Northwest Pipe Company
Portland Plant
ECSI No. 138

Dioxin/Furan Stormwater Sampling Summary
Second Event 2022

December 2022

Northwest Pipe Company

Contents

Tables

Figure

Appendices

Acronyms and Abbreviations

µg/L	microgram(s) per liter
ARAR	Applicable or Relevant and Appropriate Requirements
CSF	cancer slope factor
CUL	cleanup level
DEQ	Oregon Department of Environmental Quality
ED_{01}	effective dose
EPA	U.S. Environmental Protection Agency
IT Slip	Schnitzer International Terminals Slip
MDL	method detection limit
MOE	margin of exposure
OAR	Oregon Administrative Rule
OCDD	Octachlorodibenzodioxin
PeCDD	pentachlorodibenzo-p-dioxin
POD	point of departure
QA	quality assurance
QC	quality control
RL	reporting limit
ROD	Record of Decision
TCDD	tetrachlorodibenzo-p-dioxin
TCDD eq.	2,3,7,8-TCDD equivalency
TEQ eq.	Toxic Equivalent

1. Introduction

This data summary report presents the results of the dioxin and furan stormwater sampling and analysis conducted at Northwest Pipe Company's Portland Plant located at 12005 North Burgard Road, Portland, Oregon, collected in September 2022. This sampling event was conducted in accordance with the Oregon Department of Environmental Quality (DEQ)-approved Dioxin/Furan Stormwater Sampling Work Plan (Work Plan) finalized in June 2022 (Jacobs 2022). Sampling is being conducted at the direction of the DEQ and the United States Environmental Protection Agency (EPA) (DEQ 2022, EPA 2022) in response to the presence of two dioxin compounds (1,2,3,7,8-pentachlorodibenzo-p-dioxin [PeCDD] and 2,3,7,8-tetrachlorodibenzo-p-dioxin [TCDD]) found in the sediment of the International Terminals Slip (IT Slip). This data summary follows the methodology and data evaluation proposed in the Work Plan to supplement the lines of evidence that Northwest Pipe Company's Aquip stormwater treatment removes dioxins and furans, if present, from stormwater at the Portland Plant. The September 2022 sampling event was the second stormwater sampling event in a series of four proposed events at the site.

2. Sampling Event

Samples for dioxins and furans, as required by EPA and DEQ, were collected from the outlet port of each Aquip filtration system on September 29, 2022 (Figure 1). Prior to sample collection, the sample port was inspected for dirt or residue. No dirt or residue was observed to be present during this event and the pumps were manually started to flush the system. Water from the system was allowed to flow for 5 minutes prior to sample collection so that a fresh sample from the treatment tank is collected as opposed to a sample from any piping. After flushing the system, the flow was set to the minimum flow needed to maintain a steady stream from the port valve, and the samples were collected. Field notes are provided in Appendix A. A field duplicate was collected from Filter 1. Sample handling was conducted in accordance with the Work Plan (Jacobs 2022). Samples were submitted to the Eurofins Seattle Laboratory for analysis.

3. Rain Event

As specified in the Work Plan, samples were collected during a heavy rain event. A heavy rain event is defined by DEQ as a minimum predicted rainfall greater than 0.2 inch during the event which follows an antecedent dry period of at least 24 hours. Rainfall for this sampling event was measured at the City of Portland's HYDRA Rainfall Network Shipyard Rain Gage, number 82, located at 8900 North Sever Road. Samples were collected following an antecedent dry period of at least 24 hours, as defined by <0.1 inch over the previous 24 hours. The cumulative rainfall during the event was 2.5 inches prior to sample collection on September 29, 2022 (Figure 2). Therefore, the rain event beginning on September 28, 2022, met the DEQ criteria of an antecedent dry period of at least 24 hours and a minimum rainfall greater than 0.2 inch during the event.

4. Analytical Results

The dioxin/furan data are presented in Table 1 along with Portland Harbor Record of Decision (ROD) cleanup levels (CUL) for surface water found in Table 17 of the Portland Harbor ROD (EPA 2017, Errata 2018, Errata #2 2020). Screening against the ROD CULs for surface water was requested by DEQ and EPA although the samples were obtained from a stormwater treatment system. Table 1 provides the calculated 2,3,7,8-TCDD toxic equivalency (TCDD eq.) for this sampling event. Analytical results are also provided in an Excel electronic format in Appendix A, as requested by DEQ. As stated in the Work Plan, an uncertainty

evaluation is included for data with reporting limits greater than screening levels in the case where results are below the detection limits, i.e. "ND". Results show that nearly all dioxins/furans were below the detection limits in the system samples collected during the September sampling event.

