1
Sequence: SJC0512
Standard ID: J002774

ANALYTE	EXPECTED (ug/L)	FOUND (ug/L)	% DRIFT	QC LIMIT
Arsenic-75a (dissolved)	200.00	197	-1.4	10.00

* Values outside of QC limits

HIGH-CONCENTRATION CALIBRATION VERIFICATION

EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Calibration: EC00098
Laboratory ID: SJC0512-HCV2
Sequence: SJC0512
Standard ID: J002867

ANALYTE	EXPECTED (ug/L)	FOUND (ug/L)	% DRIFT	QC LIMIT
Arsenic-75a (dissolved)	300.00	291	-3.0	10.00

* Values outside of QC limits

HIGH-CONCENTRATION CALIBRATION VERIFICATION

EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Calibration: EC00100
Laboratory ID: SJC0516-HCV1
Sequence: SJC0516
Standard ID: J002774

ANALYTE	EXPECTED (ug/L)	FOUND (ug/L)	% DRIFT	QC LIMIT
Arsenic-75a (dissolved)	200.00	192	-3.8	10.00

* Values outside of QC limits

HIGH-CONCENTRATION CALIBRATION VERIFICATION

EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc.
SDG: 21C0250
Client: Floyd - Snider
Project: Lora Lake
Calibration: EC00100
Laboratory ID: SJC0516-HCV2
Sequence: SJC0516
Standard ID: J002867

ANALYTE	EXPECTED (ug/L)	FOUND (ug/L)	% DRIFT	QC LIMIT
Arsenic-75a (dissolved)	300.00	282	-6.0	10.00

* Values outside of QC limits

HOLDING TIME SUMMARY

Analysis: EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc. SDG: 21C0250

Client: Floyd - Snider Project: Lora Lake

Sample Name	Date Collected	Date Received	Date Prepared	Days to Prep	Max Days to Prep	Date Analyzed	Days to Analysis	Max Days to Analysis	Q
MW-C3-031621 21C0250-01	03/16/21 10:10	03/17/21 14:37	03/29/21 13:42	13	180	03/30/21 23:40	15	180	
MW-C3-031621-D 21C0250-02	03/16/21 10:15	03/17/21 14:37	03/29/21 13:42	13	180	03/30/21 23:44	15	180	
MW-C2-031621 21C0250-03	03/16/21 10:35	03/17/21 14:37	03/29/21 13:42	13	180	03/30/21 23:48	15	180	
MW-VB3-031621 21C0250-04	03/16/21 12:00	03/17/21 14:37	03/29/21 13:42	13	180	03/30/21 23:52	14	180	
HCOO-B312-031621 21C0250-05	03/16/21 12:55	03/17/21 14:37	03/29/21 13:42	13	180	03/30/21 23:56	14	180	
MW-CP7-031621 21C0250-06	03/16/21 14:25	03/17/21 14:37	03/29/21 13:42	12	180	03/31/21 00:00	14	180	
MW-CP6-031621 21C0250-07	03/16/21 14:26	03/17/21 14:37	03/29/21 13:42	12	180	03/31/21 00:04	14	180	
MW-CP4-031621 21C0250-08	03/16/21 15:30	03/17/21 14:37	03/29/21 13:42	12	180	03/31/21 00:08	14	180	
MW-CP5-031621 21C0250-09	03/16/21 15:55	03/17/21 14:37	03/29/21 13:42	12	180	03/31/21 14:44	15	180	
MW-CP2-031721 21C0250-10	03/17/21 09:30	03/17/21 14:37	03/29/21 13:42	12	180	03/31/21 00:45	14	180	
MW-CP2-031721-D 21C0250-11	03/17/21 09:40	03/17/21 14:37	03/29/21 13:42	12	180	03/31/21 00:49	14	180	
MW-CP3-031721 21C0250-12	03/17/21 09:40	03/17/21 14:37	03/29/21 13:42	12	180	03/31/21 00:53	14	180	
MW-CP1-031721 21C0250-13	03/17/21 10:50	03/17/21 14:37	03/29/21 13:42	12	180	03/31/21 00:57	14	180	
MW-C1/VB1-031721 21C0250-14	03/17/21 13:00	03/17/21 14:37	03/29/21 13:42	12	180	03/31/21 01:48	14	180	
MW-VB2-031721 21C0250-15	03/17/21 13:25	03/17/21 14:37	03/29/21 13:42	12	180	03/31/21 01:01	13	180	
Duplicate BJC0762-DUP1	03/17/21 13:25	03/17/21 14:37	03/29/21 13:42	12	180	03/31/21 01:05	13	180	
Matrix Spike BJC0762-MS1	03/17/21 13:25	03/17/21 14:37	03/29/21 13:42	12	180	03/31/21 01:10	13	180	

* Indicates hold time exceedance.

METHOD DETECTION AND REPORTING LIMITS

EPA 200.8 UCT-KED

Laboratory: Analytical Resources, Inc. SDG: 21C0250

Client: Floyd - Snider Project: Lora Lake

Matrix: Water Instrument: ICPMS1

Analyte	MDL	RL	Units
Arsenic-75a (dissolved)	0.0373	0.200	ug/L

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO Guide 34, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGMO10
Lot Number:	N2-MO670050
Matrix:	H2O tr NH4OH
Value / Analyte(s):	10 000 µg/mL ea: Molybdenum
Starting Material:	Ammonium Molybdate
Starting Material Lot#:	2197
Starting Material Purity:	99.9921%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10013 ± 31 µg/mL

Density: 1.011 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **10006 ± 42 µg/mL**
ICP Assay NIST SRM 3134 Lot Number: 130418

Assay Method #2 **10021 ± 44 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two Methods

Certified Value, $X_{CRM/RM}$, where two methods of characterization are used is the weighted mean of the two results:

$X_{CRM/RM} = [(w_a)(X_a) + (w_b)(X_b)]$

X_a = mean of Assay Method A with standard uncertainty $u_{char\ a}$

X_b = mean of Assay Method B with standard uncertainty $u_{char\ b}$

w_a and w_b = the weighting factors for each method calculated using the inverse square of the variance:

$w_a = (1/u_{char\ a})^2 / ((1/u_{char\ a})^2 + (1/u_{char\ b})^2))$

$w_b = (1/u_{char\ b})^2 / ((1/u_{char\ a})^2 + (1/u_{char\ b})^2))$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a\&b} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2 in all cases at Inorganic Ventures

$u_{char\ a\&b} = [(w_a)^2 (u_{char\ a})^2 + (w_b)^2 (u_{char\ b})^2]^{1/2}$ where $u_{char\ a}$ and $u_{char\ b}$ are the square root of the sum of the squares of errors from characterization which include instrument measurement, density, NIST SRM uncertainty, weighing, and volume

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM}$ = mean of Assay Method A with standard uncertainty $u_{char\ a}$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2 in all cases at Inorganic Ventures

$u_{char\ a}$ = square root of the sum of the squares of the errors from characterization which include instrumental measurement, density, NIST SRM uncertainty, weighing, and volume

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000631	M	Eu	<	0.000315	O	Na		0.006415	M	Se	<	0.010742	M	Zn		0.009510
M	Al		0.003279	M	Fe	<	0.006634	M	Nb	<	0.025907	i	Si	<		M	Zr	<	0.001263
M	As		0.104451	M	Ga	<	0.000315	i	Nd	<		M	Sm	<	0.000315				
M	Au	<	0.003161	M	Gd	<	0.000315	M	Ni	<	0.001895	M	Sn		0.004481				
M	B	<	0.050867	M	Ge	<	0.001263	M	Os	<	0.000632	M	Sr		0.000436				
i	Ba	<		M	Hf	<	0.000315	i	P	<		M	Ta	<	0.001263				
M	Be	<	0.000315	M	Hg	<	0.006954	M	Pb	<	0.001263	M	Tb	<	0.000315				
M	Bi	<	0.005055	M	Ho	<	0.000315	M	Pd	<	0.000631	i	Te	<					
O	Ca		0.011541	M	In		0.003935	M	Pr	<	0.061294	M	Th	<	0.000315				
O	Cd	<	0.118155	M	Ir	<	0.003161	M	Pt	<	0.000631	O	Ti	<	0.103600				
M	Ce	<	0.071404	O	K		0.181442	M	Rb	<	0.005687	M	Tl		0.000983				
M	Co	<	0.003159	M	La	<	0.000315	M	Re		0.050830	M	Tm	<	0.000315				
M	Cr		0.051377	O	Li		0.001182	M	Rh	<	0.000315	M	U	<	0.000315				
M	Cs	<	0.005055	M	Lu	<	0.000315	M	Ru	<	0.088514	M	V	<	0.012006				
M	Cu		0.004809	M	Mg		0.010712	i	S	<		M	W		1.251642				
M	Dy	<	0.001263	M	Mn		0.003279	M	Sb		0.003169	M	Y	<	0.000315				
M	Er	<	0.000315	s	Mo	<		M	Sc	<	0.000631	M	Yb	<	0.000315				

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 95.94 +6 6,7,8,9 [MoO4] -2(chemical form as received)
Chemical Compatibility -Mo is received in a NH4OH matrix giving the operator the option of using HCl or HF to stabilize acidic solutions. The [MoO4]-2 is soluble in concentrated HCl [MoOCl5]-2, dilute HF / HNO3 [MoOF5] -2 and basic media [MoO4]-2. Stable at ppm levels with some metals provided it is fluorinated. Do not mix with Alkaline or Rare Earths when HF is present. Stable with most inorganic anions provided it is in the [MoO4]-2 chemical form.
Stability - 2-100 ppb levels stable (alone or mixed with all other metals that are at comparable levels) as the [MoOF5]-2 for months in 1% HNO3 / LDPE container. 1-10,000 ppm single element solutions as the [MoO4] -2 chemically stable for years in 1% NH4OH in a LDPE container.
Mo Containing Samples (Preparation and Solution) -Metal (Soluble in HF / HNO3 or hot dilute HCl); Oxide (soluble in HF or NH4OH) ; Organic Matrices (Dry ash at 450EC in Pt0 and dissolve oxide with HF or HCl).
Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 95 amu	3 ppt	n/a	40Ar39K16O,79Br16O,190Os2+,190Pt2+
ICP-OES 202.030 nm	0.008 / 0.0002 µg/mL	1	Os, Hf
ICP-OES 203.844 nm	0.012 / 0.002 µg/mL	1	
ICP-OES 204.598 nm	0.012 / 0.001 µg/mL	1	Ir, Ta

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO Guide 34 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

August 10, 2018

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **August 10, 2022**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Supervisor, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGSB10
Lot Number:	N2-SB672482
Matrix:	3% (v/v) HNO3 3% (v/v) Tartaric Acid
Value / Analyte(s):	10 000 µg/mL ea: Antimony
Starting Material:	Antimony Metal
Starting Material Lot#:	1857
Starting Material Purity:	99.9838%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10041 ± 45 µg/mL

Density: 1.061 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **10041 ± 39 µg/mL**
ICP Assay NIST SRM 3102a Lot Number: 140911

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{1/2}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\,(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000210	M	Eu	<	0.000110	O	Na		0.060000	M	Se	<	0.001500	O	Zn		0.003900
M	Al		0.110000	O	Fe		0.028000	M	Nb	<	0.000110	O	Si		0.071000	M	Zr	<	0.002700
M	As	<	0.003100	M	Ga	<	0.000210	M	Nd	<	0.000110	M	Sm	<	0.000110				
M	Au	<	0.000110	M	Gd	<	0.000110	O	Ni		0.005900	M	Sn		0.001800				
O	B		0.018000	M	Ge	<	0.000110	M	Os	<	0.000110	O	Sr	<	0.000540				
O	Ba	<	0.000540	M	Hf	<	0.000610	O	P		0.590000	M	Ta	<	0.000410				
O	Be	<	0.000110	M	Hg	<	0.000110	M	Pb	<	0.002500	M	Tb	<	0.000110				
M	Bi	<	0.000210	M	Ho	<	0.000110	M	Pd	<	0.000110	M	Te	<	0.002600				
O	Ca		0.078000	M	In	<	0.000410	M	Pr	<	0.003100	M	Th	<	0.000110				
M	Cd	<	0.000210	M	Ir	<	0.000110	M	Pt	<	0.000110	O	Ti		0.014000				
M	Ce		0.007700	O	K		0.530000	M	Rb		0.002200	M	Tl	<	0.000110				
M	Co	<	0.001300	O	La	<	0.008300	M	Re	<	0.000110	M	Tm	<	0.000110				
O	Cr		0.099000	O	Li		0.000540	M	Rh	<	0.000110	M	U	<	0.000110				
M	Cs	<	0.000510	M	Lu	<	0.000110	M	Ru	<	0.000110	O	V	<	0.001400				
O	Cu	<	0.003100	O	Mg		0.004500	n	S	<		M	W	<	0.000510				
M	Dy	<	0.000110	O	Mn		0.002700	s	Sb	<		M	Y	<	0.000110				
M	Er	<	0.000110	M	Mo		0.003600	O	Sc	<	0.000850	M	Yb	<	0.000110				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 121.75 +3 6 Sb(O)C4H4O6-1
Chemical Compatibility -Stable in conc. HCl, dilute or conc. HF. Stable in dilute HNO3 as the fluoride or tartrate complex. Avoid basic media. Stable with most metals and inorganic anions in acidic media as the tartrate provided the acidity is not too high or the acid is oxidizing causing loss of the stabilizing tartrate ion. The fluoride complex of antimony is stable in strong acid but you should only mix with other metals that are fluorinated.
Stability - 2-100 ppb levels stable for months in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-2% HNO3 / LDPE container.
Sb Containing Samples (Preparation and Solution) -Metal and alloys (Soluble in H2O / HF / HNO3 mixture); Oxides (Soluble in HCl and tartaric acid or H2O / HF / HNO3 mixtures); Ores (fusion with Na2CO3 in Pt0 followed by dissolving the fuseate in a H2O / HF / HNO3 mixture); Organic based (sulfuric acid / hydrogen peroxide digestion)
Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 121 amu	5 ppt	N/A	105Pd16O, 89Y16O2
ICP-OES 206.833 nm	0.03/0.003 µg/mL	1	Ta, Cr, Ge, Hf
ICP-OES 217.581 nm	0.05/0.005 µg/mL	1	Nb, W, Re, Fe
ICP-OES 231.147 nm	0.06/0.006 µg/mL	1	Ni, Co, Pt

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

January 18, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **January 18, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Supervisor, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
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CERTIFICATE OF ANALYSIS

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGAG10
Lot Number:	P2-AG679501
Matrix:	7% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Silver
Starting Material:	Ag Shot
Starting Material Lot#:	2217
Starting Material Purity:	99.9993%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 9996 ± 30 µg/mL

Density: 1.053 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **10015 ± 56 µg/mL**
ICP Assay NIST SRM 3151 Lot Number: 160729

Assay Method #2 **9992 ± 25 µg/mL**
Volhard NIST SRM 999c Lot Number: 999c

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

s	Ag	<		M	Eu	<	0.000253	O	Na		0.005562	M	Se	<	0.018179	M	Zn		0.005799
O	Al		0.006295	O	Fe		0.002932	M	Nb	<	0.000253	M	Si		0.022484	M	Zr	<	0.005559
M	As	<	0.002403	M	Ga	<	0.000253	M	Nd	<	0.000253	M	Sm	<	0.000253				
M	Au		0.001634	M	Gd	<	0.000253	O	Ni	<	0.005472	M	Sn		0.001927				
O	B	<	0.009978	M	Ge	<	0.000754	M	Os	<	0.000254	O	Sr		0.000086				
M	Ba	<	0.000785	M	Hf	<	0.000253	M	P	<	0.053784	M	Ta	<	0.000253				
M	Be	<	0.002407	M	Hg	<	0.001332	M	Pb		0.003281	M	Tb	<	0.000253				
M	Bi		0.001671	M	Ho	<	0.000253	M	Pd	<	0.001382	M	Te	<	0.003715				
O	Ca		0.007115	M	In	<	0.003483	M	Pr	<	0.000253	M	Th	<	0.000253				
M	Cd	<	0.000253	M	Ir	<	0.000254	M	Pt	<	0.000253	M	Ti	<	0.002706				
M	Ce	<	0.000573	O	K		0.004010	M	Rb	<	0.000253	M	Tl	<	0.000253				
M	Co	<	0.000253	M	La	<	0.000253	M	Re	<	0.000253	M	Tm	<	0.000253				
O	Cr	<	0.005043	O	Li	<	0.000214	M	Rh	<	0.000253	M	U	<	0.000253				
M	Cs	<	0.002769	M	Lu	<	0.000253	M	Ru	<	0.000254	M	V	<	0.000822				
O	Cu		0.004614	O	Mg		0.001034	M	S	<	0.560935	M	W	<	0.002146				
M	Dy	<	0.000253	M	Mn	<	0.000253	M	Sb	<	0.006899	M	Y	<	0.000253				
M	Er	<	0.000253	M	Mo	<	0.000479	M	Sc	<	0.000733	M	Yb	<	0.000253				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 107.87 +1 6 $Ag(H_2O)_6^+$
Chemical Compatibility -Stable in HNO_3, and HF. Avoid basic media. Ag forms more insoluble salts than any other metal. It also is subject to photochemical reduction to the metal in HCl media although 10 µg/mL solutions in 10% HCl [$AgCl_{x1-x}$] are commonly used in the analytical laboratory. The most common solubility problems exist with arsenate, arsenite , bromide, chloride, iodide, carbonate , chromate, cyanide, iodate, oxalate, oxide, sulfate, sulfide, tartrate, and thiocyanate in aqueous media. The addition of nitric acid renders many of these salts soluble.
Stability - 2-100 ppb levels stable for 75+ days when mixed with equivalent levels of all other elements including the precious metals (where chloride is present) when in 1% HNO_3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-5% HNO_3 / LDPE container.
Ag Containing Samples (Preparation and Solution) -Metal (Soluble in HNO_3); Oxides (Soluble in HNO_3); Ores (Digestion with conc. HNO_3).
Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 107 amu	1 ppt	N/A	91Zr16O
ICP-OES 243.779 nm	0.12/0.01 µg/mL	1	Mn, Th, Ni, Rh
ICP-OES 328.068 nm	0.007/0.0007 µg/mL	1	Ce, Rh, V
ICP-OES 338.289 nm	0.013/0.001 µg/mL	1	Ce, Cr, Th

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

June 07, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **June 07, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Supervisor, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGAL10
Lot Number:	R2-AL689264
Matrix:	7% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Aluminum
Starting Material:	Al shot
Starting Material Lot#:	2253
Starting Material Purity:	99.9986%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10020 ± 33 µg/mL

Density: 1.085 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **10028 ± 25 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #2 **9979 ± 49 µg/mL**
ICP Assay NIST SRM 3101a Lot Number: 140903

Assay Method #3 **10031 ± 52 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000635	M	Eu	<	0.000635	O	Na		0.026739	M	Se	<	0.011252	M	Zn	<	0.006354
s	Al	<		O	Fe		0.014971	M	Nb	<	0.000635	O	Si		0.079302	M	Zr	<	0.005083
O	As	<	0.026840	M	Ga	<	0.005083	M	Nd	<	0.001906	M	Sm	<	0.000635				
M	Au	<	0.000625	M	Gd	<	0.000635	M	Ni	<	0.012708	M	Sn	<	0.008895				
O	B		0.010178	M	Ge	<	0.002541	M	Os	<	0.000625	O	Sr	<	0.000671				
M	Ba	<	0.003812	M	Hf	<	0.000635	n	P	<		M	Ta	<	0.000635				
M	Be	<	0.002541	M	Hg	<	0.000625	M	Pb	<	0.000635	M	Tb	<	0.006354				
M	Bi	<	0.000635	M	Ho	<	0.000635	M	Pd	<	0.000635	M	Te	<	0.006989				
O	Ca		0.010097	M	In	<	0.016521	M	Pr	<	0.000635	M	Th	<	0.001270				
M	Cd	<	0.000635	M	Ir	<	0.000625	M	Pt	<	0.000635	O	Ti		0.001157				
M	Ce	<	0.010166	O	K		0.008132	M	Rb	<	0.002541	M	Tl	<	0.000635				
O	Co	<	0.009394	O	La	<	0.009394	M	Re	<	0.000635	M	Tm	<	0.000635				
O	Cr		0.002638	O	Li	<	0.000671	M	Rh	<	0.000635	M	U	<	0.000635				
M	Cs	<	0.001906	M	Lu	<	0.000635	M	Ru	<	0.000625	O	V	<	0.013420				
O	Cu		0.008751	O	Mg		0.011605	i	S	<		M	W	<	0.003812				
M	Dy	<	0.000635	O	Mn		0.000780	M	Sb	<	0.001270	M	Y	<	0.000635				
M	Er	<	0.000635	M	Mo	<	0.005718	M	Sc	<	0.003812	M	Yb	<	0.000635				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 26.98 +3 6 Al(H2O)6+3
Chemical Compatibility -Soluble in HCl, HNO3, HF and H2SO4. Avoid neutral media. Soluble in strongly basic NaOH forming the Al(OH)4(H2O)21- species. Stable with most metals and inorganic anions. The phosphate is insoluble in water and only slightly soluble in acid.
Stability - 2-100 ppb levels stable for months in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 2-5% HNO3 / LDPE container.
Al Containing Samples (Preparation and Solution) -Metal (Best dissolved in HCl / HNO3); a- Al2O3 (Na2CO3 fusion in Pt0);
Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 27 amu	30 ppt	N/A	12C15N, 13C14N, 1H12C14N, 11B16O, 54Cr2+, 54Fe2+
ICP-OES 167.078 nm	0.1/0.009 µg/mL	1	Fe
ICP-OES 394.401 nm	0.05/0.006 µg/mL	1	U, Ce
ICP-OES 396.152 nm	0.03/0.006 µg/mL	1	Mo, Zr, Ce

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

February 22, 2020

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **February 22, 2024**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

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CERTIFICATE OF ANALYSIS

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGAS10
Lot Number:	R2-AS691113
Matrix:	2% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Arsenic
Starting Material:	As Pieces
Starting Material Lot#:	2208
Starting Material Purity:	99.9980%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 9981 ± 55 µg/mL

Density: 1.028 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **9981 ± 55 µg/mL**
ICP Assay NIST SRM 3103a Lot Number: 100818

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The follow ing equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\,(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.001578	M	Eu	<	0.000526	O	Na		0.036136	M	Se	<	0.014204	O	Zn	<	0.003390
O	Al		0.006694	M	Fe		0.002633	O	Nb	<	0.011526	O	Si		0.139479	M	Zr	<	0.003156
s	As	<		M	Ga	<	0.000526	M	Nd	<	0.000526	M	Sm	<	0.000526				
M	Au	<	0.000526	M	Gd	<	0.000526	O	Ni	<	0.005537	M	Sn	<	0.001052				
M	B		0.017011	M	Ge	<	0.000526	M	Os	<	0.000526	M	Sr	<	0.000526				
M	Ba	<	0.000526	M	Hf	<	0.000526	O	P	<	0.056500	M	Ta	<	0.000526				
O	Be	<	0.001130	M	Hg	<	0.002104	M	Pb	<	0.000526	M	Tb	<	0.000526				
M	Bi	<	0.002104	M	Ho	<	0.000526	M	Pd	<	0.000526	M	Te	<	0.003682				
O	Ca		0.005657	M	In	<	0.000526	M	Pr	<	0.002630	M	Th	<	0.000526				
M	Cd	<	0.000526	M	Ir	<	0.000526	M	Pt	<	0.000526	O	Ti	<	0.001017				
M	Ce	<	0.000526	O	K		0.003865	M	Rb	<	0.002104	M	Tl	<	0.000526				
M	Co	<	0.003156	M	La	<	0.000526	M	Re	<	0.000526	M	Tm	<	0.000526				
M	Cr		0.000877	M	Li	<	0.000526	M	Rh	<	0.000526	M	U	<	0.000526				
M	Cs	<	0.002104	M	Lu	<	0.000526	M	Ru	<	0.000526	M	V	<	0.001578				
M	Cu	<	0.003156	O	Mg		0.000235	O	S	<	0.056500	M	W	<	0.000526				
M	Dy	<	0.000526	M	Mn	<	0.001052	M	Sb	<	0.000526	M	Y	<	0.000526				
M	Er	<	0.000526	M	Mo	<	0.000526	M	Sc	<	0.002104	M	Yb	<	0.000526				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 74.92 ; mix of +3 and +5 ; 6 ; H_3AsO_4 and $HAsO_2$

Chemical Compatibility - Arsenic has no cationic chemistry. It is soluble in HCl, HNO_3,H_3PO_4, H_2SO_4 and HF aqueous matrices water and NH_4OH . It is stable with most inorganic anions (forms arsenate when boiled with chromate) but many cationic metals form the insoluble arsenates under pH neutral conditions. When fluorinated and / or under acidic conditions arsenate formation is typically not a problem at moderate to low concentrations.

Stability - 2-100 ppb levels stable for months alone or mixed with other elements at equivalent levels in 1% HNO_3 / LDPE container.

As Containing Samples (Preparation and Solution) - Metal (soluble in 1:1 H_2O / HNO_3); Oxides (the oxide exists in crystalline and amorphous forms where the amorphic form is more water soluble. The oxides typically dissolve in dilute acidic solutions when boiled); Minerals (one gram of powered sample is fused in a Ni crucible with 10 grams of a 1:1 mix of K_2CO_3 and KNO_3 and the melt extracted with hot water); Organic Matrices (0.2 to 0.5 grams of sample are fused with 15 grams of a 1:1 Na_2CO_3 / Na_2O_2 mix in a Ni crucible. The fuseate is extracted with water and acidified with HNO_3).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 75 amu	20 ppt	N/A	40Ar35Cl, 59Co16O, 36Ar38Ar1H,8Ar37Cl,Ar39K, 150Nd2+,150Sm2+
ICP-OES 189.042 nm	0.05/0.005 µg/mL	1	Cr
ICP-OES 193.696 nm	0.1/0.01 µg/mL	1	V, Ge
ICP-OES 228.812 nm	0.1/0.01 µg/mL	1	Cd, Pt, Ir, Co

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

March 25, 2020

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **March 25, 2024**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 · 540.585.3030
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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGBA10
Lot Number:	P2-BA682107
Matrix:	2% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Barium
Starting Material:	Ba(NO3)2
Starting Material Lot#:	Mixed Lots
Starting Material Purity:	99.9995%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10072 ± 32 µg/mL

Density: 1.024 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **10054 ± 80 µg/mL**
ICP Assay NIST SRM 3104a Lot Number: 140909

Assay Method #2 **10075 ± 30 µg/mL**
Gravimetric NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.001538	O	Eu	<	0.028728	O	Na		0.006767	M	Se	<	0.007964	O	Zn		0.004335
M	Al		0.005194	M	Fe		0.016554	M	Nb	<	0.000200	O	Si	<	0.020780	M	Zr	<	0.000271
M	As	<	0.000519	M	Ga	<	0.000200	M	Nd	<	0.000200	M	Sm	<	0.082480				
M	Au	<	0.003452	M	Gd	<	0.000200	M	Ni	<	0.001290	M	Sn	<	0.000200				
M	B	<	0.002519	M	Ge	<	0.000430	M	Os	<	0.000752	O	Sr		0.027070				
s	Ba	<		M	Hf	<	0.002746	O	P	<	0.044677	M	Ta	<	0.001008				
M	Be	<	0.000430	M	Hg	<	0.001063	M	Pb	<	0.002257	M	Tb	<	0.000200				
M	Bi	<	0.002971	M	Ho	<	0.000200	M	Pd	<	0.000286	M	Te	<	0.001470				
O	Ca		0.026224	M	In	<	0.000200	M	Pr	<	0.000200	M	Th	<	0.000200				
M	Cd	<	0.000200	M	Ir	<	0.000446	M	Pt	<	0.000200	M	Ti	<	0.000324				
M	Ce	<	0.004362	O	K		0.011526	M	Rb		0.001487	M	Tl	<	0.000200				
M	Co	<	0.000200	O	La	<	0.091587	M	Re	<	0.000200	M	Tm	<	0.000954				
M	Cr	<	0.002191	O	Li	<	0.002181	M	Rh	<	0.000200	M	U	<	0.000200				
M	Cs	<	0.001640	M	Lu	<	0.002934	M	Ru	<	0.000200	M	V	<	0.000229				
M	Cu	<	0.003646	O	Mg		0.002379	O	S	<	0.073041	M	W	<	0.001627				
M	Dy	<	0.000200	M	Mn	<	0.000902	M	Sb	<	0.000514	O	Y	<	0.019637				
M	Er	<	0.000556	M	Mo	<	0.000455	M	Sc	<	0.000478	M	Yb	<	0.001991				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 137.33 +2 6 $Ba(H_2O)_6^{+2}$

Chemical Compatibility - Soluble in HCl, and HNO_3. Avoid H_2SO_4, HF and neutral to basic media. Stable with most metals and inorganic anions forming insoluble silicate, carbonate, hydroxide, oxide, fluoride, sulfate, oxalate, chromate, arsenate, iodate, molybdate, sulfite and tungstate in neutral aqueous media.

Stability - 2-100 ppb levels stable for months in 1% HNO_3 / LDPE container. 1 -10,000 ppm solutions chemically stable for years in 1-3.5% HNO_3 / LDPE container.

Ba Containing Samples (Preparation and Solution) -Metal(is best dissolved in diluted HNO_3); Ores(Carbonate fusion in Pt0 followed by HCl dissolution. If sulfate is present dissolve the fuseate using HCl / tartaric acid to prevent $BaSO_4$ precipitate); Organic Matrices (dry ash and dissolve in dilute HCl.)

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 138 amu	1 ppt	N/A	122Sn16O, 122Te16O
ICP-OES 230.424 nm	0.004/0.0005 µg/mL	1	Mo, Ir, Co
ICP-OES 233.527 nm	0.004/0.0003 µg/mL	1	
ICP-OES 455.403 nm	0.002/0.0001 µg/mL	1	Zr, U

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

September 13, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **September 13, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

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CERTIFICATE OF ANALYSIS

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ACCREDITED
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ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGBE10
Lot Number:	P2-BE678865
Matrix:	6% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Beryllium
Starting Material:	Beryllium diacetate
Starting Material Lot#:	2221
Starting Material Purity:	99.9998%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10036 ± 35 µg/mL

Density: 1.140 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **10051 ± 42 µg/mL**
ICP Assay NIST SRM 3105a Lot Number: 090514

Assay Method #2 **10008 ± 59 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag		0.045414	M	Eu	<	0.000254	O	Na		0.015009	M	Se	<	0.015257	O	Zn		0.004059
O	Al		0.008058	O	Fe		0.011749	M	Nb	<	0.000254	O	Si		0.063793	O	Zr	<	0.007064
M	As	<	0.006473	M	Ga	<	0.000254	M	Nd	<	0.000254	M	Sm	<	0.000254				
M	Au	<	0.000248	M	Gd	<	0.000254	M	Ni	<	0.002034	M	Sn	<	0.002542				
O	B	<	0.021661	M	Ge	<	0.000508	M	Os	<	0.000248	M	Sr	<	0.000254				
M	Ba		0.001760	M	Hf	<	0.000254	O	P	<	0.666500	M	Ta	<	0.000254				
s	Be	<		M	Hg	<	0.001244	M	Pb	<	0.001271	M	Tb	<	0.000254				
M	Bi	<	0.000254	M	Ho	<	0.000254	M	Pd	<	0.000254	M	Te	<	0.001780				
O	Ca		0.015256	M	In	<	0.000254	M	Pr	<	0.000254	M	Th	<	0.000254				
M	Cd	<	0.000254	M	Ir	<	0.000248	M	Pt	<	0.000254	O	Ti	<	0.002266				
M	Ce	<	0.000254	O	K		0.031127	M	Rb	<	0.000508	M	Tl	<	0.000254				
M	Co	<	0.004068	M	La	<	0.000254	M	Re	<	0.000254	M	Tm	<	0.000254				
M	Cr	<	0.001525	O	Li	<	0.000666	M	Rh	<	0.000254	M	U	<	0.000254				
M	Cs		0.001642	M	Lu	<	0.000254	M	Ru	<	0.000248	M	V	<	0.000508				
M	Cu	<	0.005085	O	Mg		0.001907	i	S	<		M	W	<	0.004068				
M	Dy	<	0.000254	O	Mn	<	0.001333	M	Sb	<	0.000254	M	Y	<	0.000254				
M	Er	<	0.000254	M	Mo	<	0.000762	O	Sc	<	0.001333	M	Yb	<	0.000254				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 9.01 +2 4 Be+(H2O)4+2
Chemical Compatibility -Soluble in HCl, HNO3, H2SO4 and HF aqueous matrices. Stable with all metals and inorganic anions.
Stability - 2-100 ppb levels stable for months in 1 % HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 5-10 % HNO3 / LDPE container.
Be Containing Samples (Preparation and Solution) - Meta l(is best dissolved in diluted H2SO4); BeO (boiling nitric, hydrochloric, or sulfuric acids or KHSO4 fusion); Ores (H2SO4/HF digestion or carbonate fusion in Pt0); Organic Matrices (sulfuric/peroxide digestion or nitric/sulfuric/perchloric acid decomposition, or dry ash and dissolution according to the BeO procedure above).
Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 9 amu	4 ppt	N/A	
ICP-OES 234.861 nm	0.0003/0.00016 µg/mL	1	Fe, Ta, Mo
ICP-OES 313.042 nm	0.0003/0.00009 µg/mL	1	V, Ce, U
ICP-OES 313.107 nm	0.0007/0.0005 µg/mL	1	Ce, Th, Tm

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

April 22, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **April 22, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Supervisor, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

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ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGCA10
Lot Number:	P2-CA688224
Matrix:	2% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Calcium
Starting Material:	Calcium Oxide
Starting Material Lot#:	P2-CA677788
Starting Material Purity:	99.9998%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10034 ± 30 µg/mL

Density: 1.039 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **10033 ± 29 µg/mL**
ICP Assay NIST SRM 3109a Lot Number: 130213

Assay Method #2 **10038 ± 26 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #3 **10021 ± 47 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.004700	M	Eu	<	0.001200	O	Na		0.005556	M	Se	<	0.023000	O	Zn		0.000555
M	Al		0.005229	O	Fe		0.002723	M	Nb	<	0.001200	O	Si	<	0.029000	M	Zr	<	0.001200
M	As	<	0.013000	M	Ga	<	0.002400	M	Nd	<	0.001200	M	Sm	<	0.001200				
M	Au	<	0.002400	M	Gd	<	0.001200	O	Ni	<	0.003100	M	Sn	<	0.003600				
O	B	<	0.014000	M	Ge	<	0.003600	M	Os	<	0.001200	O	Sr		0.043577				
M	Ba		0.001024	M	Hf	<	0.001200	O	P	<	0.067000	M	Ta	<	0.001200				
M	Be	<	0.001200	M	Hg	<	0.003600	M	Pb	<	0.017000	M	Tb	<	0.001200				
M	Bi	<	0.001200	M	Ho	<	0.001200	M	Pd	<	0.001200	M	Te	<	0.015000				
s	Ca	<		M	In	<	0.001200	M	Pr	<	0.001200	M	Th	<	0.001200				
M	Cd	<	0.001200	M	Ir	<	0.001200	M	Pt	<	0.001200	O	Ti	<	0.007900				
M	Ce	<	0.001200	O	K		0.005556	M	Rb	<	0.001200	M	Tl	<	0.001200				
O	Co		0.000642	M	La	<	0.001200	M	Re	<	0.001200	M	Tm	<	0.001200				
M	Cr	<	0.004700	O	Li	<	0.002300	M	Rh	<	0.001200	M	U	<	0.001200				
M	Cs	<	0.001200	M	Lu	<	0.001200	M	Ru	<	0.001200	M	V	<	0.001200				
M	Cu	<	0.007100	O	Mg		0.003268	n	S	<		M	W	<	0.002400				
M	Dy	<	0.001200	O	Mn		0.000119	M	Sb	<	0.001200	M	Y	<	0.001200				
M	Er	<	0.001200	M	Mo		0.001024	O	Sc	<	0.006800	M	Yb	<	0.001200				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 40.08 +2 6 $Ca(H_2O)_6^{+2}$

Chemical Compatibility - Soluble in HCl and HNO_3. Avoid H_2SO_4, HF, H_3PO_4 and neutral to basic media. Stable with most metals and inorganic anions forming insoluble silicate, carbonate, hydroxide, oxide, fluoride, sulfate, oxalate, chromate, arsenate, and tungstate in neutral aqueous media.

Stability - 2-100 ppb levels stable for months in 1% HNO_3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-10% HNO_3 / LDPE container.

Ca Containing Samples (Preparation and Solution) -Metal (best dissolved in diluted HNO_3); Ores (Carbonate fusion in Pt0 followed by HCl dissolution); Organic Matrices (dry ash and dissolution in dilute HCl. Do not heat when dissolving to avoid precipitation of SiO_2). The oxide, hydroxide, carbonate, phosphate, and fluoride of calcium are soluble in % levels of HCl or HNO_3. The sulfates (gypsum, anhydrite, etc.), certain silicates, and complex compounds require fusion with Na_2CO_3 followed by HCl / water dissolution. Note that contamination is a very real problem when analyzing for trace levels.