EPA Stage 2B data validation was conducted on 100% of the laboratory data, using laboratory-derived quality assurance/quality control (QA/QC) limits, and laboratory analytical data was validated by the Jacobs Project Chemist. The laboratory report is included in Appendix B and the data validation report is attached as Appendix C.

5. Discussion of Results and Recommendations

In response to Northwest Pipe Company's 2021 *Response to DEQ Questions on Dioxins Memorandum* prepared by Haute-Geologie, EPA sent a memorandum to Northwest Pipe Company on February 28, 2022, recognizing that "using the Aquip treatment system TSS removal percentage as a surrogate for dioxin/furan removal is likely reasonable given the high sorption coefficient," but went on to state that empirical data in the form of stormwater samples were needed to support this conclusion because sediment concentrations of TCDD and PeCDD exceed the Remedial Action Levels in samples within the IT Slip. Analytical data for dioxins and furans have some inherent uncertainty arising from the very low levels the data are screened against. This section discusses the results and includes a qualitative evaluation required by the Work Plan of the uncertainty associated with the data.

Several factors should be considered when evaluating the data and comparing to the ROD CULs:

1. Surface water CULs are not applicable to industrial stormwater discharges.
2. Even pristine water would not meet CULs due to laboratory limitations and required methodology.
3. The basis for the criteria values has a high threshold of uncertainty.
4. Dioxins/furans are ubiquitous in nature and the site does not pose a recontamination risk to the IT Slip.

First, consider the inapplicability of comparing dioxin/furan sample results in stormwater discharge from an industrial source to the CULs for surface water in the ROD, Table 17. Portland Harbor ROD Table 17 references the basis of the CULs as the Applicable or Relevant and Appropriate Requirements (ARAR) based value from DEQ Oregon Administrative Rule (OAR) 340-41-8033, Table 40: Human Health Water Quality Criteria for Toxic Pollutants (effective April 18, 2014), chronic exposure and organism + water criteria. However, the basis and calculations for development of Table 40 are not identified in the OAR or the ROD. In addition, the introduction to Table 40 states the following:

> "The 'water + organism' criteria are established to protect the consumption of ***drinking water, fish, and shellfish, and apply where both fishing and domestic water supply (public and private) are designated uses*** (emphasis added)."

Neither the consumption of drinking water, nor fish and shellfish apply in the case of the stormwater discharges from the Northwest Pipe Company treatment system to Outfall 18. Therefore, in the case of industrial stormwater discharges from the Northwest Pipe Company treatment system to the IT Slip, the 'water + organism' criteria are inapplicable.

Second, the cleanup level for surface water, TCDD eq. of 5.1E-10 micrograms per liter (µg/L), is below technically achievable laboratory reporting limits (RLs) and/or method detection limits (MDLs). Utilizing

the EPA Data Management Plan for Portland Harbor (EPA 2021) rules for handling non-detected values, "calculated totals for an analyte group are the sum of all detected results and the sum of all non-detected results at one half the value of the non-detects". As a result, the lowest toxic equivalent (TEQ) value that the commercial laboratories can achieve is 8.3E-07 µg/L, one-half of which (consistent with EPA's Data Management Plan) exceeds the CUL by a factor of 814. A breakdown of the calculations from the laboratories is provided in Appendix E. Consequently, even water free of dioxins and furans would thus exceed the CUL as the laboratory-achievable non-detect values would sum to a TCDD eq. exceeding 5.1E-10 µg/L.

Results from both the June and the September 2022 sampling at the site show only one of the dioxins/furans (Octachlorodibenzodioxin [OCDD]) above the reporting limits in the system samples collected. The two dioxin compounds found in the sediment of the IT Slip, and of concern to DEQ and EPA (1,2,3,7,8-PeCDD and 2,3,7,8-TCDD), were not present above the reporting limits in the stormwater samples. However, in accordance with EPA's Program Data Management Plan requirements, the calculated TCDD-eq. for Northwest Pipe Company's discharge events and results from any pristine water free of dioxins and furans would both be above the ROD CUL value (Table 2).

Third, the Portland ROD Table 17 cleanup level for TCDD eq. in surface water is highly uncertain and not soundly based on science. In *Health Risks from Dioxin and Related Compounds: Evaluation of the EPA Reassessment* (The National Academies Press 2006), the uncertainties and assumptions made by EPA are evaluated. The reassessment committee notes that the toxicity of TCDD to humans is lacking sufficient research and that EPA uses the toxicology in rodents to draw assumptions. In addition, the committee states that, "In humans, the relationship between dioxin exposure and risk of individual, clinically significant, noncancer end points remains uncertain, except for chloracne" (The National Academies Press 2006).