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 44 amu	1200 ppt	n/a	16O212C, 28Si16O, 88Sr
ICP-OES 393.366 nm	0.0002 / 0.00004 µg/mL	1	U, Ce
ICP-OES 396.847 nm	0.0005 / 0.00006 µg/mL	1	Th
ICP-OES 422.673 nm	0.01 / 0.001 µg/mL	1	Ge

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

January 25, 2020

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **January 25, 2024**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGCD10
Lot Number:	P2-CD675954
Matrix:	3% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Cadmium
Starting Material:	Cd Shot
Starting Material Lot#:	1954
Starting Material Purity:	99.9998%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10014 ± 30 µg/mL

Density: 1.029 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **10021 ± 32 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #2 **10038 ± 43 µg/mL**
ICP Assay NIST SRM 3108 Lot Number: 130116

Assay Method #3 **9996 ± 30 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag		0.000834	O	Eu	<	0.002146	O	Na		0.003359	M	Se	<	0.003997	O	Zn		0.000251
O	Al		0.002435	O	Fe	<	0.001180	M	Nb	<	0.000399	O	Si		0.009519	M	Zr	<	0.000399
M	As	<	0.003997	M	Ga	<	0.000399	M	Nd	<	0.000399	M	Sm	<	0.000799				
M	Au	<	0.002809	M	Gd	<	0.000399	M	Ni	<	0.002398	M	Sn	<	0.000799				
M	B	<	0.005197	M	Ge	<	0.004397	M	Os	<	0.000401	O	Sr	<	0.000107				
M	Ba	<	0.000399	M	Hf	<	0.000399	O	P	<	0.023606	M	Ta	<	0.000399				
O	Be	<	0.000107	O	Hg	<	0.010730	M	Pb	<	0.001599	M	Tb	<	0.000399				
M	Bi	<	0.000399	M	Ho	<	0.000399	M	Pd	<	0.000799	M	Te	<	0.005596				
O	Ca		0.001399	O	In	<	0.015558	M	Pr	<	0.000399	M	Th	<	0.000399				
s	Cd	<		M	Ir	<	0.000401	M	Pt	<	0.000399	O	Ti	<	0.000536				
M	Ce	<	0.000399	O	K		0.004479	M	Rb	<	0.000399	M	Tl		0.000625				
M	Co	<	0.000399	M	La	<	0.000399	M	Re	<	0.000399	M	Tm	<	0.000399				
M	Cr	<	0.001199	O	Li	<	0.000214	M	Rh	<	0.000399	M	U	<	0.000399				
M	Cs	<	0.000399	M	Lu	<	0.000399	M	Ru	<	0.000401	M	V	<	0.001599				
O	Cu	<	0.003219	O	Mg		0.000083	O	S	<	0.021460	M	W	<	0.000799				
M	Dy	<	0.000399	O	Mn	<	0.000429	M	Sb	<	0.001599	M	Y	<	0.000399				
M	Er	<	0.000399	M	Mo	<	0.000399	O	Sc	<	0.000429	M	Yb	<	0.000399				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 112.41 +2 4 Cd2(OH) (aq)3+ and Cd(OH)(aq)
Chemical Compatibility -Stable in HCl, HNO3, H2SO4 , and HF. Avoid basic media forming insoluble carbonate and hydroxide.
Stability - 2-100 ppb levels stable for months in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-5 % HNO3 / LDPE container.
Cd Containing Samples (Preparation and Solution) -Metal (soluble in HNO3); Oxides (soluble in HCl or HNO3); Ores (dissolve in HCl /HNO3 then take to fumes with H2SO4. The silica and lead sulfate are filtered off after the addition of water); Organic based (dry ash at 450°C and dissolve ash in HCl), (sulfuric / peroxide acid digestion).
Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 111 amu	11 ppt	n/a	95Mo16O
ICP-OES 214.438 nm	0.003 / 0.0003 µg/mL	1	Pt, Ir
ICP-OES 226.502 nm	0.003 / 0.0003 µg/mL	1	Ir
ICP-OES 228.802 nm	0.003 / 0.0003 µg/mL	1	Co, Ir, As, Pt

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

March 07, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **March 07, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Supervisor, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGCO10
Lot Number:	N2-CO671028
Matrix:	3% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Cobalt
Starting Material:	COBALT
Starting Material Lot#:	1749
Starting Material Purity:	99.9978%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 9988 ± 34 µg/mL

Density: 1.057 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **9973 ± 32 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #2 **10024 ± 50 µg/mL**
ICP Assay NIST SRM traceable to 3113 Lot Number: M2-CO661665

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

O	Ag		0.022956	M	Eu	<	0.000422	O	Na		0.008125	M	Se	<	0.009290	M	Zn		0.007197
O	Al		0.013621	O	Fe		0.048700	M	Nb	<	0.000422	O	Si		0.017539	M	Zr	<	0.014357
i	As	<		M	Ga	<	0.000844	M	Nd	<	0.017735	M	Sm	<	0.001689				
M	Au	<	0.000583	M	Gd		0.003247	O	Ni	<	0.043642	M	Sn	<	0.005067				
M	B	<	0.013512	M	Ge	<	0.004645	M	Os	<	0.000583	O	Sr		0.000841				
O	Ba		0.071210	M	Hf	<	0.000422	n	P	<		M	Ta	<	0.000422				
O	Be	<	0.001771	M	Hg	<	0.002334	M	Pb		0.010094	M	Tb	<	0.001689				
M	Bi		0.000614	M	Ho	<	0.000422	M	Pd	<	0.000422	M	Te	<	0.008445				
O	Ca		0.025034	M	In	<	0.003378	M	Pr	<	0.006756	M	Th	<	0.000422				
M	Cd	<	0.000844	M	Ir	<	0.000583	M	Pt	<	0.000422	M	Ti	<	0.002533				
M	Ce		0.002721	O	K		0.005785	M	Rb	<	0.001689	M	Tl	<	0.000422				
s	Co	<		M	La		0.000877	M	Re		0.016853	M	Tm	<	0.000422				
M	Cr	<	0.020269	O	Li		0.000262	M	Rh	<	0.000422	M	U	<	0.000422				
M	Cs		0.000877	M	Lu	<	0.000422	M	Ru	<	0.000583	M	V	<	0.001689				
M	Cu		0.007197	O	Mg		0.003444	n	S	<		M	W	<	0.000844				
M	Dy	<	0.000422	O	Mn	<	0.006072	M	Sb	<	0.005911	M	Y		0.001228				
M	Er	<	0.000422	M	Mo	<	0.005911	M	Sc	<	0.001689	M	Yb	<	0.003378				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 58.93 +2 6 $Co(H_2O)_6^{2+}$
Chemical Compatibility -Stable in HCl, HNO_3, H_2SO_4 ,HF, H_3PO_4. Avoid basic media. Stable with most metals and inorganic anions in acidic media.
Stability - 2-100 ppb levels stable for months in 1% HNO_3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-5% HNO_3 / LDPE container.
Co Containing Samples (Preparation and Solution) - Metal (soluble in HNO_3); Oxides (Soluble in HCl); Ores (dissolve in HCl / HNO_3).
Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 59 amu	2 ppt	n/a	42Ca16O1H , 40Ar18O1H , 36Ar23Na, 43Ca16O, 24Mg35Cl
ICP-OES 228.616 nm	0.01/0.001 µg/mL	1	
ICP-OES 237.862 nm	0.01/0.002 µg/mL	1	W, Re, Al, Ta
ICP-OES 238.892 nm	0.01/0.002 µg/mL	1	Fe, W, Ta

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

January 15, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **January 15, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Supervisor, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGCR(3)10
Lot Number:	P2-CR684202
Matrix:	10% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Chromium
Starting Material:	Cr METAL
Starting Material Lot#:	2077
Starting Material Purity:	99.9942%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10056 ± 49 µg/mL

Density: 1.084 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **10061 ± 71 µg/mL**
ICP Assay NIST SRM 3112a Lot Number: 170630

Assay Method #2 **10052 ± 64 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000540	M	Eu	<	0.003200	O	Na		0.130027	M	Se	<	0.012000	O	Zn	<	0.002700
O	Al		0.016626	O	Fe		0.202502	M	Nb	<	0.022000	n	Si	<		M	Zr	<	0.020000
M	As		0.003836	O	Ga	<	0.031000	M	Nd	<	0.000540	M	Sm	<	0.035000				
M	Au	<	0.000540	M	Gd	<	0.000540	O	Ni		0.009165	M	Sn		0.004049				
M	B	<	0.049000	M	Ge	<	0.005400	M	Os	<	0.088000	O	Sr	<	0.000250				
O	Ba	<	0.002000	M	Hf	<	0.000540	i	P	<		M	Ta	<	0.000540				
O	Be	<	0.000250	M	Hg	<	0.001600	M	Pb		0.002557	M	Tb	<	0.000540				
M	Bi		0.008952	M	Ho	<	0.000540	M	Pd	<	0.001100	M	Te	<	0.004800				
O	Ca		0.074605	M	In	<	0.001100	M	Pr	<	0.000540	M	Th	<	0.000540				
M	Cd	<	0.000540	M	Ir	<	0.000540	M	Pt	<	0.000540	O	Ti		0.013428				
M	Ce	<	0.000540	O	K		0.034105	i	Rb	<		M	Tl	<	0.001100				
O	Co	<	0.002900	M	La	<	0.001100	M	Re	<	0.002700	O	Tm	<	0.001800				
s	Cr	<		O	Li	<	0.000130	M	Rh	<	0.032000	M	U	<	0.001100				
M	Cs	<	0.019000	M	Lu	<	0.000540	M	Ru	<	0.094000	O	V		0.159869				
O	Cu		0.010018	O	Mg		0.001449	i	S	<		M	W	<	0.028000				
M	Dy	<	0.000540	O	Mn	<	0.014000	M	Sb	<	0.008600	M	Y	<	0.001100				
M	Er	<	0.016000	O	Mo	<	0.013000	O	Sc	<	0.001400	M	Yb	<	0.000540				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 52.00 +3 6 $Cr(H_2O)_6^{3+}$

Chemical Compatibility -Stable in HCl, HNO_3, H_2SO_4, HF, H_3PO_4. Avoid basic media. Stable with most metals and inorganic anions in acidic media.

Stability - 2-100 ppb levels stable for months in 1% HNO_3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-5% HNO_3 / LDPE container.

Cr3 Containing Samples (Preparation and Solution) -Metal (soluble in HCl); Oxides/Ores (Chrome ore/oxides are very difficult to dissolve. The following procedures [A-D] are commonly used: A. Fusion with $KHSO_4$ and extraction with hot KCl. The residue fused with Na_2CO_3 and $KClO_3$, 3:1. B. Fusion with $NaKSO_4$ and NaF 2:1, C. Fusion with magnesia or lime and sodium or potassium carbonates, 4:1. D. Fusion with Na_2O_2 or NaOH and KNO_3 or NaOH and Na_2O_2. Nickel, iron, copper, or silver crucibles should be used for D. Platinum may be used for A, B, C); Organic Matrices (ash at 4500C followed by one of the fusion methods above or sulfuric/hydrogen peroxide acid digestions may be applicable to non oxide containing samples).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 52 amu	40 ppt	N/A	36S16O, 36Ar16O - The 50Cr, 53Cr, 54Cr lines suffer from many more potential interferences from sulfur, chlorine and argon compounds of oxygen, nitrogen and carbon.
ICP-OES 205.552 nm	0.006/0.0008 µg/mL	1	Os
ICP-OES 276.654 nm	0.01/0.001 µg/mL	1	Cu, Ta, V
ICP-OES 284.325 nm	0.008/0.0007 µg/mL	1	

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

November 02, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **November 02, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGCU10
Lot Number:	P2-CU682108
Matrix:	3% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Copper
Starting Material:	Cu Metal
Starting Material Lot#:	2095
Starting Material Purity:	99.9996%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10013 ± 30 µg/mL

Density: 1.032 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **9977 ± 50 µg/mL**
ICP Assay NIST SRM 3114 Lot Number: 121207

Assay Method #2 **10024 ± 26 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #3 **10007 ± 46 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.007542	M	Eu	<	0.000942	O	Na		0.001434	M	Se	<	0.016971	M	Zn	<	0.005657
O	Al	<	0.000609	O	Fe		0.008700	M	Nb	<	0.000942	O	Si		0.003052	M	Zr	<	0.000942
M	As	<	0.010371	M	Ga	<	0.000942	M	Nd	<	0.000942	M	Sm	<	0.000942				
M	Au	<	0.001885	M	Gd	<	0.000942	M	Ni		0.003781	M	Sn	<	0.005657				
O	B		0.003663	M	Ge	<	0.005657	M	Os	<	0.000942	M	Sr	<	0.000942				
M	Ba		0.004253	M	Hf	<	0.000942	O	P	<	0.031668	M	Ta	<	0.000942				
M	Be	<	0.000942	O	Hg	<	0.007064	M	Pb		0.005789	M	Tb	<	0.000942				
M	Bi	<	0.000942	M	Ho	<	0.000942	M	Pd	<	0.000942	M	Te	<	0.004714				
O	Ca		0.002304	M	In	<	0.000942	M	Pr	<	0.000942	M	Th	<	0.000942				
M	Cd	<	0.000942	M	Ir	<	0.000942	M	Pt	<	0.000942	O	Ti	<	0.002801				
M	Ce	<	0.000942	O	K		0.000763	M	Rb	<	0.000942	M	Tl	<	0.000942				
M	Co		0.001890	M	La	<	0.000942	M	Re	<	0.000942	M	Tm	<	0.000942				
M	Cr	<	0.005657	O	Li	<	0.000243	i	Rh	<		M	U	<	0.000942				
M	Cs	<	0.000942	M	Lu	<	0.000942	M	Ru	<	0.039588	M	V	<	0.003771				
s	Cu	<		O	Mg		0.000320	O	S		0.007174	M	W	<	0.005657				
M	Dy	<	0.000942	O	Mn		0.000793	M	Sb	<	0.001885	M	Y	<	0.000942				
M	Er	<	0.000942	M	Mo	<	0.005657	M	Sc	<	0.000942	M	Yb	<	0.000942				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 63.55 +2 6 $Cu(H_2O)_6^{2+}$

Chemical Compatibility -Stable in HCl, HNO_3, H_2SO_4, HF, H_3PO_4. Avoid basic media. Stable with most metals and inorganic anions in acidic media.

Stability - 2-100 ppb levels stable for months in 1% HNO_3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-5% HNO_3 / LDPE container.

Cu Containing Samples (Preparation and Solution) -Metal (soluble in HNO_3); Oxides (Soluble in HCl); Ores (Dissolve in HCl / HNO_3).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 63 amu	10 ppt	n/a	40Ar23Na 47Ti16O, 14N12C37Cl, 16O12C35Cl, 23Na40Ca
ICP-OES 219.958 nm	0.01/.002 µg/mL	1	Th, Ta, Nb, U, Hf
ICP-OES 224.700 nm	0.01/.001 µg/mL	1	Pb, Ir, Ni, W
ICP-OES 324.754 nm	0.06/.001 µg/mL		Nb, U, Th, Mo, Hf

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

August 24, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **August 24, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	ARI-1
Lot Number:	R2-MEB692461
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Iron

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Iron, Fe	**10 000.0 ± 40.0 µg/mL**		

Density: 1.037 g/mL (measured at 20 ± 4 ºC)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928

The follow ing equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\,(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

April 22, 2020

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **April 22, 2024**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

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CERTIFICATE OF ANALYSIS

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGK10
Lot Number:	P2-K688009
Matrix:	2% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Potassium
Starting Material:	KNO3
Starting Material Lot#:	2313
Starting Material Purity:	99.9971%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10013 ± 30 µg/mL

Density: 1.025 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **10007 ± 24 µg/mL**
Gravimetric NIST SRM Lot Number: See Sec. 4.2

Assay Method #2 **9984 ± 73 µg/mL**
ICP Assay NIST SRM 3141a Lot Number: 140813

Assay Method #3 **10020 ± 22 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.001400	M	Eu	<	0.000660	O	Na		0.240000	M	Se	<	0.007900	O	Zn	0.017000
O	Al		0.001600	O	Fe		0.005800	M	Nb	<	0.000660	O	Si		0.012000	O	Zr	< 0.001600
M	As	<	0.005300	M	Ga	<	0.000660	M	Nd	<	0.000660	M	Sm	<	0.000660			
M	Au	<	0.002000	M	Gd	<	0.000660	O	Ni	<	0.004900	M	Sn	<	0.000660			
O	B	<	0.005600	M	Ge	<	0.002000	M	Os	<	0.003300	O	Sr		0.000055			
O	Ba	<	0.000860	M	Hf	<	0.000660	O	P	<	0.032000	M	Ta	<	0.000660			
O	Be	<	0.000082	M	Hg	<	0.002000	M	Pb	<	0.002300	M	Tb	<	0.000660			
M	Bi	<	0.006600	M	Ho	<	0.000660	M	Pd	<	0.000660	M	Te	<	0.017000			
O	Ca		0.031000	M	In	<	0.000660	M	Pr	<	0.000660	M	Th	<	0.000660			
O	Cd	<	0.000450	M	Ir	<	0.000660	M	Pt	<	0.002700	M	Ti	<	0.000660			
M	Ce	<	0.000660	s	K	<		M	Rb		0.480000	M	Tl	<	0.000660			
O	Co	<	0.000780	M	La	<	0.000660	M	Re	<	0.000660	M	Tm	<	0.000660			
O	Cr		0.000530	O	Li	<	0.000084	M	Rh	<	0.000660	M	U	<	0.000660			
M	Cs	<	0.000660	M	Lu	<	0.000660	M	Ru	<	0.000660	O	V	<	0.001100			
M	Cu	<	0.002700	O	Mg		0.006300	O	S		0.028000	M	W	<	0.000660			
M	Dy	<	0.000660	O	Mn		0.000480	M	Sb	<	0.000660	M	Y	<	0.000660			
M	Er	<	0.000660	M	Mo	<	0.000660	O	Sc	<	0.000340	O	Yb	<	0.000270			

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 39.10 +1 (6) K+(aq)
Chemical Compatibility -Soluble in HCl, HNO_3, H_2SO_4 and HF aqueous matrices. Avoid use of $HClO_4$ due to insolubility of the perchlorate. Stable with all metals and inorganic anions except ClO_4^-.
Stability - 2-100 ppb levels stable for months in 1% HNO_3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-5% HNO_3 / LDPE container.
K Containing Samples (Preparation and Solution) - Metal (Dissolves very rapidly in water); Ores (Sodium carbonate fusion in Pt0 followed by HCl dissolution-blank levels of K in sodium carbonate critical); Organic Matrices (Sulfuric/peroxide digestion)
Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 39 amu	10 ppt	n/a	38ArH, 23Na16O, 78Se
ICP-OES 404.721 nm	1.1 / 0.05 µg/mL	1	U, Ce
ICP-OES 766.490 nm	0.4 / 0.001 µg/mL	1	2nd order radiation from R.E.s on some optical designs
ICP-OES 771.531 nm	1.0 / 0.03 µg/mL	1	2nd order radiation from R.E.s on some optical designs

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

February 10, 2020

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **February 10, 2024**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

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ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGMG10
Lot Number:	P2-MG686672
Matrix:	2% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Magnesium
Starting Material:	Magnesium
Starting Material Lot#:	2168
Starting Material Purity:	99.9996%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10003 ± 30 µg/mL

Density: 1.053 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **9958 ± 36 µg/mL**
ICP Assay NIST SRM 3131a Lot Number: 140110

Assay Method #2 **10015 ± 26 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #3 **10017 ± 29 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.001471	M	Eu	<	0.000599	O	Na		0.007247	M	Se	<	0.031185	O	Zn	<	0.002438
M	Al		0.003845	M	Fe	<	0.001062	M	Nb	<	0.000599	O	Si	<	0.022307	M	Zr	<	0.000603
M	As	<	0.004195	M	Ga	<	0.000599	M	Nd	<	0.004804	M	Sm	<	0.000599				
M	Au	<	0.010269	M	Gd	<	0.000599	M	Ni		0.003944	M	Sn	<	0.000599				
O	B	<	0.015847	M	Ge	<	0.001198	M	Os	<	0.000599	O	Sr	<	0.000365				
O	Ba		0.000222	M	Hf	<	0.000599	O	P	<	0.059731	M	Ta	<	0.000599				
M	Be	<	0.000599	M	Hg	<	0.004427	M	Pb	<	0.000599	M	Tb	<	0.000599				
M	Bi	<	0.000599	M	Ho	<	0.000599	M	Pd	<	0.000599	M	Te	<	0.002397				
O	Ca		0.013052	M	In	<	0.000599	M	Pr	<	0.000599	M	Th	<	0.000599				
M	Cd	<	0.000599	M	Ir	<	0.000599	M	Pt	<	0.000599	O	Ti	<	0.002316				
M	Ce	<	0.000599	O	K		0.014274	M	Rb	<	0.006958	M	Tl	<	0.000599				
M	Co	<	0.000599	M	La	<	0.001754	M	Re	<	0.000599	M	Tm	<	0.000599				
M	Cr	<	0.005882	O	Li		0.010969	M	Rh	<	0.000599	M	U	<	0.000599				
M	Cs	<	0.001801	M	Lu	<	0.000599	M	Ru	<	0.000599	O	V	<	0.006704				
M	Cu	<	0.008473	s	Mg	<		O	S	<	0.088621	M	W	<	0.000599				
M	Dy	<	0.000599	O	Mn		0.003249	M	Sb	<	0.000599	M	Y	<	0.000599				
M	Er	<	0.000599	M	Mo	<	0.000730	O	Sc		0.000444	M	Yb	<	0.000599				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 24.31 +2 6 $Mg(H_2O)_6^{+2}$

Chemical Compatibility -Soluble in HCl, HNO_3, and H_2SO_4 avoid HF, H_3PO_4 and neutral to basic media. Stable with most metals and inorganic anions forming insoluble silicates, carbonates, hydroxides, oxides, and tungstates in neutral and slightly acidic media.

Stability - 2-100 ppb levels stable for months in 1% HNO_3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-10% HNO_3 / LDPE container.

Mg Containing Samples (Preparation and Solution) -Metal (Best dissolved in diluted HNO_3); Oxide (Readily soluble in above compatible aqueous acidic solutions); Ores (Carbonate fusion in Pt0 followed by HCl dissolution); Organic Matrices (Sulfuric / peroxide digestion or nitric / sulfuric / perchloric acid decomposition, or dry ash and dissolution in dilute HCl).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 24 amu	42 ppt	n/a	7Li17O, 48Ti+2 , 48Ca+2
ICP-OES 279.553 nm	0.0002 / 0.00003 µg/mL	1	Th
ICP-OES 280.270 nm	0.0003 / 0.00005 µg/mL	1	U, V
ICP-OES 285.213 nm	0.002 / 0.00003 µg/mL	1	U, Hf, Cr, Zr

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

December 02, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **December 02, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGMN10
Lot Number:	P2-MN687536
Matrix:	3% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Manganese
Starting Material:	Mn Metal
Starting Material Lot#:	2275
Starting Material Purity:	99.9909%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10046 ± 30 µg/mL

Density: 1.035 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **10045 ± 25 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #2 **10083 ± 68 µg/mL**
ICP Assay NIST SRM 3132 Lot Number: 050429

Assay Method #3 **10031 ± 47 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.001500	M	Eu	<	0.000730	O	Na		0.176713	M	Se	<	0.006600	M	Zn		0.009960
O	Al		0.004337	M	Fe	<	0.650000	M	Nb	<	0.000730	O	Si		0.097995	M	Zr	<	0.000730
M	As	<	0.008000	M	Ga		0.004337	M	Nd	<	0.001500	M	Sm	<	0.000730				
M	Au	<	0.000730	M	Gd	<	0.000730	M	Ni		0.024097	M	Sn	<	0.002200				
M	B		0.069078	M	Ge	<	0.004400	M	Os	<	0.000730	O	Sr		0.000931				
M	Ba	<	0.001500	M	Hf	<	0.000730	i	P	<		M	Ta	<	0.000730				
M	Be	<	0.000730	M	Hg	<	0.002200	M	Pb		0.007389	M	Tb	<	0.000730				
M	Bi	<	0.003000	M	Ho	<	0.000730	M	Pd	<	0.000730	M	Te	<	0.019000				
O	Ca		0.062652	M	In	<	0.003000	M	Pr	<	0.000730	M	Th	<	0.000730				
M	Cd	<	0.001500	M	Ir	<	0.000730	M	Pt	<	0.000730	O	Ti	<	0.006500				
M	Ce	<	0.007300	O	K		0.006425	M	Rb	<	0.006600	M	Tl	<	0.000730				
O	Co		0.014779	M	La	<	0.003000	M	Re	<	0.000730	M	Tm	<	0.000730				
O	Cr		0.273102	O	Li		0.000417	M	Rh	<	0.003000	M	U	<	0.001500				
M	Cs	<	0.000730	M	Lu	<	0.000730	M	Ru	<	0.004400	M	V	<	0.000730				
O	Cu		0.007711	O	Mg		0.321297	i	S	<		M	W	<	0.004400				
M	Dy	<	0.001500	s	Mn	<		M	Sb	<	0.021000	O	Y		0.001365				
M	Er	<	0.001500	M	Mo		0.010281	O	Sc	<	0.004100	M	Yb	<	0.000730				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 54.94 +2 6 $Mn(H_2O)_6^{2+}$

Chemical Compatibility -Stable in HCl, HNO_3, H_2SO_4 ,HF, H_3PO_4. Avoid basic media. Stable with most metals and inorganic anions in acidic media.

Stability - 2-100 ppb levels stable for months in 1% HNO_3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-5 % HNO_3/LDPE container.

Mn Containing Samples (Preparation and Solution) -Metal (Soluble in dilute acids); Oxides (Soluble in dilute acids); Ores (Dissolve with HCl. If silica is present add HF and then fume off silica by adding H_2SO_4 and heat to SO_3 fumes - dense white fumes).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 55 amu	10 ppt	n/a	40Ar14N1H,39K16O,37Cl18O,40Ar15N,38Ar17O,36Ar18O1H ,38Ar16O1H,37Cl17O1H,23Na32S
ICP-OES 257.610 nm	0.0014 / 0.00002 µg/mL	1	Ce, W, Re
ICP-OES 259.373 nm	0.0016 / 0.00002 µg/mL	1	U, Ta, Mo, Fe, Nb
ICP-OES 260.569 nm	0.0021 / 0.00002 µg/mL	1	Co

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

January 05, 2020

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **January 05, 2024**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

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300 Technology Drive
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CERTIFICATE OF ANALYSIS

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGMO10
Lot Number:	P2-MO681847
Matrix:	tr. NH4OH H2O
Value / Analyte(s):	10 000 µg/mL ea: Molybdenum
Starting Material:	Ammonium Molybdate
Starting Material Lot#:	2257
Starting Material Purity:	99.9914%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10030 ± 30 µg/mL

Density: 1.011 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **10066 ± 45 µg/mL**
ICP Assay NIST SRM 3134 Lot Number: 130418

Assay Method #2 **10002 ± 40 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.001826	M	Eu	<	0.000300	M	Na		0.008765	M	Se	<	0.007480	M	Zn		0.002557
M	Al		0.004462	M	Fe		0.002097	M	Nb	<	0.015030	i	Si	<		M	Zr	<	0.005393
M	As	<	0.003006	M	Ga	<	0.000300	i	Nd	<		M	Sm	<	0.000300				
M	Au	<	0.006012	M	Gd	<	0.000300	M	Ni	<	0.004828	M	Sn		0.001006				
M	B	<	0.035184	M	Ge	<	0.000903	M	Os	<	0.003006	M	Sr		0.001906				
O	Ba		0.015639	M	Hf	<	0.000896	i	P	<		M	Ta	<	0.000300				
M	Be	<	0.003006	M	Hg	<	0.003006	M	Pb	<	0.000409	M	Tb	<	0.000300				
M	Bi	<	0.000401	M	Ho	<	0.000300	M	Pd	<	0.001114	M	Te	<	0.060122				
O	Ca		0.032644	M	In	<	0.015030	M	Pr	<	0.090184	M	Th	<	0.000786				
O	Cd	<	0.051800	M	Ir	<	0.007483	M	Pt	<	0.000388	O	Ti	<	0.093240				
M	Ce	<	0.015030	M	K		1.116389	M	Rb		0.040710	M	Tl		0.013162				
M	Co		0.004039	M	La	<	0.000300	M	Re	<	0.000300	M	Tm	<	0.000300				
M	Cr		0.005941	O	Li		0.000215	M	Rh	<	0.000300	M	U		0.000938				
M	Cs		0.002817	M	Lu	<	0.000300	M	Ru	<	0.003006	M	V	<	0.000759				
M	Cu		0.005181	M	Mg		0.005221	i	S	<		M	W		0.593427				
M	Dy	<	0.000300	M	Mn		0.000953	M	Sb		0.003153	M	Y	<	0.000300				
M	Er	<	0.000300	s	Mo	<		M	Sc	<	0.009019	M	Yb	<	0.000300				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 95.94 +6 6,7,8,9 [MoO4] -2(chemical form as received)

Chemical Compatibility -Mo is received in a NH4OH matrix giving the operator the option of using HCl or HF to stabilize acidic solutions. The [MoO4]-2 is soluble in concentrated HCl [MoOCl5]-2, dilute HF / HNO3 [MoOF5] -2 and basic media [MoO4]-2. Stable at ppm levels with some metals provided it is fluorinated. Do not mix with Alkaline or Rare Earths when HF is present. Stable with most inorganic anions provided it is in the [MoO4]-2 chemical form.

Stability - 2-100 ppb levels stable (alone or mixed with all other metals that are at comparable levels) as the [MoOF5]-2 for months in 1% HNO3 / LDPE container. 1-10,000 ppm single element solutions as the [MoO4] -2 chemically stable for years in 1% NH4OH in a LDPE container.

Mo Containing Samples (Preparation and Solution) -Metal (Soluble in HF / HNO3 or hot dilute HCl); Oxide (soluble in HF or NH4OH) ; Organic Matrices (Dry ash at 450EC in Pt0 and dissolve oxide with HF or HCl).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 95 amu	3 ppt	n/a	40Ar39K16O,79Br16O,190Os2+,190Pt2+
ICP-OES 202.030 nm	0.008 / 0.0002 µg/mL	1	Os, Hf
ICP-OES 203.844 nm	0.012 / 0.002 µg/mL	1	
ICP-OES 204.598 nm	0.012 / 0.001 µg/mL	1	Ir, Ta

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

July 30, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **July 30, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGNA10
Lot Number:	P2-NA685078
Matrix:	2% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Sodium
Starting Material:	Sodium Carbonate
Starting Material Lot#:	1870
Starting Material Purity:	99.9994%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10012 ± 40 µg/mL

Density: 1.034 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **9956 ± 67 µg/mL**
ICP Assay NIST SRM 3152a Lot Number: 120715

Assay Method #2 **10019 ± 21 µg/mL**
Gravimetric NIST SRM Lot Number: See Sec. 4.2

Assay Method #3 **10010 ± 21 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000930	M	Eu	<	0.000930	s	Na	<		M	Se	<	0.024000	M	Zn	0.001689
M	Al		0.003769	M	Fe		0.001429	M	Nb	<	0.000930	O	Si	<	0.018000	M	Zr	< 0.000930
M	As	<	0.008300	M	Ga	<	0.000930	M	Nd	<	0.000930	M	Sm	<	0.000930			
M	Au	<	0.001900	M	Gd	<	0.000930	O	Ni	<	0.005100	M	Sn	<	0.001900			
O	B	<	0.015000	M	Ge	<	0.001900	M	Os	<	0.000930	M	Sr		0.000727			
M	Ba	<	0.000930	M	Hf	<	0.000930	O	P	<	0.037000	M	Ta	<	0.000930			
M	Be	<	0.002800	M	Hg	<	0.000930	M	Pb	<	0.000930	M	Tb	<	0.000930			
M	Bi	<	0.000930	M	Ho	<	0.000930	M	Pd	<	0.000930	M	Te	<	0.002800			
O	Ca		0.019497	M	In	<	0.000930	M	Pr	<	0.000930	M	Th	<	0.000930			
M	Cd	<	0.000930	M	Ir	<	0.000930	M	Pt	<	0.000930	O	Ti	<	0.001900			
M	Ce	<	0.000930	O	K		0.142978	M	Rb	<	0.000930	M	Tl	<	0.000930			
M	Co	<	0.000930	M	La	<	0.000930	M	Re	<	0.000930	M	Tm	<	0.000930			
M	Cr		0.000844	O	Li	<	0.000130	M	Rh	<	0.000930	M	U	<	0.000930			
M	Cs	<	0.000930	M	Lu	<	0.000930	M	Ru	<	0.001900	M	V	<	0.001900			
M	Cu	<	0.004700	O	Mg		0.001143	O	S	<	0.037000	M	W	<	0.001900			
M	Dy	<	0.000930	M	Mn	<	0.001900	M	Sb	<	0.000930	M	Y	<	0.000930			
M	Er	<	0.000930	M	Mo	<	0.001900	O	Sc	<	0.000370	M	Yb	<	0.000930			

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 22.99 +1 (6) Na+(aq) largely ionic in nature

Chemical Compatibility -Soluble in HCl, HNO3, H2SO4 and HF aqueous matrices. Stable with all metals and inorganic anions.

Stability - 2-100 ppb levels stable for months in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-5% HNO3 / LDPE container.

Na Containing Samples (Preparation and Solution) - Metal (Dissolves very rapidly in water); Ores (Lithium carbonate fusion in graphite crucible followed by HCl dissolution - blank levels of Na in lithium carbonate critical); Organic Matrices (Sulfuric / peroxide digestion or nitric/sulfuric/perchloric acid decomposition).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 23 amu	310 ppt	n/a	46Ti+2 , 46Ca+2
ICP-OES 330.237 nm	2.0 / 0.09 µg/mL	1	Pd, Zn
ICP-OES 588.995 nm	0.03 / 0.006 µg/mL	1	2nd order radiation from R.E.s on some optical designs
ICP-OES 589.595 nm	0.07 / 0.00009 µg/mL	1	2nd order radiation from R.E.s on some optical designs

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

December 12, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **December 12, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
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CERTIFICATE OF ANALYSIS

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGNI10
Lot Number:	P2-NI686384
Matrix:	3% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Nickel
Starting Material:	Ni Metal
Starting Material Lot#:	2277 and 2282
Starting Material Purity:	99.9992%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 9979 ± 30 µg/mL

Density: 1.038 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **9971 ± 54 µg/mL**
ICP Assay NIST SRM 3136 Lot Number: 120619

Assay Method #2 **9970 ± 32 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #3 **9993 ± 33 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag		0.002606	M	Eu	<	0.001100	O	Na		0.004965	O	Se	<	0.067000	M	Zn		0.006578
M	Al	<	0.013000	O	Fe		0.018618	M	Nb	<	0.001100	O	Si		0.010923	M	Zr	<	0.001100
O	As	<	0.067000	M	Ga	<	0.001100	M	Nd	<	0.001100	M	Sm	<	0.001100				
M	Au	<	0.002100	M	Gd	<	0.001100	s	Ni	<		M	Sn	<	0.016000				
M	B	<	0.017000	M	Ge	<	0.004200	M	Os		0.002110	O	Sr	<	0.000940				
M	Ba	<	0.001100	M	Hf	<	0.001100	i	P	<		M	Ta	<	0.001100				
O	Be	<	0.000410	M	Hg		0.014895	M	Pb		0.006578	M	Tb	<	0.001100				
M	Bi	<	0.004200	M	Ho	<	0.001100	M	Pd	<	0.001100	M	Te	<	0.015000				
O	Ca		0.003351	M	In	<	0.001100	M	Pr	<	0.001100	M	Th	<	0.001100				
M	Cd		0.001365	M	Ir		0.004716	M	Pt	<	0.001100	M	Ti	<	0.004200				
M	Ce	<	0.001100	O	K		0.004716	M	Rb	<	0.001100	M	Tl	<	0.001100				
O	Co		0.017377	M	La	<	0.001100	M	Re		0.001737	M	Tm	<	0.001100				
O	Cr	<	0.006700	O	Li	<	0.000140	M	Rh	<	0.006300	M	U	<	0.001100				
M	Cs	<	0.007300	M	Lu	<	0.001100	M	Ru	<	0.019000	M	V	<	0.002100				
M	Cu		0.004096	O	Mg		0.000372	i	S	<		M	W	<	0.006300				
M	Dy	<	0.001100	O	Mn	<	0.001900	M	Sb		0.005833	O	Y	<	0.000540				
M	Er	<	0.001100	M	Mo	<	0.008400	M	Sc	<	0.002100	M	Yb	<	0.001100				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 58.69 +2 6 $Ni(H_2O)_6^{2+}$

Chemical Compatibility -Stable in HCl, HNO_3, H_2SO_4 ,HF, H_3PO_4. Avoid basic media. Stable with most metals and inorganic anions in acidic media.

Stability - 2-100 ppb levels stable for months in 1% HNO_3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-5% HNO_3 / LDPE container.

Ni Containing Samples (Preparation and Solution) -Metal (Soluble in HNO_3); Oxides (Soluble in HCl); Ores (Dissolve in HCl / HNO_3).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 60 amu	100 ppt	n/a	43Ca16O1H , 44Ca16O, 23Na37Cl
ICP-OES 221.647 nm	0.01 / 0.0009 µg/mL	1	Si
ICP-OES 231.604 nm	0.02 / 0.002 µg/mL	1	Sb, Ta, Co
ICP-OES 232.003 nm	0.02 / 0.006 µg/mL	1	Cr, Re, Os, Nb, Ag, Pt, Fe

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

December 02, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **December 02, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
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CERTIFICATE OF ANALYSIS

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1.0 ACCREDITATION / REGISTRATION

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ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGPB10
Lot Number:	P2-PB686383
Matrix:	0.5% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Lead
Starting Material:	Lead Nitrate
Starting Material Lot#:	2299
Starting Material Purity:	99.9974%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10031 ± 30 µg/mL

Density: 1.015 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **10060 ± 63 µg/mL**
ICP Assay NIST SRM 3128 Lot Number: 101026

Assay Method #2 **10048 ± 32 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #3 **10007 ± 32 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag		0.000850	M	Eu	<	0.000310	O	Na		0.005780	M	Se	<	0.004600	M	Zn		0.005440
O	Al		0.234602	O	Fe		0.023460	M	Nb	<	0.000310	O	Si		0.047600	M	Zr	<	0.000610
M	As	<	0.001900	M	Ga	<	0.000310	M	Nd	<	0.000310	M	Sm	<	0.000310				
M	Au	<	0.002200	M	Gd	<	0.004300	M	Ni	<	0.001600	M	Sn	<	0.000610				
O	B	<	0.005200	M	Ge	<	0.000610	M	Os	<	0.000310	O	Sr		0.000442				
O	Ba		0.001530	M	Hf	<	0.000310	O	P	<	0.052000	M	Ta	<	0.000310				
O	Be	<	0.000630	M	Hg	<	0.001600	s	Pb	<		M	Tb	<	0.000310				
O	Bi		0.021080	M	Ho	<	0.000610	M	Pd	<	0.000310	M	Te	<	0.004300				
O	Ca		0.037400	M	In	<	0.000310	M	Pr	<	0.000310	M	Th	<	0.000310				
M	Cd	<	0.000610	M	Ir	<	0.000310	M	Pt	<	0.000310	M	Ti		0.002992				
M	Ce	<	0.000910	O	K		0.008840	M	Rb	<	0.000610	M	Tl		0.037400				
M	Co	<	0.000610	M	La	<	0.000610	M	Re	<	0.000310	M	Tm	<	0.000610				
M	Cr	<	0.003400	O	Li		0.000108	O	Rh	<	0.006300	M	U	<	0.000310				
M	Cs		0.002686	M	Lu	<	0.000310	M	Ru	<	0.000310	M	V	<	0.000310				
M	Cu	<	0.002500	O	Mg		0.004760	O	S	<	0.052000	M	W	<	0.002200				
M	Dy	<	0.000310	M	Mn	<	0.000310	M	Sb	<	0.001300	M	Y	<	0.000310				
M	Er	<	0.000310	O	Mo	<	0.005400	M	Sc	<	0.000310	M	Yb	<	0.000310				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 207.20 +2 6 $Pb(H_2O)_6^{+2}$

Chemical Compatibility - Soluble in HCl, HF and HNO_3. Avoid H_2SO_4. Stable with most metals and inorganic anions forming insoluble carbonate, borate, sulfate, sulfite, sulfide, phosphate, oxalate, chromate, tannate, iodate, and cyanide in neutral aqueous media.

Stability - 2-100 ppb levels stable for months in 1% HNO_3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 2-5% HNO_3 / LDPE container.