Other limitations noted by the committee include the following statement:

> "EPA used linear extrapolation from the point of departure (POD) (the ED_{01}) (effective dose) derived from the cancer epidemiological studies and animal bioassays to calculate a cancer slope factor (CSF). The selection of the default linear extrapolation approach was one of the most critical decisions in the Reassessment, but the decision to use this approach was not supported by a scientifically rigorous argument, nor was there a balanced presentation of arguments that would support the calculation and interpretation of a margin of exposure (MOE) with the same data. The committee determined that a balanced presentation of available data could support the use of a nonlinear model consistent with a receptor-mediated mode of action with subsequent calculations and interpretation of MOE values. (For cancer risk assessment, the threshold approach should be used in addition to the linear approach.)"

This suggests that the use of the extremely low TCDD eq. value of 5.1E-10 is extremely conservative and potentially unsupported from a scientific perspective. As noted in the Review of Risk Characterization section (The National Academies Press 2006), the slope factor used by EPA has a "public health-conservative nature." The committee states that "such risk management considerations should not be used to support an approach to risk characterization or detract from selection of the most appropriate, scientifically justifiable approach." Not only are the surface water CULs overly conservative for comparison to industrial stormwater discharges, but the basis for the surface water criteria values is also, by itself, highly conservative and has a high threshold of uncertainty.

Finally, given the ubiquitous nature of dioxins and furans in the environment, the extremely low levels and non-detectable results identified during the two sampling events do not represent a recontamination

potential to the IT Slip. EPA's 2006 dioxin report (and its draft update from 2013) confirm that the vast majority (well over 90 percent) of dioxins in the environment originate from air deposition from combustion sources. The draft update further notes that, while the assigned source of dioxins to land sources was higher than estimated in 2006, that is due almost entirely to including ash from backyard trash burning by individual homeowners.

The stormwater pathway from the Northwest Pipe Company is through communal Outfall 18, of which the Northwest Pipe Company is only a small contributor (29.9%) (*Analysis of Outfall 18 Drainage Area Relative to Northwest Pipe*, Jacobs 2021). In addition, in the *River Mile 3.5 East Remedial Design Sufficiency Assessment Report* (Floyd|Snider 2020), the stormwater recontamination potential is rated as "B", conditionally controlled, in recognition of the stormwater treatment system capabilities (discussed in *Response to DEQ Question on Dioxins*, Haute Géologie, LLC 2021). More importantly, the two congeners identified by DEQ in the IT Slip with an exceedance of remedial action levels (RALs) in sediment samples (TCDD and PeCDD), identified in Table 21 of the ROD (EPA 2018) were either not detected in the Northwest Pipe Company stormwater samples or – in the case of PeCDD - only sporadically detected at such low concentrations its magnitude is flagged as estimated. The principal dioxin detected in site stormwater, OCDD, has the lowest of all the TEFs of dioxins and furans and is not driving remediation. Consequently, the stormwater data generated in response to DEQ's request confirm that the NW Pipe site is not a potential source for recontamination.

While these factors all indicate stormwater from Northwest Pipe does not present a further risk to recontamination of the IT Slip sediment, nonetheless, Northwest Pipe also takes source control measures to prevent potential contamination from reaching the slip. The site is equipped with two state-of-the-art Aquip stormwater treatment systems. The Aquip system is a proprietary stormwater treatment system that provides several treatment methods. Aquip targets TSS, metals, biological and chemical oxygen demand, and nutrients in stormwater. It also removes oil that may be entrained in stormwater runoff, and dissolved organic compounds susceptible to carbon adsorption, such as dioxins. StormwateRx reports an 83% decrease in suspended solids as a typical average; however, for the Northwest Pipe system, a 96% reduction has been documented (Jacobs 2021). This represents an underestimate of expected dioxin removal efficiency because the dioxin will also adsorb to the activated carbon in the Aquip filtration media, providing an additional treatment method. Filtration and activated carbon adsorption are particularly well-suited to dioxin removal from stormwater. Furthermore, the site is equipped with catch basins designed to filter, separate, and remove oil and grease and total suspended solids (TSS) from stormwater before it even reaches the stormwater treatment system. The catch basins and stormwater conveyance lines are regularly cleaned and maintained. The pavement cap is routinely inspected, repaired, and swept to prevent material from entering the stormwater system.