Pb Containing Samples (Preparation and Solution) -Metal (Best dissolved in 1:1 H_2O / HNO_3); Oxides (The many different Pb oxides are soluble in HNO_3 with the exception of PbO_2 which is soluble in HCl or HF); Ores and Alloys (Best attacked using 1:1 H_2O / HNO_3); Organic Matrices (Dry ash and dissolve in dilute HCl).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 208 amu	5 ppt	n/a	192Pt16O, 192Os16O
ICP-OES 168.215 nm	0.03 / 0.003 µg/mL	1	Co
ICP-OES 217.000 nm	0.09 / 0.03 µg/mL	1	W, Ir, Hf, Sb, Th
ICP-OES 220.353 nm	0.04 / 0.006 µg/mL	1	Bi, Nb

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

December 02, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **December 02, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGSB10
Lot Number:	P2-SB676840
Matrix:	3% (v/v) HNO3 3% (w/v) Tartaric acid
Value / Analyte(s):	10 000 µg/mL ea: Antimony
Starting Material:	Antimony Metal
Starting Material Lot#:	1857
Starting Material Purity:	99.9898%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10019 ± 51 µg/mL

Density: 1.062 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **10019 ± 45 µg/mL**
ICP Assay NIST SRM 3102a Lot Number: 140911

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{1/2}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\,(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{1/2}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000110	M	Eu	<	0.000110	O	Na		0.160000	M	Se	<	0.002700	O	Zn		0.006000
M	Al		0.010000	O	Fe		0.054000	M	Nb	<	0.000110	O	Si		0.087000	O	Zr	<	0.003200
M	As	<	0.003400	M	Ga	<	0.000110	M	Nd	<	0.000110	M	Sm	<	0.000110				
M	Au	<	0.000110	M	Gd	<	0.000110	O	Ni	<	0.005900	M	Sn	<	0.002300				
O	B		0.018000	M	Ge	<	0.000110	M	Os	<	0.000110	O	Sr		0.000540				
O	Ba	<	0.000750	M	Hf	<	0.000410	O	P		0.550000	M	Ta	<	0.000410				
O	Be	<	0.000110	M	Hg	<	0.000310	M	Pb	<	0.000210	M	Tb	<	0.000110				
M	Bi	<	0.000210	M	Ho	<	0.000110	M	Pd	<	0.000110	M	Te	<	0.001900				
O	Ca		0.097000	M	In	<	0.000110	M	Pr	<	0.002000	M	Th	<	0.000110				
M	Cd	<	0.000110	M	Ir	<	0.000410	M	Pt	<	0.000110	O	Ti	<	0.004000				
M	Ce		0.006100	O	K		0.018000	M	Rb	<	0.000110	M	Tl	<	0.000110				
M	Co	<	0.001800	O	La	<	0.005800	M	Re	<	0.000110	M	Tm	<	0.000110				
M	Cr		0.005500	O	Li	<	0.000110	M	Rh	<	0.000110	M	U	<	0.000110				
M	Cs	<	0.000110	M	Lu	<	0.000110	M	Ru	<	0.000110	M	V	<	0.000510				
M	Cu	<	0.002300	O	Mg		0.020000	n	S	<		M	W	<	0.000410				
M	Dy	<	0.000110	M	Mn		0.001200	s	Sb	<		M	Y	<	0.000110				
M	Er	<	0.000110	M	Mo	<	0.000110	O	Sc	<	0.001500	M	Yb	<	0.000110				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 121.75 +3 6 Sb(O)C4H4O6-1
Chemical Compatibility -Stable in conc. HCl, dilute or conc. HF. Stable in dilute HNO3 as the fluoride or tartrate complex. Avoid basic media. Stable with most metals and inorganic anions in acidic media as the tartrate provided the acidity is not too high or the acid is oxidizing causing loss of the stabilizing tartrate ion. The fluoride complex of antimony is stable in strong acid but you should only mix with other metals that are fluorinated.
Stability - 2-100 ppb levels stable for months in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-2% HNO3 / LDPE container.
Sb Containing Samples (Preparation and Solution) -Metal and alloys (Soluble in H2O / HF / HNO3 mixture); Oxides (Soluble in HCl and tartaric acid or H2O / HF / HNO3 mixtures); Ores (fusion with Na2CO3 in Pt0 followed by dissolving the fuseate in a H2O / HF / HNO3 mixture); Organic based (sulfuric acid / hydrogen peroxide digestion)
Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 121 amu	5 ppt	N/A	105Pd16O, 89Y16O2
ICP-OES 206.833 nm	0.03/0.003 µg/mL	1	Ta, Cr, Ge, Hf
ICP-OES 217.581 nm	0.05/0.005 µg/mL	1	Nb, W, Re, Fe
ICP-OES 231.147 nm	0.06/0.006 µg/mL	1	Ni, Co, Pt

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

March 20, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **March 20, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Supervisor, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 · 540.585.3030
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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGSE10
Lot Number:	P2-SE684206
Matrix:	3% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Selenium
Starting Material:	Se Metal
Starting Material Lot#:	1962
Starting Material Purity:	99.9991%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 9992 ± 61 µg/mL

Density: 1.035 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **9993 ± 67 µg/mL**
ICP Assay NIST SRM 3149 Lot Number: 100901

Assay Method #2 **9992 ± 73 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.002242	M	Eu	<	0.000373	O	Na		0.013700	s	Se	<		O	Zn		0.002382
M	Al		0.004465	M	Fe		0.008506	O	Nb	<	0.002975	O	Si		0.006270	M	Zr	<	0.001868
O	As	<	0.022040	M	Ga	<	0.000373	M	Nd	<	0.000373	M	Sm	<	0.000373				
M	Au	<	0.000373	M	Gd	<	0.000373	O	Ni		0.001849	M	Sn		0.000850				
O	B	<	0.007714	M	Ge	<	0.002616	M	Os	<	0.000373	M	Sr	<	0.001121				
M	Ba	<	0.001495	M	Hf	<	0.000373	O	P	<	0.022040	M	Ta	<	0.000373				
M	Be	<	0.001495	M	Hg	<	0.002240	M	Pb		0.006379	M	Tb	<	0.006353				
M	Bi	<	0.000373	M	Ho	<	0.000373	M	Pd	<	0.000373	M	Te	<	0.012707				
O	Ca		0.006552	M	In	<	0.000373	M	Pr	<	0.001495	M	Th	<	0.002990				
M	Cd		0.001169	M	Ir	<	0.000373	M	Pt	<	0.000373	M	Ti	<	0.003363				
M	Ce	<	0.000373	O	K		0.002006	M	Rb	<	0.001868	M	Tl		0.008613				
M	Co	<	0.000373	M	La	<	0.001121	M	Re	<	0.000373	M	Tm	<	0.000373				
M	Cr		0.002870	O	Li		0.000062	M	Rh	<	0.000373	M	U	<	0.000373				
M	Cs	<	0.001121	M	Lu	<	0.000373	M	Ru	<	0.001493	M	V	<	0.000747				
M	Cu	<	0.000747	O	Mg		0.001159	O	S		0.024674	M	W	<	0.002242				
M	Dy	<	0.000373	M	Mn	<	0.000373	M	Sb	<	0.002242	M	Y	<	0.000373				
M	Er	<	0.000373	O	Mo	<	0.003195	M	Sc	<	0.001121	M	Yb	<	0.000373				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 78.96 +4 6 H_2SeO_3

Chemical Compatibility -Soluble in HCl, HNO_3,H_3PO_4, H_2SO_4 and HF aqueous matrices and water. It is stable with most inorganic anions but many cationic metals form the insoluble selenites under pH neutral conditions. When fluorinated and/or under acidic conditions precipitation is typically not a problem at moderate to low concentrations.

Stability - 2-100 ppb levels stable for months alone or mixed with other elements at equivalent levels in 1% HNO_3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-5% HNO_3 / LDPE container.

Se Containing Samples (Preparation and Solution) -Metal (soluble in HNO_3); Oxides (readily soluble in water); Minerals and alloys (acid digestion with HNO_3or HNO_3 / HF); Organic Matrices (acid digestion with hot concentrated H_2SO_4 accompanied by the careful dropwise addition of H_2O_2 until clear).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	Estimated D.L.	Order	Interferences (underlined indicates severe)
ICP-MS 82 amu	200 ppt	N/A	12C35Cl2
ICP-OES 196.026 nm	0.08/0.006 µg/mL	1	Fe
ICP-OES 203.985 nm	0.2/0.05 µg/mL	1	Sb, Ir, Cr, Ta
ICP-OES 206.279 nm	0.3/0.16 µg/mL	1	Cr, Pt

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

September 13, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **September 13, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGTL10
Lot Number:	P2-TL681849
Matrix:	5% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Thallium
Starting Material:	TlNO3
Starting Material Lot#:	2118
Starting Material Purity:	99.9998%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10015 ± 50 µg/mL

Density: 1.035 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **10015 ± 45 µg/mL**
ICP Assay NIST SRM 3158 Lot Number: 151215

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000200	M	Eu	<	0.000200	O	Na		0.002486	M	Se	<	0.011019	O	Zn		0.002295
O	Al	<	0.004184	O	Fe	<	0.002824	M	Nb	<	0.000200	O	Si		0.003755	M	Zr	<	0.000200
M	As	<	0.002003	M	Ga	<	0.000200	M	Nd	<	0.000200	M	Sm	<	0.000200				
O	Au	<	0.002824	M	Gd	<	0.000200	M	Ni		0.001722	M	Sn	<	0.000601				
O	B	<	0.004184	M	Ge	<	0.000801	M	Os	<	0.000198	O	Sr	<	0.000313				
M	Ba	<	0.000400	M	Hf	<	0.000200	O	P	<	0.010460	M	Ta	<	0.000200				
O	Be	<	0.000104	M	Hg	<	0.000794	M	Pb		0.000810	M	Tb	<	0.000200				
M	Bi	<	0.005209	M	Ho	<	0.000200	M	Pd	<	0.000400	M	Te	<	0.005008				
O	Ca		0.002433	M	In	<	0.000200	M	Pr	<	0.000200	M	Th	<	0.000200				
M	Cd		0.001316	M	Ir	<	0.000198	M	Pt	<	0.000801	O	Ti	<	0.001255				
M	Ce	<	0.000200	O	K		0.006167	M	Rb	<	0.000200	s	Tl	<					
M	Co	<	0.000601	M	La	<	0.000200	M	Re	<	0.000200	M	Tm	<	0.000200				
M	Cr	<	0.000801	O	Li	<	0.000177	M	Rh	<	0.000200	M	U	<	0.000200				
M	Cs	<	0.003606	M	Lu	<	0.000200	M	Ru	<	0.000397	M	V	<	0.002203				
M	Cu	<	0.001001	O	Mg		0.000528	O	S	<	0.015690	M	W	<	0.000601				
M	Dy	<	0.000200	M	Mn	<	0.000801	M	Sb	<	0.000400	M	Y	<	0.000200				
M	Er	<	0.000200	M	Mo	<	0.001202	O	Sc	<	0.000711	M	Yb	<	0.000200				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 204.38 +1 6 Tl(H2O)61+

Chemical Compatibility - Soluble in HCl, HNO3, and H2SO4. Stable with most metals and inorganic anions. The sulfite, thiocyanate and oxalate are moderately soluble; the phosphate and arsenite are slightly soluble and the sulfide is insoluble.

Stability - 2-100 ppb levels stable for months in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 2-5% HNO3 / LDPE container.

Tl Containing Samples (Preparation and Solution) -Metal (Best dissolved in HNO3 which forms chiefly the Tl1+ ion.); Oxide (The thallous oxide is readily soluble in water. The thallic oxide requires high levels of acid); Ores (Carbonate fusion in Pt0 followed by HCl dissolution); Organic Matrices (Sulfuric/peroxide digestion or dry ash and dissolution in HCl).

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 205 amu	2 ppt	N/A	189Os16O
ICP-OES 190.864 nm	0.04 / 0.004 µg/mL	1	V, Ti
ICP-OES 276.787 nm	0.1 / 0.01 µg/mL	1	Ta, V, Fe, Cr
ICP-OES 351.924 nm	0.2 / 0.02 µg/mL	1	Th, Ce, Zr

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

July 31, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **July 31, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

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300 Technology Drive
Christiansburg, VA 24073 · USA
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CERTIFICATE OF ANALYSIS

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGV10
Lot Number:	P2-V677312
Matrix:	7% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Vanadium
Starting Material:	V2O5
Starting Material Lot#:	1782
Starting Material Purity:	99.9939%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 9984 ± 30 µg/mL

Density: 1.102 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **9975 ± 30 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #2 **10026 ± 64 µg/mL**
ICP Assay NIST SRM 3165 Lot Number: 160906

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000273	M	Eu	<	0.000118	O	Na		0.100243	M	Se	<	0.001167	M	Zn	<	0.006080
M	Al		0.057110	M	Fe		0.212199	M	Nb	<	0.001479	O	Si		0.333950	M	Zr	<	0.003181
M	As	<	0.000540	M	Ga	<	0.009451	M	Nd	<	0.000118	M	Sm	<	0.000118				
M	Au	<	0.000191	M	Gd	<	0.000118	M	Ni	<	0.003169	M	Sn	<	0.000733				
M	B	<	0.002950	M	Ge	<	0.000434	M	Os	<	0.000150	M	Sr		0.000557				
M	Ba	<	0.001024	M	Hf	<	0.000118	O	P	<	0.056000	M	Ta	<	0.000118				
M	Be	<	0.000118	M	Hg	<	0.000170	M	Pb		0.002214	M	Tb	<	0.000118				
M	Bi	<	0.000363	M	Ho	<	0.000118	M	Pd	<	0.000140	M	Te	<	0.002236				
O	Ca		0.109005	M	In	<	0.000118	M	Pr	<	0.000118	M	Th	<	0.000118				
M	Cd	<	0.000145	M	Ir	<	0.000118	M	Pt	<	0.000118	M	Ti		0.012731				
M	Ce	<	0.000245	M	K		0.019121	M	Rb	<	0.000118	M	Tl	<	0.000118				
M	Co	<	0.000119	M	La	<	0.000118	M	Re	<	0.000118	M	Tm	<	0.000118				
O	Cr		0.158019	M	Li	<	0.000501	M	Rh	<	0.000118	M	U	<	0.000395				
M	Cs		0.004388	M	Lu	<	0.000118	M	Ru	<	0.000118	s	V	<					
M	Cu	<	0.002021	M	Mg		0.005621	n	S	<		M	W		0.001599				
M	Dy	<	0.000118	M	Mn		0.005968	M	Sb		0.079957	M	Y	<	0.000118				
M	Er	<	0.000118	O	Mo		0.065962	M	Sc	<	0.000118	M	Yb	<	0.000118				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 50.94 +5 6 H2V10O284-
Chemical Compatibility -Soluble in HCl, HNO3, H2SO4, HF, H3PO4 and strong basic media. Stable with most metals and inorganic anions in acidic media.
Stability - 2-100 ppb levels stable for months in 1% HNO3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-5% HNO3 / LDPE container.
V Containing Samples (Preparation and Solution) -Metal (Fusion with NaOH or KOH in Ni0 or Na2CO3 / KNO3); Oxides (V2O3 - use HCl, V2O4 - use HCl or HNO3, V2O5 - use concentrated acids); Ores (Na2CO3 / KNO3 in Pt0 caution - nitrates attack Pto followed by water extraction of fuseate); Organic Matrices (Ash at 450 EC followed by dissolving according to V2O5 above) .
Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 51 amu	4 ppt	N/A	34S16O1H, 35Cl16O, 38Ar13C, 36Ar15N, 36Ar14N1H, 37Cl14N,36S15N, 33S18O, 34S17O, 102Ru+2,02Pd+2
ICP-OES 290.882 nm	0.008 / 0.0008 µg/mL	1	Hf, Nb
ICP-OES 292.402 nm	0.006 / 0.001 µg/mL	1	Th
ICP-OES 309.311 nm	0.005 / 0.001 µg/mL	1	Mg, U, Th

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

June 12, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **June 12, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Supervisor, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGZN10
Lot Number:	P2-ZN686137
Matrix:	2% (v/v) HNO3
Value / Analyte(s):	10 000 µg/mL ea: Zinc
Starting Material:	Zn Shot
Starting Material Lot#:	2201
Starting Material Purity:	99.9993%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 10040 ± 30 µg/mL

Density: 1.033 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **10009 ± 54 µg/mL**
ICP Assay NIST SRM 3168a Lot Number: 120629

Assay Method #2 **10049 ± 33 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #3 **10041 ± 28 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.003057	M	Eu	<	0.000509	O	Na		0.001874	M	Se	<	0.023441	s	Zn	<	
O	Al	<	0.005720	O	Fe		0.006348	M	Nb	<	0.000509	O	Si	<	0.057200	M	Zr	<	0.000509
M	As	<	0.003057	M	Ga	<	0.007134	M	Nd	<	0.000509	M	Sm	<	0.000509				
M	Au	<	0.000510	M	Gd	<	0.000509	M	Ni	<	0.000509	M	Sn	<	0.000509				
O	B	<	0.017160	M	Ge	<	0.003057	M	Os	<	0.000510	M	Sr	<	0.000509				
M	Ba	<	0.000509	M	Hf	<	0.000509	O	P	<	0.057200	M	Ta	<	0.000509				
M	Be	<	0.000509	M	Hg	<	0.001021	O	Pb		0.023870	M	Tb	<	0.000509				
M	Bi	<	0.005095	M	Ho	<	0.000509	M	Pd	<	0.002038	M	Te	<	0.023441				
O	Ca		0.033793	M	In	<	0.000509	M	Pr	<	0.000509	M	Th	<	0.000509				
O	Cd		0.003924	M	Ir	<	0.000510	M	Pt	<	0.000509	M	Ti	<	0.000509				
M	Ce	<	0.000509	O	K		0.001499	M	Rb	<	0.002038	M	Tl	<	0.009172				
M	Co	<	0.000509	M	La	<	0.000509	M	Re	<	0.000509	M	Tm	<	0.000509				
O	Cr		0.001549	O	Li	<	0.000457	M	Rh	<	0.000509	M	U	<	0.000509				
M	Cs	<	0.000509	M	Lu	<	0.000509	M	Ru	<	0.006129	M	V	<	0.000509				
O	Cu	<	0.010296	O	Mg		0.000349	O	S	<	0.034320	M	W	<	0.001019				
M	Dy	<	0.000509	M	Mn	<	0.000509	M	Sb	<	0.001019	M	Y	<	0.000509				
M	Er	<	0.000509	M	Mo	<	0.000509	M	Sc	<	0.000509	M	Yb	<	0.000509				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 65.39 +2 4 Zn(OH)(aq)1+

Chemical Compatibility -Stable in HCl, HNO_3, H_2SO_4 ,HF, H_3PO_4. Avoid basic media forming insoluble carbonate and hydroxide. Stable with most metals and inorganic anions in acidic media.

Stability - 2-100 ppb levels stable for months in 1% HNO_3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 1-5% HNO_3 / LDPE container.

Zn Containing Samples (Preparation and Solution) -Metal (soluble in HNO_3); Oxides (Soluble in HCl); Ores (Dissolve in HCl / HNO_3); Organic based (dry ash at 4500C and dissolve ash in HCl) (sulfuric/peroxide acid digestion)

Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 66 amu	7 ppt	N/A	50Ti16O,50Cr16O, 50V16O, 34S16O2, 32S16O18O, 32S17O2, 33S16O17O, 32S34S, 33S2
ICP-OES 202.548 nm	0.004/0.0002 µg/mL	1	Nb, Cu, Co, Hf
ICP-OES 206.200 nm	0.006/0.0006 µg/mL	1	Sb, Ta, Bi, Os
ICP-OES 213.856 nm	0.002/0.0004 µg/mL	1	Ni, Cu, V

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

December 05, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **December 05, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
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CERTIFICATE OF ANALYSIS

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1.0 ACCREDITATION / REGISTRATION

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ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Single Analyte Custom Grade Solution
Catalog Number:	CGU1
Lot Number:	P2-U683975
Matrix:	2% (v/v) HNO3
Value / Analyte(s):	1 000 µg/mL ea: Uranium
Starting Material:	Uranyl Nitrate
Starting Material Lot#:	1948
Starting Material Purity:	99.9985%

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Value: 1001 ± 5 µg/mL

Density: 1.010 g/mL (measured at 20 ± 4 ºC)

Assay Information:

Assay Method #1 **1001 ± 5 µg/mL**
ICP Assay NIST SRM 3164 Lot Number: 080521

Assay Method #2 **1002 ± 6 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

- The Calculated Value is a value calculated from the weight of a starting material that has been certified directly vs. a National Institute of Standards and Technology (NIST) SRM/RM. See Sec 4.2 for balance traceability.