In summary, dioxins and furans whose presence in the IT Slip exceeded risk-based concentrations generally were not detected using the very low reporting limits available from commercial environmental laboratories, and the site is confirmed not to be a recontamination risk to IT Slip sediment by highly toxic dioxin compounds, such as those exceeding RALs in the IT Slip. Furthermore, the uncertainty evaluation identifies four factors which prove the stormwater data for Northwest Pipe are not a concern. (1) Surface water CULs are overly conservative for comparison to industrial stormwater discharges. (2) The laboratory limitations and the methodology required to calculate the TCDD eq. mean that even pristine water would exceed CULs. (3) The basis for the criteria values has a high threshold of uncertainty, and are not soundly based on science, but instead are intentionally conservative. And (4) even though dioxins and furans are ubiquitous in nature, the site does not pose a sediment recontamination risk to the IT Slip. Northwest Pipe already employs all of the potential source control measures to control dioxins and furans in the stormwater system including onsite stormwater treatment. The laboratory analytical data and the uncertainty analysis of that data pursuant to EPA requirements and the Work Plan referenced in this report

clearly support a decision to suspend the final two sampling events. The results of Northwest Pipe's work provide multiple lines of evidence that Northwest Pipe's stormwater is not a source of dioxin and furans to the IT Slip that could threaten any remediation efforts of sediment, or perhaps even be measurable. Further sampling of Northwest Pipe's stormwater is not necessary or scientifically justified to further evaluate the effectiveness and success of its stormwater source control measures. Therefore, in accordance with EPA's February 28, 2022, Memorandum and DEQ's March 1, 2022, Letter to Ms. Stephanie Heldt-Sheller, Northwest Pipe proposes that the final two sampling events described in the Work Plan be suspended.

6. References

Floyd|Snider. 2020. River Mile 3.5 East Remedial Design Sufficiency Assessment Report, Draft. September.

Haute Géologie, LLC. 2021. Response to DEQ Question on Dioxins. December.

Jacobs Engineering Group Inc. (Jacobs). 2022. *Dioxin/Furan Stormwater Sampling Work Plan*. Prepared for Northwest Pipe Company, ECSI #138, Portland, Oregon. June.

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U.S. Environmental Protection Agency (EPA). 2022. Letter from Ben Leake, PMP, Remedial Project Manager to Jim Orr, RG, Project Manager, Oregon Department of Environmental Quality. Re: Response to DEQ Questions on Dioxins Memorandum Northwest Pipe Company Facility, Portland, OR, ECSI #138, December 2021.

Figures

IT Slip

Outfall 18

Note: Complete offsite stormwater system is not shown.

Stormwater Filter System

Aquip® Stormwater Treatment System

Stormwater Filter System

Aquip® Stormwater Treatment System

IDZ2 Isolated Discharge

IDZ1 Rainwater Harvest Area

DRAINAGE BASIN II

DRAINAGE BASIN I

18" Galv

21" Galv

21" Cor

21" Conc

18" Galv

21" Galv

15" Galv

18" Galv

15" Galv

12" Galv

12" Galv

12" Galv

12" Galv

15" Galv

12" Galv

6"

Pump/Settling Vault

Catch basin does not drain

Sheet Flow onto Site

Two landscape planters installed underground they tie into the storm drain system.

NORTHWEST PIPE CO

DUNKIN & BUSH

PACIFIC LEASING/ WESTERN TRUCKING

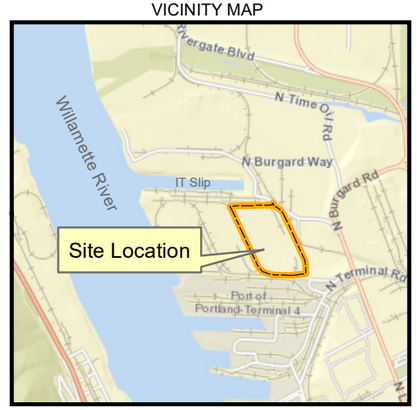
IRC ALUMINUM

WESTERN MACHINE WORKS

SCHNITZER STEEL

NORTHWEST PIPE CO

VICINITY MAP



LEGEND

- Roof Drain Downspout
- Storm Drain
- Approximate Storm Drain Line
- Roof Drain
- Stormwater Treatment System
- Cement Mortar Recycle Water System
- Landscape Planter
- Trench Drain
- Treatment System Line
- Surface Flow Direction
- Drainage Basin Boundary
- Isolated Drainage Zone (IDZ)
- Railroad Line
- Leased Property Boundary
- Northwest Pipe Site Boundary

N

0 75 150 300

Feet

Figure 1. Stormwater System
Northwest Pipe Company
Portland, Oregon

Jacobs

Document Path: \\PDXFPP01\proj\NorthwestPipeCompany\485880PortHarbSup\GIS\MapFiles\2022\Figure1-1_StormwaterWorkPlan.mxd