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Certified Abundance:

IV's Certified Abundance

Isotope	Atom %
Uranium 238U	99.8 ± 0.1
Uranium 235U	0.24 ± 0.05

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

M	Ag	<	0.000103	M	Eu	<	0.000103	M	Na		0.020618	M	Se	<	0.001246	M	Zn	<	0.003533
M	Al	<	0.003740	M	Fe		0.001029	M	Nb	<	0.000207	M	Si	<	0.035027	M	Zr	<	0.000103
M	As	<	0.001143	M	Ga	<	0.001350	M	Nd	<	0.000623	M	Sm	<	0.000311				
M	Au	<	0.000207	M	Gd	<	0.000311	M	Ni	<	0.008313	M	Sn	<	0.007273				
M	B	<	0.005819	M	Ge	<	0.001974	M	Os	<	0.000103	M	Sr	<	0.001039				
M	Ba	<	0.002286	M	Hf	<	0.000103	i	P	<		M	Ta	<	0.000103				
M	Be	<	0.001350	M	Hg	<	0.000415	M	Pb	<	0.000103	M	Tb	<	0.000103				
M	Bi	<	0.000103	M	Ho	<	0.000103	M	Pd	<	0.000207	M	Te	<	0.006234				
M	Ca	<	0.010391	M	In	<	0.000103	M	Pr	<	0.000103	M	Th		0.010535				
M	Cd	<	0.000103	M	Ir	<	0.000103	M	Pt	<	0.000103	M	Ti	<	0.000207				
M	Ce	<	0.000103	M	K	<	0.041565	M	Rb	<	0.000519	M	Tl	<	0.000103				
M	Co	<	0.000415	M	La	<	0.001662	M	Re	<	0.000103	M	Tm	<	0.000103				
M	Cr	<	0.001870	M	Li	<	0.001662	M	Rh	<	0.000103	s	U	<					
M	Cs		0.000175	M	Lu	<	0.000103	M	Ru	<	0.000519	M	V	<	0.000207				
M	Cu		0.000792	M	Mg	<	0.002493	i	S	<		M	W	<	0.000103				
M	Dy	<	0.000103	M	Mn	<	0.001454	M	Sb	<	0.000103	M	Y	<	0.000103				
M	Er	<	0.000103	M	Mo	<	0.000415	M	Sc	<	0.006234	M	Yb	<	0.000103				

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Atomic Weight; Valence; Coordination Number; Chemical Form in Solution - 238.03 +6 8 UO_2^{2+}(uranyl)
Chemical Compatibility - Soluble in HCl and HNO_3. Avoid H_3PO_4. H_2SO_4 and HF matrices should not be a problem depending upon [U]. Although the UO_2^{2+} ion is distinctly basic, any U+4 will precipitate in basic media. UO_2^{2+}salts are generally soluble in water and UO_2^{2+} is stable with most metals and inorganic anions. The uranyl phosphate is insoluble in water. UF_4 and UF_6 are water soluble.
Stability - 2-100 ppb levels stable for months in 1% HNO_3 / LDPE container. 1-10,000 ppm solutions chemically stable for years in 2-5% HNO_3 / LDPE container.
U Containing Samples (Preparation and Solution) -Metal (Dissolves rapidly in HCl and HNO_3); Oxide (Soluble in HNO_3); Ores (Digest for 1-2 hours with 1 gram of ore to 30 mL 1:1 HNO_3. Silica insolubles are removed by filtration after bringing the sample to fumes with conc. H_2SO_4.)
Atomic Spectroscopic Information (ICP-OES D.L.s are given as radial/axial view):

Technique/Line	**Estimated D.L.**	**Order**	**Interferences** (underlined indicates severe)
ICP-MS 238 amu	2 ppt	N/A	206Pb16O2
ICP-OES 263.553 nm	0.3 / 0.01 µg/mL	1	Ce, Ir, Th, Rh, W, Zr, Ta, Ti, V, Hf, Fe, Re, Ru
ICP-OES 367.007 nm	0.3 / 0.02 µg/mL	1	Th, Ce
ICP-OES 385.958 nm	0.3 / 0.01 µg/mL	1	Th, Fe

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

September 28, 2019

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **September 28, 2023**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
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CERTIFICATE OF ANALYSIS

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1.0 ACCREDITATION / REGISTRATION

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ACCREDITED — Testing Laboratory Certificate 883.01
ACCREDITED — Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	AR-ICVMS-2
Lot Number:	R2-MEB692462
Matrix:	3% (v/v) HNO3 tr. HF
Value / Analyte(s):	2.5 µg/mL ea: Molybdenum, Antimony

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Antimony, Sb	**2.505 ± 0.017 µg/mL**	**Molybdenum, Mo**	**2.503 ± 0.017 µg/mL**

Density: 1.012 g/mL (measured at 20 ± 4 ºC)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Mo	ICP Assay	3134	130418
Sb	ICP Assay	3102a	140911
Sb	Calculated		See Sec. 4.2

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\,(u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\,(u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

HF Note: This standard should not be prepared or stored in glass.

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

Inorganic Ventures, 300 Technology Drive, Christiansburg, Va. 24073, USA; Telephone: 800.669.6799; 540.585.3030, Fax: 540.585.3012; inorganicventures.com; info@inorganicventures.com

11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

April 22, 2020

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **April 22, 2024**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

INORGANIC VENTURES
300 Technology Drive
Christiansburg, VA 24073 · USA
inorganicventures.com

CERTIFICATE OF ANALYSIS

tel: 800.669.6799 · 540.585.3030
fax: 540.585.3012
info@inorganicventures.com

1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED
Testing Laboratory
Certificate 883.01

ACCREDITED
Reference Material Producer
Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Multi Analyte Custom Grade Solution
Catalog Number:	AR-ICVMS-3
Lot Number:	R2-MEB692463
Matrix:	7% (v/v) HNO3
Value / Analyte(s):	250 µg/mL ea:

Aluminum, Calcium,
Iron, Potassium,
Magnesium, Sodium,

4 µg/mL ea:
Selenium,

2.5 µg/mL ea:

Thorium,	Thallium,
Uranium,	Vanadium,
Zinc,	Manganese,
Cadmium,	Cobalt,
Chromium,	Copper,
Arsenic,	Barium,
Beryllium,	Nickel,
Lead,	Silver

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ANALYTE	CERTIFIED VALUE	ANALYTE	CERTIFIED VALUE
Aluminum, Al	250.1 ± 0.8 µg/mL	Arsenic, As	2.505 ± 0.022 µg/mL
Barium, Ba	2.504 ± 0.013 µg/mL	Beryllium, Be	2.502 ± 0.015 µg/mL
Cadmium, Cd	2.504 ± 0.013 µg/mL	Calcium, Ca	249.9 ± 1.3 µg/mL
Chromium, Cr	2.505 ± 0.017 µg/mL	Cobalt, Co	2.505 ± 0.015 µg/mL
Copper, Cu	2.505 ± 0.013 µg/mL	Iron, Fe	250.3 ± 1.0 µg/mL
Lead, Pb	2.505 ± 0.014 µg/mL	Magnesium, Mg	249.9 ± 1.3 µg/mL
Manganese, Mn	2.505 ± 0.013 µg/mL	Nickel, Ni	2.505 ± 0.014 µg/mL
Potassium, K	249.9 ± 1.2 µg/mL	Selenium, Se	4.007 ± 0.024 µg/mL
Silver, Ag	2.495 ± 0.017 µg/mL	Sodium, Na	249.9 ± 1.2 µg/mL
Thallium, Tl	2.500 ± 0.017 µg/mL	Thorium, Th	2.496 ± 0.013 µg/mL
Uranium, U	2.505 ± 0.013 µg/mL	Vanadium, V	2.505 ± 0.014 µg/mL
Zinc, Zn	2.505 ± 0.014 µg/mL		

Density: 1.040 g/mL (measured at 20 ± 4 ºC)

Assay Information:

ANALYTE	METHOD	NIST SRM#	SRM LOT#
Ag	ICP Assay	3151	160729
Ag	Volhard	999c	999c
Ag	Calculated		See Sec. 4.2
Al	ICP Assay	3101a	140903
Al	EDTA	928	928
As	ICP Assay	3103a	100818
Ba	ICP Assay	3104a	140909
Ba	Calculated		See Sec. 4.2
Ba	Gravimetric		See Sec. 4.2
Be	ICP Assay	3105a	090514
Ca	ICP Assay	3109a	130213
Ca	EDTA	928	928
Cd	ICP Assay	3108	130116
Cd	EDTA	928	928
Cd	Calculated		See Sec. 4.2
Co	EDTA	928	928
Co	ICP Assay	traceable to 3113	M2-CO661665
Cr	ICP Assay	3112a	170630
Cu	ICP Assay	3114	121207
Cu	EDTA	928	928
Fe	ICP Assay	3126a	140812
Fe	EDTA	928	928
K	ICP Assay	3141a	140813
K	Gravimetric		See Sec. 4.2
Mg	ICP Assay	3131a	140110
Mg	EDTA	928	928
Mn	ICP Assay	3132	050429
Mn	EDTA	928	928
Na	ICP Assay	3152a	120715
Na	Gravimetric		See Sec. 4.2
Ni	ICP Assay	3136	120619
Ni	EDTA	928	928
Pb	ICP Assay	3128	101026
Pb	EDTA	928	928
Se	ICP Assay	3149	100901
Se	Calculated		See Sec. 4.2
Th	EDTA	928	928
Th	Calculated		See Sec. 4.2
Tl	ICP Assay	3158	151215
Tl	Calculated		See Sec. 4.2
U	ICP Assay	3164	080521
U	Calculated		See Sec. 4.2
V	ICP Assay	3165	160906
V	EDTA	928	928
Zn	ICP Assay	3168a	120629
Zn	EDTA	928	928

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Characterization of CRM/RM by Two or More Methods

Certified Value, $X_{CRM/RM}$, where two or more methods of characterization are used is the weighted mean of the results:

$X_{CRM/RM} = \Sigma(w_i)(X_i)$

X_i = mean of Assay Method i with standard uncertainty $u_{char\ i}$

w_i = the weighting factors for each method calculated using the inverse square of the variance:

$w_i = (1/u_{char\ i})^2 / (\Sigma(1/(u_{char\ i})^2)$

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char} = [\Sigma((w_i)^2\ (u_{char\ i})^2)]^{½}$ where $u_{char\ i}$ are the errors from each characterization method

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Characterization of CRM/RM by One Method

Certified Value, $X_{CRM/RM}$, where one method of characterization is used is the mean of individual results:

$X_{CRM/RM} = (X_a)\ (u_{char\ a})$

X_a = mean of Assay Method A with

$u_{char\ a}$ = the standard uncertainty of characterization Method A

CRM/RM Expanded Uncertainty (±) = $U_{CRM/RM} = k\,(u^2_{char\ a} + u^2_{bb} + u^2_{lts} + u^2_{ts})^{½}$

k = coverage factor = 2

$u_{char\ a}$ = the errors from characterization

u_{bb} = bottle to bottle homogeneity standard uncertainty

u_{lts} = long term stability standard uncertainty (storage)

u_{ts} = transport stability standard uncertainty

Certified Abundance:

IV's Certified Abundance

Isotope	Atom %
Uranium 238U	99.8 ± 0.1
Uranium 235U	0.24 ± 0.05

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM/RM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

N/A

6.0 INTENDED USE

- For the calibration of analytical instruments and validation of analytical methods as appropriate.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag, keep cap tightly sealed when not in use and store between 4° - 24° C to minimize the effects of transpiration. Use at 20° ± 4° C to minimize volumetric dilution error when using the reported density. Do not pipette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

Low Silver Note: This solution contains "LOW" levels of Silver. Please store this entire bottle inside a sealed glass jar.

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 CERTIFICATION, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Certification Issue Date

April 22, 2020

- The certification is valid within the measurement uncertainty specified provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This certification is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **April 22, 2024**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- Sealed TCT Bag Open Date: _____

- This CRM/RM should not be used longer than one year (or six months in the case of a 30 mL bottle) from the date of opening the aluminized bag or after the date given in Sec. 11.2, whichever comes first. This is contingent upon the CRM/RM being stored and handled in accordance with the instructions given in Sec. 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Approved By:

Michael Booth
Manager, Quality Control

Certifying Officer:

Paul Gaines
CEO, Senior Technical Director

DATA VALIDATION REPORT

LORA LAKE - ANNUAL LAKESIDE GW MONITORING 2021

Prepared for:

Floyd | Snider
601 Union Street, Suite 600
Seattle, WA 98101

Prepared by:

EcoChem, Inc.
500 Union Street, Suite 1010
Seattle, WA 98101

EcoChem Project: C15231-2

May 18, 2021

Approved for Release:

Christine Ransom
Senior Project Chemist
EcoChem, Inc.

PROJECT NARRATIVE

Basis for the Data Validation

This report summarizes the results of data validation performed on groundwater and quality control (QC) sample data for the Lora Lake Lakeside GW Monitoring project. The dioxin data received full validation (EPA Stage 4). A complete list of samples is provided in the Sample Index.

Analytical Resources in Tukwila, WA performed the analyses. The analytical method and EcoChem project chemists are listed in the table below.

ANALYSIS	METHOD	PRIMARY REVIEW	SECONDARY REVIEW
Dioxins	EPA 1613B	E. Clayton	C. Ransom

The data were reviewed using guidance and quality control criteria documented in the analytical methods; *Port of Seattle Lora Lake Parcel, Remedial Investigation/Feasibility Study Work Plan* (Floyd Snider February 11, 2011); *National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins (CDDs) and Chlorinated Dibenzofurans (CDFs) Data Review* (USEPA, September 2011); *National Functional Guidelines for High Resolution Superfund Methods Data Review* (USEPA, April 2016).

EcoChem's goal in assigning data assessment qualifiers is to assist in proper data interpretation. If values are estimated (J or UJ), data may be used for site evaluation and risk assessment purposes but reasons for data qualification should be taken into consideration when interpreting sample concentrations. If values are assigned an R or DNR, the data should not be used for any site evaluation purposes. If values have no data qualifier assigned, then the data meet the data quality objectives as stated in the documents and methods referenced above.

Data qualifier definitions, reason codes, and validation criteria are included as Appendix A. A Qualified Data Summary Table is included in Appendix B. Data Validation Worksheets will be kept on file at EcoChem, Inc. A qualified laboratory electronic data deliverable (EDD) is also submitted with this report.

Sample Index
Lora Lake - Annual Lakeside GW Monitoring 2021

SDG	SAMPLE ID	LAB ID	1613B Dioxins
20J0389	MW-VB3-031621	21C0250-04	✓
20J0389	HCOO-B312-031621	21C0250-05	✓
20J0389	MW-CP7-031621	21C0250-06	✓
20J0389	MW-CP6-031621	21C0250-07	✓
20J0389	MW-CP4-031621	21C0250-08	✓
20J0389	MW-CP5-031621	21C0250-09	✓
20J0389	MW-CP2-031721	21C0250-10	✓
20J0389	MW-CP2-031721-D	21C0250-11	✓
20J0389	MW-CP3-031721	21C0250-12	✓
20J0389	MW-CP1-031721	21C0250-13	✓
20J0389	MW-C1/VB1-031721	21C0250-14	✓
20J0389	MW-VB2-031721	21C0250-15	✓

DATA VALIDATION REPORT
Lora Lake - Annual Lakeside GW Monitoring 2021
Dioxin/Furan Compounds by Method 1613B

This report documents the review of analytical data from the analysis of groundwater samples and the associated laboratory and field quality control (QC) samples. Samples were analyzed by Analytical Resources, Inc., Tukwila, Washington. Refer to the SAMPLE INDEX for a complete list of samples.

SDG	NUMBER OF SAMPLES	VALIDATION LEVEL
21C0250	12 Groundwater	EPA Stage 4

DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative.

The initial calibration IICAL) summary forms were missing the low standard information for OCDD. The laboratory confirmed that this standard was used and that results were calculated using the correct response factor. The data package was resubmitted with corrected ICAL summaries.

EDD TO HARDCOPY VERIFICATION

Sample results and related quality control data were received as an electronic data deliverable (EDD) and laboratory report. The EDD was verified against the laboratory report (10%). No errors were noted.

TECHNICAL DATA VALIDATION

The quality control (QC) requirements reviewed are summarized in the following table:

✓	Sample Receipt, Preservation, and Holding Times	1	Matrix Spike/Matrix Spike Duplicates (MS/MSD)
✓	System Performance and Resolution Checks	1	Field Duplicates
✓	Initial Calibration (ICAL)	✓	Target Analyte List
2	Calibration Verification	✓	Reported Results
2	Blanks (Laboratory and Field)	2	Compound Identification
2	Labeled Compounds	1	Calculation Verification
✓	Ongoing Precision and Recovery (OPR)		

✓ ***Stated method quality objectives (MQO) and QC criteria have been met. No outliers are noted or discussed.***
1 ***Quality control results are discussed below, but no data were qualified.***
2 ***Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.***

Calibration Verification

Calibration verifications (CCAL) were analyzed at the beginning of each sequence as required. With the exceptions noted below, compound concentrations fell within the acceptance limits specified in the method. All ion ratios were acceptable. The S/N ratio was greater than 10, as required, for all compounds. All relative retention times for all target compounds met the required criteria.

For the CCAL analyzed on 4/7/21 at 07:21, the CCAL recovery for 2,3,4,6,7,8-HxCDF was greater than the upper control limit. The associated detected field sample results were estimated (J-5BH).

For the CCAL analyzed on 4/7/21 at 17:15, the recovery for 1,2,3,4,6,7,8-HpCDF was greater than the upper control limit. This analyte was not detected in the associated field samples; no data were qualified.

Blanks

To assess the impact of any blank contaminant on the reported sample results, an action level is established at five times (5x) the concentration reported in the blank. If a contaminant is reported in an associated field sample and the concentration is less than the action level, the result is qualified as not detected (U-7). No action is taken if the sample result is greater than the action level, or for non-detected results.

For extraction batch, BJC0518, 1,2,3,4,6,7,8-HpCDD, OCDF, and OCDD were detected in the method blank. Results for these compounds in the associated samples that were less than the 5x action levels were qualified as not-detected (U-7).

For extraction batch, BJC0519, 1,2,3,4,6,7,8-HpCDF, OCDF, and OCDD were detected in the method blank. Results for these compounds in the associated samples that were less than the 5x action levels were qualified as not-detected (U-7).

Labeled Compounds

The recoveries for some labeled compounds were less than the QAPP specified lower control limit of 70%. The following results were estimated (J/UJ-13L) to indicate a potential low bias.

Sample ID	Labeled Compound	Associated Compounds	Qualifier
HCOO-B312-031621	13C-2,3,7,8-TCDF	2,3,7,8-TCDF	UJ-13L
	13C-2,3,7,8-TCDD	2,3,7,8-TCDD	UJ-13L
	13C-1,2,3,7,8-PeCDF	1,2,3,7,8-PeCDF	UJ-13L
	13C-2,3,4,7,8-PeCDF	2,3,4,7,8-PeCDF	UJ-13L
	13C-1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-HpCDD	UJ-13L
	13C-1,2,3,7,8-PeCDD	1,2,3,7,8-PeCDD	UJ-13L
	13C-2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	UJ-13L
	13C-1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-HxCDF	UJ-13L
	13C-1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-HpCDF	UJ-13L
	13C-OCDD	OCDD, OCDF	UJ-13L

Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicate analyses were not performed; they are not required by the method. Accuracy was evaluated using the labeled compound and ongoing precision and recovery (OPR)/OPR duplicate recoveries. Precision was evaluated using the OPR/OPR Dup and field duplicate relative percent difference (RPD) values.

Field Duplicates

The RPD control limit is 35% for results greater than 5x the reporting limit (RL). For results less than 5x the RL, the absolute difference between the sample and replicate must be less than the RL.

One set of field duplicates was submitted: MW-CP2-102720 and MW-CP2-102720-D. All field precision criteria were met.

Compound Identification

The method requires the confirmation of 2,3,7,8-TCDF using an alternate GC column as the DB5 column that is typically used cannot fully separate 2,3,7,8-TCDF from closely eluting non-target TCDF isomers. The laboratory did not perform a second column confirmation; however, the laboratory uses an RTX-Dioxin2 column. This column provides adequate resolution of the TCDF isomers as indicated by the acceptable peak to valley ratios. Since the 2,3,7,8-TCDF resolution was acceptable, no confirmation was necessary.

The laboratory assigned an "EMPC" flag to one or more analytes to indicate that the ion ratio criterion for positive identification was not met. Since the ion abundance ratio is the primary identification criterion for high resolution mass spectroscopy, an outlier indicates that the reported result may be a false positive. These "EMPC" flagged results were qualified as not detected (U-25) at the reported concentration.

Calculation Verification

Several results were verified by recalculation from the raw data. No calculation or transcription errors were found.

OVERALL ASSESSMENT

As determined by this evaluation, the laboratory followed the specified analytical method. With the exceptions noted above, accuracy was acceptable as demonstrated by the labeled compound and OPR/OPR Dup recoveries and precision was acceptable as demonstrated by the OPR/OPR Dup and field duplicate RPD values.

Detection limits were elevated based on ion ratio outliers and method blank contamination. Results were estimated based on labeled compound recovery outliers and CCAL recovery outliers.

All data, as qualified, are acceptable for use.