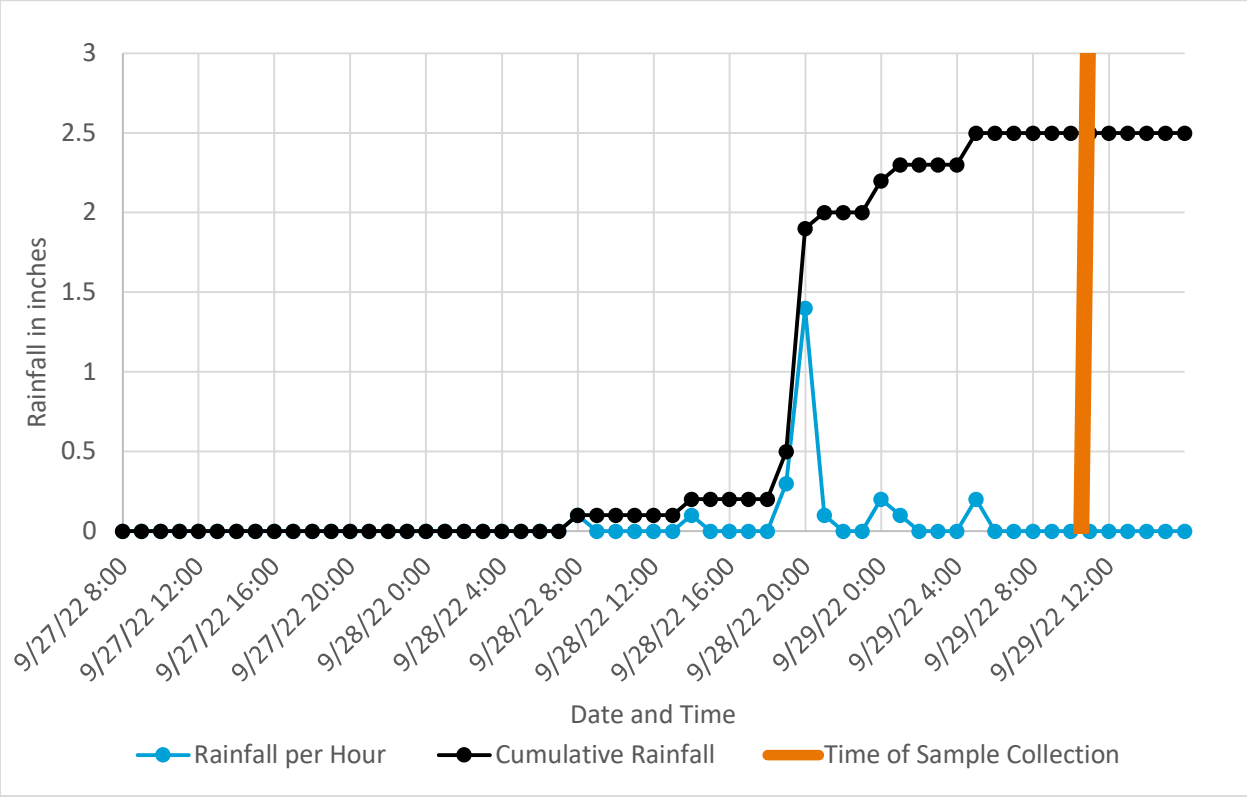


Figure 2. Rain Event Data

Tables

Table 1. Dioxin/ Furan Sampling Results with TEQ Values
Northwest Pipe Company
Collected September 29, 2022

	SP-FD (duplicate from System1)						SYSTEM01-09299022						SYSTEM02-09292022					
Analyte	Result pg/L	Flag	TEF	Result*TEF	RL	MDL	Result pg/L	Flag	TEF	Result*TEF	RL	MDL	Result pg/L	Flag	TEF	Result*TEF	RL	MDL
1,2,3,4,6,7,8-HpCDD	7.4	UB	0.01	0.037	54	0.15	7.3	UB	0.01	0.0365	55	0.17	12	J	0.01	0.12	53	0.18
1,2,3,4,6,7,8-HpCDF	3.5	UB	0.01	0.0175	54	0.38	2.6	UB	0.01	0.013	55	0.31	5.3	UB	0.01	0.0265	53	0.4
1,2,3,4,7,8,9-HpCDF	2.7	UB	0.01	0.0135	54	0.42	0.31	U	0.01	0.00155	55	0.31	3.3	UB	0.01	0.0165	53	0.39
1,2,3,4,7,8-HxCDD	3	UB	0.1	0.15	54	0.16	2.3	UB	0.1	0.115	55	0.13	3.9	UB	0.1	0.195	53	0.16
1,2,3,4,7,8-HxCDF	1.6	UB	0.1	0.08	54	0.14	0.79	UB	0.1	0.0395	55	0.12	2.7	UB	0.1	0.135	53	0.14
1,2,3,6,7,8-HxCDD	2.7	UB	0.1	0.135	54	0.19	1.5	UB	0.1	0.075	55	0.15	3.3	UB	0.1	0.165	53	0.19
1,2,3,6,7,8-HxCDF	1.7	UB	0.1	0.085	54	0.14	0.75	UB	0.1	0.0375	55	0.12	2.3	UB	0.1	0.115	53	0.14
1,2,3,7,8,9-HxCDD	2.2	UB	0.1	0.11	54	0.15	1.2	UB	0.1	0.06	55	0.12	3.4	UB	0.1	0.17	53	0.15
1,2,3,7,8,9-HxCDF	2.6	UB	0.1	0.13	54	0.16	1.8	UB	0.1	0.09	55	0.12	3.4	UB	0.1	0.17	53	0.15
1,2,3,7,8-PeCDD	0.21	U	1	0.105	54	0.21	0.23	U	1	0.115	55	0.23	2.1	J	1	2.1	53	0.19
1,2,3,7,8-PeCDF	1.1	J	0.03	0.033	54	0.096	0.96	J	0.03	0.0288	55	0.12	1.2	J	0.03	0.036	53	0.11
2,3,4,6,7,8-HxCDF	1.5	UB	0.1	0.075	54	0.14	0.57	UB	0.1	0.0285	55	0.12	2.7	UB	0.1	0.135	53	0.14
2,3,4,7,8-PeCDF	0.92	J	0.3	0.276	54	0.098	0.59	J	0.3	0.177	55	0.13	1.9	J	0.3	0.57	53	0.12
2,3,7,8-TCDD	0.15	U	1	0.075	11	0.15	0.19	U	1	0.095	11	0.19	0.21	U	1	0.105	11	0.21
2,3,7,8-TCDF	0.03	U	0.1	0.0015	11	0.03	0.11	U	0.1	0.0055	11	0.11	0.07	U	0.1	0.0035	11	0.07
OCDD	50	J	0.0003	0.015	110	0.42	48	J	0.0003	0.0144	110	0.31	110		0.0003	0.033	110	0.41
OCDF	8.5	UB	0.0003	0.001275	110	0.31	4.8	UB	0.0003	0.00072	110	0.21	13	UB	0.0003	0.00195	110	0.34
			TCDD eq (pg/L)	1.3					TCDD eq (pg/L)	0.93					TCDD eq (pg/L)	4.1		
Calculated Result for comparison to ROD CUL:			TCDD eq (µg/L)	1.3E-06					TCDD eq (µg/L)	9.3E-07					TCDD eq (µg/L)	4.1E-06		

Notes:

U = the analyte was not detected at or greater than the method detection limit.

UB = the analyte was qualified as not detected at the reported concentration due to associated method blank contamination.

J = the analyte was detected at a concentration greater than the method detection limit but less than the reporting limit, or was qualified as estimated due to a QA/QC exceedance

TEF = toxicity equivalency factor (World Health Organization published values, see reference in PH Program Data Management Plan 2021)

Yellow highlight indicates the two dioxins present in the IT Slip sediment.

PH ROD Table 17 Surface Water CUL for Dioxins/ Furans (2,3,7,8-TCDD eq) =	5.10E-10	µg/L
	0.00051	pg/L

Table 2. Dioxin/ Furan Sampling Results for June and September 2022 Events, with TEQ Values
Northwest Pipe Company