ECOCHEM
Data Quality

APPENDIX A

DATA QUALIFIER DEFINITIONS
REASON CODES
AND CRITERIA TABLES

DATA VALIDATION QUALIFIER CODES
Based on National Functional Guidelines

The following definitions provide brief explanations of the qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents the approximate concentration.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

The following is an EcoChem qualifier that may also be assigned during the data review process:

DNR	Do not report; a more appropriate result is reported from another analysis or dilution.

DATA QUALIFIER REASON CODES

Group	Code	Reason for Qualification
Sample Handling	1	Improper Sample Handling or Sample Preservation (i.e., headspace, cooler temperature, pH, summa canister pressure); Exceeded Holding Times
Instrument Performance	24	Instrument Performance (i.e., tune, resolution, retention time window, endrin breakdown, lock-mass)
	5A	Initial Calibration (RF, %RSD, r^2)
	5B	Calibration Verification (CCV, CCAL; RF, %D, %R) Use bias flags (H,L)[1] where appropriate
	5C	Initial Calibration Verification (ICV %D, %R) Use bias flags (H,L)[1] where appropriate
Blank Contamination	6	Field Blank Contamination (Equipment Rinsate, Trip Blank, etc.)
	7	Lab Blank Contamination (i.e., method blank, instrument blank, etc.) Use low bias flag (L)[1] for negative instrument blanks
Precision and Accuracy	8	Matrix Spike (MS and/or MSD) Recoveries Use bias flags (H,L)[1] where appropriate
	9	Precision (all replicates: LCS/LCSD, MS/MSD, Lab Replicate, Field Replicate)
	10	Laboratory Control Sample Recoveries (a.k.a. Blank Spikes) Use bias flags (H,L)[1] where appropriate
	12	Reference Material Use bias flags (H,L)[1] where appropriate
	13	Surrogate Spike Recoveries (a.k.a. labeled compounds, recovery standards) Use bias flags (H,L)[1] where appropriate
Interferences	16	ICP/ICP-MS Serial Dilution Percent Difference
	17	ICP/ICP-MS Interference Check Standard Recovery Use bias flags (H,L)[1] where appropriate
	19	Internal Standard Performance (i.e., area, retention time, recovery)
	22	Elevated Detection Limit due to Interference (i.e., chemical and/or matrix)
	23	Bias from Matrix Interference (i.e. diphenyl ether, PCB/pesticides)
Identification and Quantitation	2	Chromatographic pattern in sample does not match pattern of calibration standard
	3	2nd column confirmation (RPD or %D)
	4	Tentatively Identified Compound (TIC) (associated with NJ only)
	20	Calibration Range or Linear Range Exceeded
	25	Compound Identification (i.e., ion ratio, retention time, relative abundance, etc.)
Miscellaneous	11	A more appropriate result is reported (multiple reported analyses i.e., dilutions, re-extractions, etc. Associated with "R" and "DNR" only)
	14	Other (See DV report for details)
	26	Method QC information not provided

[1] H = high bias indicated
L = low bias indicated

DATA QUALIFIER REASON CODES

Group	Code	Reason for Qualification
Sample Handling	1	Improper Sample Handling or Sample Preservation (i.e., headspace, cooler temperature, pH, summa canister pressure); Exceeded Holding Times
Instrument Performance	24	Instrument Performance (i.e., tune, resolution, retention time window, endrin breakdown, lock-mass)
	5A	Initial Calibration (RF, %RSD, r^2)
	5B	Calibration Verification (CCV, CCAL; RF, %D, %R) Use bias flags (H,L)[1] where appropriate
	5C	Initial Calibration Verification (ICV %D, %R) Use bias flags (H,L)[1] where appropriate
Blank Contamination	6	Field Blank Contamination (Equipment Rinsate, Trip Blank, etc.)
	7	Lab Blank Contamination (i.e., method blank, instrument blank, etc.) Use low bias flag (L)[1] for negative instrument blanks
Precision and Accuracy	8	Matrix Spike (MS and/or MSD) Recoveries Use bias flags (H,L)[1] where appropriate
	9	Precision (all replicates: LCS/LCSD, MS/MSD, Lab Replicate, Field Replicate)
	10	Laboratory Control Sample Recoveries (a.k.a. Blank Spikes) Use bias flags (H,L)[1] where appropriate
	12	Reference Material Use bias flags (H,L)[1] where appropriate
	13	Surrogate Spike Recoveries (a.k.a. labeled compounds, recovery standards) Use bias flags (H,L)[1] where appropriate
Interferences	16	ICP/ICP-MS Serial Dilution Percent Difference
	17	ICP/ICP-MS Interference Check Standard Recovery Use bias flags (H,L)[1] where appropriate
	19	Internal Standard Performance (i.e., area, retention time, recovery)
	22	Elevated Detection Limit due to Interference (i.e., chemical and/or matrix)
	23	Bias from Matrix Interference (i.e. diphenyl ether, PCB/pesticides)
Identification and Quantitation	2	Chromatographic pattern in sample does not match pattern of calibration standard
	3	2nd column confirmation (RPD or %D)
	4	Tentatively Identified Compound (TIC) (associated with NJ only)
	20	Calibration Range or Linear Range Exceeded
	25	Compound Identification (i.e., ion ratio, retention time, relative abundance, etc.)
Miscellaneous	11	A more appropriate result is reported (multiple reported analyses i.e., dilutions, re-extractions, etc. Associated with "R" and "DNR" only)
	14	Other (See DV report for details)
	26	Method QC information not provided

[1] H = high bias indicated
L = low bias indicated

Dioxin/Furan Analysis by HRMS
(Based on Dioxin NFG 2011 and Methods EPA 1613B and SW-846 8290)

QC Element	Acceptance Criteria	Source of Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Sample Handling					
Cooler/Storage Temperature Preservation	Waters/Solids ≤ 6°C & in the dark Tissues <-10°C & in the dark **Preservation Aqueous:** If Cl_2 is present Thiosulfate must be added and if pH > 9 it must be adjusted to 7 - 9	NFG [1] Method[2]	J(pos)/R(ND) if thiosulfate not added if Cl_2 present; J(pos)/UJ(ND) if pH not adjusted J(pos)/UJ(ND) if temp > 20°C	1	**EcoChem PJ, see TM-05**
Holding Time	**If properly stored, 1 year or:** **Extraction (all matrices):** 30 days from collection **Analysis (all matrices)**: 45 days from extraction	NFG [1] Method[2]	If not properly stored or HT exceedance: J(pos)/UJ(ND)	1	**EcoChem PJ, see TM-05** Gross exceedance = > 1 year 2011 NFG **Note:** Under CWA, SDWA, and RCRA the HT for H2O is 7 days.
Instrument Performance					
Mass Resolution (Tuning)	PFK (Perfluorokerosene) ≥10,000 resolving power at m/z 304.9824. Exact mass of m/z 380.9760 w/in 5 ppm of theoretical value (380.97410 to 380.97790) . Analyzed prior to ICAL and at the start and end of each 12 hr. shift.	NFG [1] Method [2]	R(pos/ND) all analytes in all samples associated with the tune	24	Notify PM
Windows Defining Mix	Peaks for first and last eluters must be within established retention time windows for each selector group (chlorination level)	NFG [1] Method [2]	If peaks are not completely within windows (clipped): If natives are ok, J(pos)/UJ(ND) homologs (Totals) If natives are affected, R all results for that selector group	24	Notify PM
Column Performance Mix	Both mixes must be analyzed before ICAL and CCAL Valley < 25% (valley = (x/y)*100%) where x = ht. of TCDD (or TCDF) & y = baseline to bottom of valley For all isomers eluting near the 2378-TCDD (TCDF) peak (TCDD only for 8290)	NFG [1] Method [2]	J(pos) if valley > 25%	24	**EcoChem PJ, see TM-05, Rev. 2**; Note: TCDF is evaluated only if second column confirmation is performed
Initial Calibration **Sensitivity**	S/N ratio > 10 for all native and labeled compounds in CS1 std.	NFG [1] Method [2]	If <10, elevate Det. Limit or R(ND)	5A	
Initial Calibration **Selectivity**	Ion Abundance ratios within QC limits (Table 8 of method 8290) (Table 9 of method 1613B)	NFG [1] Method [2]	If 2 or more ion ratios are out for one compound in ICAL, J(pos)	5A	**EcoChem PJ, see TM-05, Rev. 2**

Dioxin/Furan Analysis by HRMS
(Based on Dioxin NFG 2011 and Methods EPA 1613B and SW-846 8290)

QC Element	Acceptance Criteria	Source of Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Instrument Performance (continued)					
Initial Calibration (Minimum 5 stds.) **Stability**	%RSD < 20% for native compounds %RSD <30% for labeled compounds (%RSD < 35% for labeled compounds under 1613b)	NFG [1] Method [2]	J(pos) natives if %RSD > 20%	5A	
	Absolute RT of $^{13}C_{12}$-1234-TCDD >25 min on DB5 & >15 min on DB-225	NFG [1] Method [2]	Narrate, no action		**EcoChem PJ, see TM-05, Rev. 2**
Continuing Calibration (Prior to each 12 hr. shift) **Sensitivity**	S/N ratio for CS3 standard > 10	NFG [1] Method [2]	If <10, elevate Det. Limit or R(ND)	5B	
Continuing Calibration (Prior to each 12 hr. shift) **Selectivity**	Ion Abundance ratios within QC limits (Table 8 of method 8290) (Table 9 of method 1613B)	NFG [1] Method [2]	For congener with ion ratio outlier, J(pos) natives in all samples associated with CCAL. No action for labeled congener ion ratio outliers.	25	**EcoChem PJ, see TM-05**
Continuing Calibration (Prior to each 12 hr. shift) **Stability**	%D+/-20% for native compounds %D +/-30% for labeled compounds **(Must meet limits in Table 6, Method 1613B)** If %D in the closing CCAL are within 25%/35%, the mean RF from the two CCAL may be used to calculate samples **(Section 8.3.2.4 of 8290)**.	NFG [1] Method [2]	**Labeled compounds:** Narrate, no action. **Native compounds:** 1613: J(pos)/UJ(ND)if %D is outside Table 6 limits J(pos)/R(ND) if %D is +/-75% of Table 6 limits 8290: J(pos)/UJ(ND) if %D = 20% - 75% J(pos)/R(ND) if %D > 75%	5B (H,L)[3]	
	Absolute RT of $^{13}C_{12}$-1234-TCDD and $^{13}C_{12}$-123789-HxCDD should be ± 15 seconds of ICAL RRT for all other compounds must meet criteria listed in Table 2 Method 1316.	NFG [1] Method [2]	Narrate, no action	5B	**EcoChem PJ, see TM-05**
Blank Contamination					
Method Blank (MB)	MB: One per matrix per batch of (of ≤ 20 samples) No detected compounds > RL	NFG [1] Method [2]	U(pos) if result is < 5X action level.	7	**Hierarchy of blank review:** **#1 - Review MB, qualify as needed** **#2 - Review FB , qualify as needed**
Field Blank (FB)	FB: frequency as per QAPP No detected compounds > RL		U(pos) if result is < 5X action level.	6	

Dioxin/Furan Analysis by HRMS
(Based on Dioxin NFG 2011 and Methods EPA 1613B and SW-846 8290)

QC Element	Acceptance Criteria	Source of Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Precision and Accuracy					
MS/MSD (recovery)	**MS/MSD not typically required for HRMS analyses.** If lab analyzes MS/MSD then one set per matrix per batch (of ≤ 20 samples) Use most current laboratory control limits	EcoChem standard policy	J(pos) if both %R > UCL - high bias J(pos)/UJ(ND) if both %R < LCL - low bias J(pos)/R(ND) if both %R < 10% - very low bias J(pos)/UJ(ND) if one > UCL & one < LCL, with no bias **PJ if only one %R outlier**	8 (H,L)[3]	No action if only one spike %R is outside criteria. No action if parent concentration is >4x the amount spiked. Qualify parent sample only unless other QC indicates systematic problems.
MS/MSD (RPD)	**MS/MSD not typically required for HRMS analyses.** If lab analyzes MS/MSD then one set per matrix per batch (of ≤ 20 samples) Use most current laboratory control limits	EcoChem standard policy	J(pos) in parent sample if RPD > CL	9	Qualify parent sample only.
LCS (or OPR)	One per lab batch (of ≤ 20 samples) Use most current laboratory control limits **or** Limits from Table 6 of 1613B	NFG [1] Method [2]	J(pos) if %R > UCL - high bias J(pos)/UJ(ND) if %R < LCL - low bias J(pos)/R(ND) if %R < 10% - very low bias	10 (H,L)[3]	No action if only one spike %R is outside criteria, when LCSD is analyzed. Qualify all associated samples.
LCS/LCSD (RPD)	**LCSD not typically required for HRMS analyses.** One set per matrix and batch of 20 samples RPD < 35%	Method [2] Ecochem standard policy	J(pos) assoc. compound in all samples if RPD > CL	9	Qualify all associated samples.
Lab Duplicate (RPD)	**Lab Dup not typically required for HRMS analyses.** One per lab batch (of ≤ 20 samples) Use most current laboratory control limits	EcoChem standard policy	J(pos)/UJ(ND) if RPD > CL	9	
Labeled Compounds (Internal Standards)	Added to all samples %R = 40% - 135% in all samples 8290 %R must meet limits in Table 7 Method 1613B	NFG [1] Method [2]	J(pos) if %R > UCL - high bias J(pos)/UJ(ND) if %R < LCL - low bias J(pos)/R(ND) if %R < 10% - very low bias	13 (H,L)[3]	
Field Duplicates	Solids: RPD <50% OR difference < 2X RL (for results < 5X RL) Aqueous: RPD <35% OR difference < 1X RL (for results < 5X RL)	EcoChem standard policy	Narrate and qualify if required by project	9	**Use professional judgment**

Dioxin/Furan Analysis by HRMS
(Based on Dioxin NFG 2011 and Methods EPA 1613B and SW-846 8290)

QC Element	Acceptance Criteria	Source of Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Compound ID and Calculation					
Quantitation/ Identification	All ions for each isomer must maximize within ± 2 seconds. S/N ratio >2.5 Ion ratios must meet criteria listed in Table 8 Method 8290, or Table 9 of 1613B; RRTs w/in limits in Table 2 of 1613B	NFG [1] Method [2]	Narrate in report; qualify if necessary NJ(pos) for retention time outliers. U(pos) for ion ratio outliers.	25	**EcoChem PJ, see TM-05**
EMPC (estimated maximum possible concentration)	If quantitation identification criteria are not met, laboratory should report an EMPC value.	NFG [1] Method [2]	If laboratory correctly reported an EMPC value, qualify the native compound U(pos) to indicate that the value is a detection limit and qualify total homolog groups J (pos)	25	**Use professional judgment See TM-18**
Interferences	Interferences from chlorodiphenyl ether compounds	NFG [1] Method [2]	J(pos)/UJ(ND) if present	23	**See TM-16**
	Lock masses must not deviate ± 20% from values in Table 8 of 1613B	Method [2]	J(pos)/UJ(ND) if present	24	**See TM-17**
Second Column Confirmation	All 2,3,7,8-TCDF hits must be confirmed on a DB-225 (or equiv) column. All QC criteria must also be met for the confirmation analysis.	NFG [1] Method [2]	Report the DB-225 value. If not performed use PJ.	3	DNR-11 DB5 result if both results from both columns are reported. **EcoChem PJ, see TM-05**
Calculation Check	Check 10% of field & QC sample results	EcoChem standard policy	Contact laboratory for resolution and/or corrective action	na	Full data validation only.
Electronic Data Deliverable (EDD)					
Verification of EDD to hardcopy data	EcoChem verify @ 10% unless problems noted; then increase level up to 100% for next several packages.		Depending on scope of problem, correct at EcoChem (minor issues) to resubmittal by laboratory (major issues).	na	EcoChem Project Manager and/or Database Administrator will work with lab to provide long-term corrective action.
Dilutions, Re-extractions and/or Reanalyses	Report only one result per analyte	Standard reporting policy	Use "DNR" to flag results that will not be reported.	11	

(pos) - positive (detected) results; (ND) - not detected results

[1] National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins (CDDs) & Chlorinated Dibenzofurans (CDFs) Data Review, September 2011

[2] Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry (HRGC/HRMS), USEPA SW-846, Method 8290

[2] EPA Method 1613, Rev.B, Tetra-through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGS/HRMS, October 1994

[3] NFG 2013 suggests using "+ / -" to indicate bias; EcoChem has chosen "H" = high bias indicated; "L" = low bias indicated.

ECOCHEM
Data Quality

APPENDIX B

QUALIFIED DATA SUMMARY TABLE

Qualified Data Summary Table
Lora Lake - Annual Lakeside GW Monitoring 2021

SAMPLE ID	LAB ID	METHOD	ANALYTE	RESULT	UNITS	LAB QUAL	DV QUAL	DV CODE
MW-VB3-031621	21C0250-04	EPA 1613B	1,2,3,7,8-PeCDD	0.51	pg/L	EMPC, J	U	25
MW-VB3-031621	21C0250-04	EPA 1613B	1,2,3,4,6,7,8-HpCDD	1.25	pg/L	EMPC, J, B	U	25
MW-VB3-031621	21C0250-04	EPA 1613B	1,2,3,4,6,7,8-HpCDF	1.24	pg/L	EMPC, J, B	U	25
MW-VB3-031621	21C0250-04	EPA 1613B	1,2,3,4,7,8,9-HpCDF	0.68	pg/L	EMPC, J	U	25
MW-VB3-031621	21C0250-04	EPA 1613B	OCDF	23.3	pg/L	B	U	7
MW-VB3-031621	21C0250-04	EPA 1613B	OCDD	9.72	pg/L	J, B	U	7
HCOO-B312-031621	21C0250-05	EPA 1613B	2,3,7,8-TCDF	4.22	pg/L	U	UJ	13L
HCOO-B312-031621	21C0250-05	EPA 1613B	2,3,7,8-TCDD	2.89	pg/L	U	UJ	13L
HCOO-B312-031621	21C0250-05	EPA 1613B	1,2,3,7,8-PeCDF	4.27	pg/L	U	UJ	13L
HCOO-B312-031621	21C0250-05	EPA 1613B	2,3,4,7,8-PeCDF	4.39	pg/L	U	UJ	13L
HCOO-B312-031621	21C0250-05	EPA 1613B	1,2,3,4,6,7,8-HpCDD	6.85	pg/L	U	UJ	13L
HCOO-B312-031621	21C0250-05	EPA 1613B	1,2,3,7,8-PeCDD	3.16	pg/L	U	UJ	13L
HCOO-B312-031621	21C0250-05	EPA 1613B	OCDF	117	pg/L	EMPC, B	UJ	13L,25
HCOO-B312-031621	21C0250-05	EPA 1613B	2,3,4,6,7,8-HxCDF	5.20	pg/L	U	UJ	13L
HCOO-B312-031621	21C0250-05	EPA 1613B	1,2,3,7,8,9-HxCDF	6.79	pg/L	U	UJ	13L
HCOO-B312-031621	21C0250-05	EPA 1613B	1,2,3,4,7,8,9-HpCDF	6.37	pg/L	U	UJ	13L
HCOO-B312-031621	21C0250-05	EPA 1613B	OCDD	16.4	pg/L	U	UJ	13L
MW-CP7-031621	21C0250-06	EPA 1613B	OCDF	25.4	pg/L	B	U	7
MW-CP7-031621	21C0250-06	EPA 1613B	OCDD	10.5	pg/L	J, B	U	7
MW-CP6-031621	21C0250-07	EPA 1613B	OCDF	15.3	pg/L	J, B	U	7
MW-CP4-031621	21C0250-08	EPA 1613B	1,2,3,4,7,8-HxCDF	0.66	pg/L	EMPC, J	U	25
MW-CP4-031621	21C0250-08	EPA 1613B	OCDF	18.2	pg/L	J, B	U	7
MW-CP4-031621	21C0250-08	EPA 1613B	OCDD	5.92	pg/L	J, B	U	7
MW-CP5-031621	21C0250-09	EPA 1613B	1,2,3,4,6,7,8-HpCDD	2.12	pg/L	EMPC, J, B	U	25
MW-CP5-031621	21C0250-09	EPA 1613B	1,2,3,4,6,7,8-HpCDF	1.26	pg/L	EMPC, J, B	U	25
MW-CP5-031621	21C0250-09	EPA 1613B	1,2,3,7,8-PeCDF	1.07	pg/L	EMPC, J	U	25
MW-CP5-031621	21C0250-09	EPA 1613B	OCDD	10.6	pg/L	EMPC, J, B	U	25
MW-CP5-031621	21C0250-09	EPA 1613B	OCDF	24.8	pg/L	B	U	7
MW-CP2-031721	21C0250-10	EPA 1613B	OCDF	12.0	pg/L	EMPC, J, B	U	25
MW-CP2-031721	21C0250-10	EPA 1613B	OCDD	6.64	pg/L	J, B	U	7
MW-CP2-031721-D	21C0250-11	EPA 1613B	1,2,3,7,8-PeCDF	0.94	pg/L	EMPC, J	U	25
MW-CP2-031721-D	21C0250-11	EPA 1613B	1,2,3,7,8-PeCDD	0.50	pg/L	EMPC, J	U	25
MW-CP2-031721-D	21C0250-11	EPA 1613B	1,2,3,4,6,7,8-HpCDF	0.94	pg/L	EMPC, J, B	U	25
MW-CP2-031721-D	21C0250-11	EPA 1613B	2,3,4,7,8-PeCDF	0.69	pg/L	EMPC, J	U	25
MW-CP2-031721-D	21C0250-11	EPA 1613B	1,2,3,4,6,7,8-HpCDD	0.62	pg/L	EMPC, J, B	U	25
MW-CP2-031721-D	21C0250-11	EPA 1613B	1,2,3,4,7,8-HxCDD	0.66	pg/L	EMPC, J	U	25
MW-CP2-031721-D	21C0250-11	EPA 1613B	OCDF	6.36	pg/L	J, B	U	7
MW-CP2-031721-D	21C0250-11	EPA 1613B	OCDD	3.10	pg/L	J, B	U	7
MW-CP3-031721	21C0250-12	EPA 1613B	1,2,3,4,6,7,8-HpCDD	0.70	pg/L	J, B	U	7
MW-CP3-031721	21C0250-12	EPA 1613B	1,2,3,4,6,7,8-HpCDF	1.13	pg/L	EMPC, J, B	U	25
MW-CP3-031721	21C0250-12	EPA 1613B	OCDF	24.3	pg/L	EMPC, B	U	25

Qualified Data Summary Table
Lora Lake - Annual Lakeside GW Monitoring 2021

SAMPLE ID	LAB ID	METHOD	ANALYTE	RESULT	UNITS	LAB QUAL	DV QUAL	DV CODE
MW-CP3-031721	21C0250-12	EPA 1613B	OCDD	9.26	pg/L	J, B	U	7
MW-CP1-031721	21C0250-13	EPA 1613B	1,2,3,4,6,7,8-HpCDF	0.62	pg/L	EMPC, J, B	U	25
MW-CP1-031721	21C0250-13	EPA 1613B	OCDD	6.64	pg/L	EMPC, J, B	U	25
MW-CP1-031721	21C0250-13	EPA 1613B	OCDF	18.8	pg/L	J, B	U	7
MW-C1/VB1-031721	21C0250-14	EPA 1613B	1,2,3,4,6,7,8-HpCDD	2.16	pg/L	J, B	U	7
MW-C1/VB1-031721	21C0250-14	EPA 1613B	2,3,4,7,8-PeCDF	0.49	pg/L	EMPC, J	U	25
MW-C1/VB1-031721	21C0250-14	EPA 1613B	OCDF	28.9	pg/L	EMPC, B	U	25
MW-C1/VB1-031721	21C0250-14	EPA 1613B	OCDD	10.8	pg/L	J, B	U	7
MW-VB2-031721	21C0250-15	EPA 1613B	1,2,3,4,6,7,8-HpCDD	1.32	pg/L	EMPC, J, B	U	25
MW-VB2-031721	21C0250-15	EPA 1613B	OCDF	9.61	pg/L	J, B	U	7
MW-VB2-031721	21C0250-15	EPA 1613B	OCDD	7.27	pg/L	J, B	U	7
MW-VB2-031721	21C0250-15	EPA 1613B	2,3,4,6,7,8-HxCDF	1.30	pg/L	J	J	5BH

Lora Lake Apartments Site

2021 Annual Compliance Monitoring Report

Appendix C
Soil Cap and Wildlife Barrier Inspection Logs and Photographs

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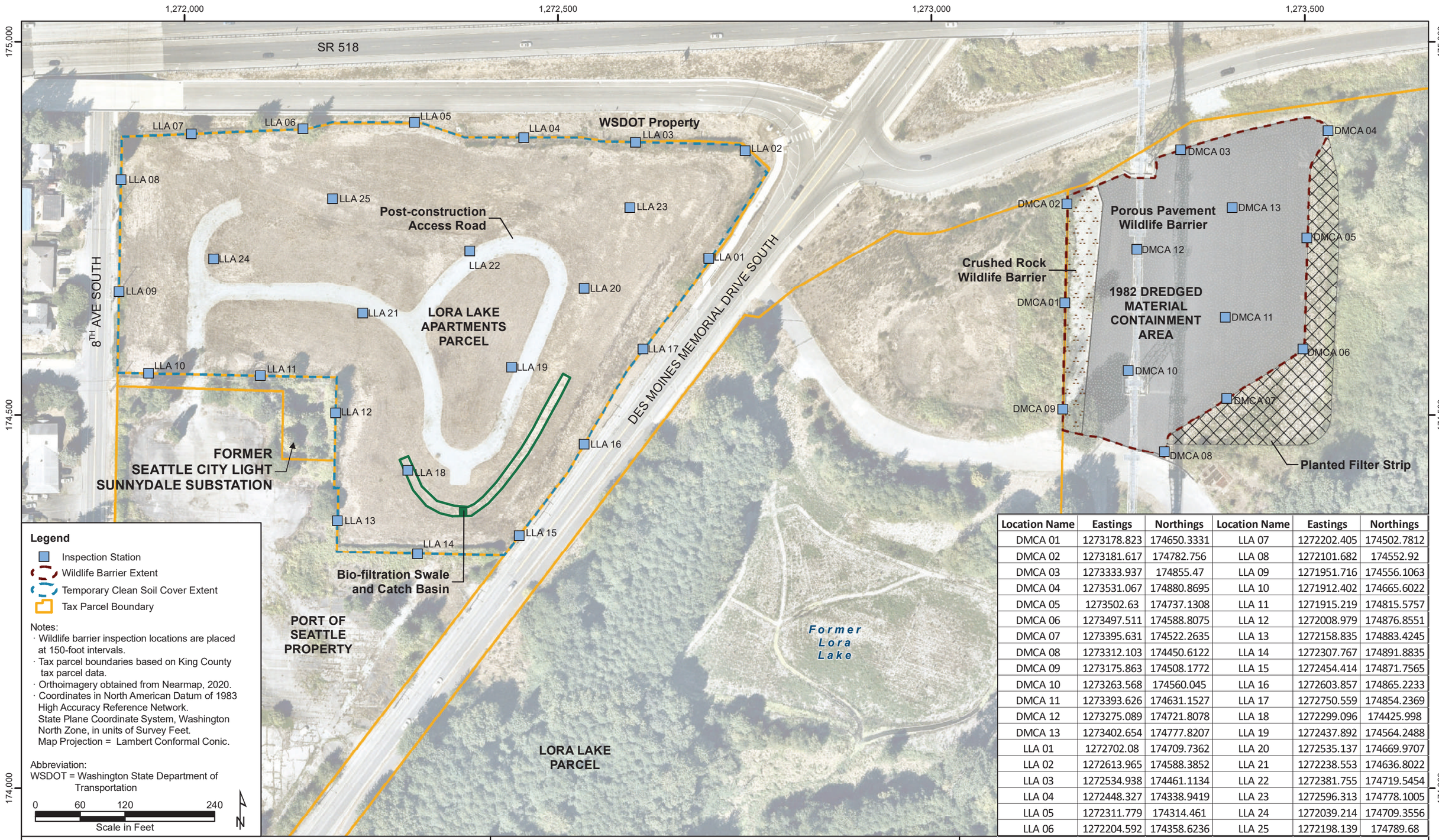
Lora Lake Apartments Site

2021 Annual Compliance Monitoring Report

Appendix C
Soil Cap and Wildlife Barrier Inspection Logs and Photographs

Figure



Legend

- Inspection Station
- Wildlife Barrier Extent
- Temporary Clean Soil Cover Extent
- Tax Parcel Boundary

Notes:

- Wildlife barrier inspection locations are placed at 150-foot intervals.
- Tax parcel boundaries based on King County tax parcel data.
- Orthoimagery obtained from Nearmap, 2020.
- Coordinates in North American Datum of 1983 High Accuracy Reference Network. State Plane Coordinate System, Washington North Zone, in units of Survey Feet. Map Projection = Lambert Conformal Conic.

Abbreviation:
WSDOT = Washington State Department of Transportation

0 60 120 240
Scale in Feet

N

Location Name	Eastings	Northings	Location Name	Eastings	Northings
DMCA 01	1273178.823	174650.3331	LLA 07	1272202.405	174502.7812
DMCA 02	1273181.617	174782.756	LLA 08	1272101.682	174552.92
DMCA 03	1273333.937	174855.47	LLA 09	1271951.716	174556.1063
DMCA 04	1273531.067	174880.8695	LLA 10	1271912.402	174665.6022
DMCA 05	1273502.63	174737.1308	LLA 11	1271915.219	174815.5757
DMCA 06	1273497.511	174588.8075	LLA 12	1272008.979	174876.8551
DMCA 07	1273395.631	174522.2635	LLA 13	1272158.835	174883.4245
DMCA 08	1273312.103	174450.6122	LLA 14	1272307.767	174891.8835
DMCA 09	1273175.863	174508.1772	LLA 15	1272454.414	174871.7565
DMCA 10	1273263.568	174560.045	LLA 16	1272603.857	174865.2233
DMCA 11	1273393.626	174631.1527	LLA 17	1272750.559	174854.2369
DMCA 12	1273275.089	174721.8078	LLA 18	1272299.096	174425.998
DMCA 13	1273402.654	174777.8207	LLA 19	1272437.892	174564.2488
LLA 01	1272702.08	174709.7362	LLA 20	1272535.137	174669.9707
LLA 02	1272613.965	174588.3852	LLA 21	1272238.553	174636.8022
LLA 03	1272534.938	174461.1134	LLA 22	1272381.755	174719.5454
LLA 04	1272448.327	174338.9419	LLA 23	1272596.313	174778.1005
LLA 05	1272311.779	174314.461	LLA 24	1272039.214	174709.3556
LLA 06	1272204.592	174358.6236	LLA 25	1272198.139	174789.68

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Compliance Monitoring Plan
Port of Seattle
Lora Lake Apartments Site
Burien, Washington

Figure C.1
Wildlife Barrier Inspection Locations

I:\GIS\Projects\POS_LLA\MXD\Task8130\Compliance Monitoring Plan Update_2020\Figure C.1 Wildlife Barrier Inspection Locations.mxd
10/22/2021

Revised – May 2020

Lora Lake Apartments Site

2021 Annual Compliance Monitoring Report

Appendix C
Soil Cap and Wildlife Barrier Inspection Logs and Photographs

Attachment C.1
Lora Lake Apartments Parcel Inspection Log and Photographs

Lora Lake Apartments Temporary Cap Inspection Form

Monitoring Station	Photo Number	Check all that apply						Overall Condition of Barrier			Repair Needed		Comments/Observations
		Engineered surface characteristics condition compromised	Exposed underlying soil	Loss of barrier material	Down-slope movement of barrier material	Presence of debris on barrier surface	Substantial plant growth	Good	Fair	Poor	Yes	No	
LLA 01	L1							x				x	Photo to the southwest
LLA 02	L2							x				x	
LLA 03	L2, L3							x				x	
LLA 04	L,3, L4							x				x	
LLA 05	L5, L6		x						x		x		Near 18' by 30' area of exposed soil
LLA 06	L5, L6		x						x		x		
LLA 07	L7								x			x	
LLA 08	L7, L8						x		x			x	
LLA 09	L8, L9						x		x			x	
LLA 10	L9							x				x	
LLA 11	L10	x	x	x						x	x		Animal activity, exposed lining
LLA 12	L10, L11			x			x			x	x		
LLA 13	L11							x				x	
LLA 14	L12								x			x	
LLA 15	L1, L12						x		x			x	
LLA 16	L 1						x		x			x	Photo to the southwest
LLA 17	L1						x		x			x	Photo to the southwest
LLA 18	L10		x							x	x		Animal activity, exposed lining
LLA 19	L13								x			x	
LLA 20	L13								x			x	
LLA 21	L10		x							x	x		Animal activity, exposed lining
LLA 22	L4						x		x			x	
LLA 23	L2							x				x	Photo taken at LLA 23 to the northwest
LLA 24	L14								x			x	
LLA 25	L5, L6		x							x	x		Near 18' by 30' area of exposed soil

Photograph 1. East property line photographed from the north to the south including stations LLA 01, LLA 15, LLA 16, and LLA 17.

Photograph 2. Stations LLA 02, LLA 03, and LLA 23 at the northwest corner of the property with some plant overgrowth.

Photograph 3. Minimal plant overgrowth at the north border, including stations LLA 03 and LLA 04.

Photograph 4. Good cap condition at stations LLA 04 and LLA 22 photographed from the north boundary.

Photograph 5. Ground conditions requiring repair to address loss of barrier material at stations LLA 05, LLA 06, and LLA 25.

Photograph 6. Large 18’ by 30’ area of loss of barrier material at stations LLA 05, LLA 06, and LLA 25.

Photograph 7. Fair cap condition at stations LLA 07 and LLA 08.

Photograph 8. Substantial plant overgrowth along the west border including stations LLA 08 and LLA 09.

Photograph 9. Southwest corner of the site near stations LLA 09 and LLA 10; substantial plant overgrowth noted at LLA 09.

Photograph 10. Exposed soil and loss of barrier material near stations LLA 11, LLA 12, LLA 18, and LLA 21.

Photograph 11. Fair cap conditions on the slope of the east boundary between stations LLA 12 and LLA 13.

Photograph 12. Fair cap conditions at the east end of the site near stations LLA 14 and LLA 15.

Photograph 13. Fair cap conditions near stations LLA 19 and LLA 20.

Photograph 14. Fair cap conditions near station LLA 24.

Lora Lake Apartments Site

2021 Annual Compliance Monitoring Report

Appendix C
Soil Cap and Wildlife Barrier Inspection Logs and Photographs

Attachment C.2
DMCA Inspection Log and Photographs

DMCA Wildlife Barrier Inspection Form

Monitoring Station	Photo Number	Check all that apply						Overall Condition of Barrier			Repair Needed		Comments/Observations
		Engineered surface characteristics condition compromised	Exposed underlying soil	Loss of barrier material	Down-slope movement of barrier material	Presence of debris on barrier surface	Substantial plant growth	Good	Fair	Poor	Yes	No	
DMCA 01	D1, D2, D3					x			x			x	
DMCA 02	D2							x				x	Photo taken to the north
DMCA 03	D4							x				x	
DMCA 04	D5							x				x	Debris previously removed by Port
DMCA 05	D6							x				x	Debris previously removed by Port
DMCA 06	D6							x				x	Debris previously removed by Port
DMCA 07	D7							x				x	
DMCA 08	D7							x				x	
DMCA 09	D1, D8					x			x		x		Fallen leaves and branches
DMCA 10	D1							x				x	Photo taken to the south
DMCA 11	D9							x				x	Photo taken t the north
DMCA 12	D2							x				x	
DMCA 13	D9							x				x	Photo taken to the north

Photograph 1. East border of the DMCA photographed to the south to include stations DMCA 01, DMCA 09, and DMCA 10.

Photograph 2. East border of the DMCA photographed to the north to include stations DMCA 01, DMCA 02, and DMCA 12.

Photograph 3. East border of the DMCA photographed to the east near station DMCA 01.

Photograph 4. North edge of DMCA cap near station DMCA 03.

Photograph 5. Good cap conditions at the northeast corner of the DMCA at station DMCA 04 where previously noted debris was addressed by the Port.

Photograph 6. Good cap conditions along the east boundary of the DMCA near stations DMCA 05 and DMCA 06 where previously noted debris was addressed by the Port.

Photograph 7. Good cap conditions along the southeast boundary of the DMCA near stations DMCA 07 and DMCA 08.

Photograph 8. Area underneath large tree, near station DMCA 09, requiring removal of debris.

Photograph 9. Good cap conditions at stations DMCA 11 and DMCA 13 captured from the southeast corner of the DMCA.

Lora Lake Apartments Site

2021 Annual Compliance Monitoring Report

Appendix D
ESA Plant Replacement Inspection Report and Post-Maintenance Photographs

Lora Lake Apartments Site

2021 Annual Compliance Monitoring Report

Appendix D
ESA Plant Replacement Inspection Report and Post-Maintenance Photographs

Attachment D.1
ESA Plant Replacement Inspection Report

5309 Shilshole Avenue NW
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Seattle, WA 98107
206.789.9658 phone
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esassoc.com

memorandum

date	January 26, 2021
to	Stacy Heilgeist, Port of Seattle
cc	Megan King, Floyd Snider
from	Sona Greenberg
subject	Plant Replacement Inspection Report for Lora Lake Season 2, Year 0

On January 12, 2021 P&G Landscaping completed their plant replacement work based on the Plant/Seed Maintenance Punchlist issued by Port of Seattle on December 21, 2020. ESA inspected the replacement plants and took field photos on January 21, 2021. A summary of remaining issues by planting zone follows:

Upland Buffer Zone

- Clear large downed tree from planting area and replace any destroyed plants beneath


Photos 1 and 2: downed tree in Upland Buffer Zone

- Remove all tags and flagging tape remaining on plants and in planting area


Photos 3 and 4: tags to remove in Upland Buffer Zone

- Replant all leaning conifers

Photo 5: leaning conifer in Upland Buffer Zone

Riparian and Wetland Zone

- Tie all new Sitka spruce trees to their stakes

Photo 6: Sitka spruce needing attachment to stake in Riparian and Wetland Zone

Floodplain Zone #1

- Remove all tags and flagging tape remaining on plants and in planting area

Photos 7 and 8: flagging tape and tags remaining on plants in Floodplain Zone #1

- Install all plants remaining in pots and dispose of pots


Photos 9 and 10: plants still in pots, Floodplain Zone #1

- Loosen rootbound root balls, replant fallen willows, and place mulch mats


Photos 11 and 12: fallen willows in Floodplain Zone #1

- Infill and tamp soil around planted willow rootballs and place mulch mats


Photos 13 and 14: willows needing infill and mulch mats in Floodplain Zone #1

- Place mulch mats for all newly installed container plants

Photo 15: new plants missing mulch mats

Enhanced Existing Wetland

- (no remaining issues)

Swale Planting Zone

- Secure all unfastened wattle stakes

Photo 16: loose wattle stake

DMCA

- Remove all tags and flagging tape remaining on plants and in planting area

Photo 17: tags remaining on DMCA plants

- Replant all leaning conifers


Photos 18 and 19: leaning trees in the DMCA

- Add mulch rings to all plants that are without rings (occurs mostly on the east side of DMCA)


Photos 20 and 21: plants in need of mulch rings

Lora Lake Apartments Site

2021 Annual Compliance Monitoring Report

Appendix D
ESA Plant Replacement Inspection Report and Post-Maintenance Photographs

Attachment D.2
Spring 2021 Post-Maintenance Photographs

Photograph 1. Lora Lake Apartment parcel reseeding to address loss of barrier material.

Photograph 2. Hydroseeding near Lora Lake.

Photograph 3. Hydroseeding to restore Lora Lake temporary access road footprint.

Photograph 4. Port crew performing maintenance of the planted filter strip just south of the 1982 Dredged Material Containment Area (DMCA).

Photograph 5. Area near station DMCA 05 after removal of excess debris.

Photograph 6. Area near station DMCA 06 after removal of excess debris.

Photograph 7. Southern edge of the DMCA after removal of excess debris.