Collected September 29, 2022	SP-FD (duplicate from System1)						SYSTEM01-09299022						SYSTEM02-09292022					
Analyte	Result pg/L	Flag	TEF	Result*TEF	RL	MDL	Result pg/L	Flag	TEF	Result*TEF	RL	MDL	Result pg/L	Flag	TEF	Result*TEF	RL	MDL
1,2,3,4,6,7,8-HpCDD	7.4	UB	0.01	0.037	54	0.15	7.3	UB	0.01	0.0365	55	0.17	12	J	0.01	0.12	53	0.18
1,2,3,4,6,7,8-HpCDF	3.5	UB	0.01	0.0175	54	0.38	2.6	UB	0.01	0.013	55	0.31	5.3	UB	0.01	0.0265	53	0.4
1,2,3,4,7,8,9-HpCDF	2.7	UB	0.01	0.0135	54	0.42	0.31	U	0.01	0.00155	55	0.31	3.3	UB	0.01	0.0165	53	0.39
1,2,3,4,7,8-HxCDD	3	UB	0.1	0.15	54	0.16	2.3	UB	0.1	0.115	55	0.13	3.9	UB	0.1	0.195	53	0.16
1,2,3,4,7,8-HxCDF	1.6	UB	0.1	0.08	54	0.14	0.79	UB	0.1	0.0395	55	0.12	2.7	UB	0.1	0.135	53	0.14
1,2,3,6,7,8-HxCDD	2.7	UB	0.1	0.135	54	0.19	1.5	UB	0.1	0.075	55	0.15	3.3	UB	0.1	0.165	53	0.19
1,2,3,6,7,8-HxCDF	1.7	UB	0.1	0.085	54	0.14	0.75	UB	0.1	0.0375	55	0.12	2.3	UB	0.1	0.115	53	0.14
1,2,3,7,8,9-HxCDD	2.2	UB	0.1	0.11	54	0.15	1.2	UB	0.1	0.06	55	0.12	3.4	UB	0.1	0.17	53	0.15
1,2,3,7,8,9-HxCDF	2.6	UB	0.1	0.13	54	0.16	1.8	UB	0.1	0.09	55	0.12	3.4	UB	0.1	0.17	53	0.15
1,2,3,7,8-PeCDD	0.21	U	1	0.105	54	0.21	0.23	U	1	0.115	55	0.23	2.1	J	1	2.1	53	0.19
1,2,3,7,8-PeCDF	1.1	J	0.03	0.033	54	0.096	0.96	J	0.03	0.0288	55	0.12	1.2	J	0.03	0.036	53	0.11
2,3,4,6,7,8-HxCDF	1.5	UB	0.1	0.075	54	0.14	0.57	UB	0.1	0.0285	55	0.12	2.7	UB	0.1	0.135	53	0.14
2,3,4,7,8-PeCDF	0.92	J	0.3	0.276	54	0.098	0.59	J	0.3	0.177	55	0.13	1.9	J	0.3	0.57	53	0.12
2,3,7,8-TCDD	0.15	U	1	0.075	11	0.15	0.19	U	1	0.095	11	0.19	0.21	U	1	0.105	11	0.21
2,3,7,8-TCDF	0.03	U	0.1	0.0015	11	0.03	0.11	U	0.1	0.0055	11	0.11	0.07	U	0.1	0.0035	11	0.07
OCDD	50	J	0.0003	0.015	110	0.42	48	J	0.0003	0.0144	110	0.31	110		0.0003	0.033	110	0.41
OCDF	8.5	UB	0.0003	0.001275	110	0.31	4.8	UB	0.0003	0.00072	110	0.21	13	UB	0.0003	0.00195	110	0.34
			TCDD eq (pg/L)	1.3					TCDD eq (pg/L)	0.93					TCDD eq (pg/L)	4.1		
Calculated Result for comparison to ROD CUL:			TCDD eq (µg/L)	1.3398E-06					TCDD eq (µg/L)	9.3297E-07					TCDD eq (µg/L)	4.0975E-06		

Collected June 6, 2022	SP-FD (duplicate from System1)						SYSTEM01-07062022						SYSTEM02-07062022					
Analyte	Result pg/L	Flag	TEF	Result*TEF	RL	MDL	Result pg/L	Flag	TEF	Result*TEF	RL	MDL	Result pg/L	Flag	TEF	Result*TEF	RL	MDL
1,2,3,4,6,7,8-HpCDD	19	J	0.01	0.19	50	0.71	11	UB	0.01	0.055	49	0.55	25	J	0.01	0.25	48	0.74
1,2,3,4,6,7,8-HpCDF	5.2	UB	0.01	0.026	50	1.1	2.7	UB	0.01	0.0135	49	0.4	5.9	UB	0.01	0.0295	48	0.93
1,2,3,4,7,8,9-HpCDF	3.4	UB	0.01	0.017	50	1.3	1.2	UB	0.01	0.006	49	0.5	2.5	UB	0.01	0.0125	48	1.1
1,2,3,4,7,8-HxCDD	4.3	UB	0.1	0.215	50	0.42	2.3	UB	0.1	0.115	49	0.36	4.1	UB	0.1	0.205	48	0.39
1,2,3,4,7,8-HxCDF	1.9	UB	0.1	0.095	50	0.31	0.31	U	0.1	0.0155	49	0.31	2.2	UB	0.1	0.11	48	0.33
1,2,3,6,7,8-HxCDD	2.6	J	0.1	0.26	50	0.47	0.4	U	0.1	0.02	49	0.4	3.4	J	0.1	0.34	48	0.44
1,2,3,6,7,8-HxCDF	1.7	UB	0.1	0.085	50	0.31	0.3	U	0.1	0.015	49	0.3	2.5	UB	0.1	0.125	48	0.32
1,2,3,7,8,9-HxCDD	3.4	J	0.1	0.34	50	0.42	1.5	J	0.1	0.15	49	0.36	3.9	J	0.1	0.39	48	0.39
1,2,3,7,8,9-HxCDF	3.9	UB	0.1	0.195	50	0.37	2	UB	0.1	0.1	49	0.38	4	UB	0.1	0.2	48	0.39
1,2,3,7,8-PeCDD	2	J	1	2	50	0.78	0.94	U	1	0.47	49	0.94	1.1	U	1	0.55	48	1.1
1,2,3,7,8-PeCDF	2	J	0.03	0.06	50	0.53	0.48	U	0.03	0.0072	49	0.48	0.54	U	0.03	0.0081	48	0.54
2,3,4,6,7,8-HxCDF	2.5	J	0.1	0.25	50	0.31	0.3	U	0.1	0.015	49	0.3	2.2	J	0.1	0.22	48	0.31
2,3,4,7,8-PeCDF	1.9	J	0.3	0.57	50	0.58	0.52	U	0.3	0.078	49	0.52	0.6	U	0.3	0.09	48	0.6
2,3,7,8-TCDD	1.1	U	1	0.55	10	1.1	1.2	U	1	0.6	9.8	1.2	1.4	U	1	0.7	9.6	1.4
2,3,7,8-TCDF	0.56	U	0.1	0.028	10	0.56	0.5	U	0.1	0.025	9.8	0.5	0.6	U	0.1	0.03	9.6	0.6
OCDD	210		0.0003	0.063	100	0.76	98		0.0003	0.0294	98	0.64	280		0.0003	0.084	96	0.88
OCDF	15	J	0.0003	0.0045	100	1.1	5.3	UB	0.0003	0.000795	98	0.98	17	J	0.0003	0.0051	96	1.1
			TCDD eq (pg/L)	4.9					TCDD eq (pg/L)	1.7					TCDD eq (pg/L)	3.3		
Calculated Result for comparison to ROD CUL:			TCDD eq (µg/L)	4.9485E-06					TCDD eq (µg/L)	1.7154E-06					TCDD eq (µg/L)	3.3492E-06		

Notes:
U = the analyte was not detected at or greater than the method detection limit.
UB = the analyte was qualified as not detected at the reported concentration due to associated method blank contamination.
J = the analyte was detected at a concentration greater than the method detection limit but less than the reporting limit, or was qualified as estimated due to a QA/QC exceedance
TEF = toxicity equivalency factor (World Health Organization published values, see reference in PH Program Data Management Plan 2021)
Yellow highlight indicates the two dioxins present in the IT Slip sediment.

PH ROD Table 17 Surface Water CUL for Dioxins/ Furans (2,3,7,8-TCDD eq) =	5.10E-10	µg/L
	0.00051	pg/L

Appendix A

Field Notes

~~AA~~ GA NWP SW Sampling 9/29/22

Task: COLLECT STORMWATER SAMPLES FROM AQUIP SYSTEMS
PERSONNEL: GRIFFIN RILEY / Jacobs
WEATHER: Overcast/Cloudy, 61°F

1020 ONSITE, CHECK IN WITH TIM WHITSON / NWP.
1028 START PURGE @ FILTER ONE (EAST)
1033 COLLECT SYSTEM01-09292022 @ 1033 + DUPE
SP-FD @ 1200 FROM FILTER 1
1052 START PURGE @ FILTERS 2+3 (WEST)
1057 COLLECT SYSTEM02-09292022 @ 1057
1115 OFFSITE AND COOLER PACKED
1300 COC PRINTED AND SAMPLES SHIPPED via FEDEX. EVENT COMPLETE

9/29/22

Scale: 1 square = _____

Eurofins Seattle
5755 8th Street East

Tacoma, WA 98424-1317
phone 253.922.2310 fax 253.922.5047

Chain of Custody Record

eurofins | Environment Testing America

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

Eurofins Environment Testing Americ

Client Contact	Project Manager: Kris Ivarson	Site Contact:	Date:	COC No:
Jacobs Engineering Group, Inc.	Email: Kris.Ivarson@jacobs.com	Lab Contact: Matlock, Pauline M	Carrier:	1 of 1 COCs
Address: 2020 SW Fourth Ave, 3rd Floor	Tel/Fax:			TALS Project #:
City/State/Zip: Portland, OR, 97201	Analysis Turnaround Time			Sampler:
530-229-3202 Phone	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(xxx) xxx-xxxx FAX	TAT if different from Below _____			Walk-in Client:
Project Name: Northwest Pipe Company stormwater 2022	☐ 2 weeks			Lab Sampling:
Site:	☐ 1 week			Job / SDG No.:
P O #	☐ 2 days ☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	1613B- 17 Isomers List	Sample Specific Notes:
SYSTEM01-09299022	#######	1033	G	WATER	2	N	N	Y	
SYSTEM02-09292022	9/29/22	1057	G	WATER	2	N	N	Y	
SP-FD	9/29/22	1200	G	WATER	2	N	N	Y	

580-118426 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

1.9/1.8 A3/LgBlu/wet/Bub/FedEx P.O

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

Relinquished by:	Company: Jacobs	Date/Time: 9/29 @ 1300	Received by:	Company: EETN	Date/Time: 9/30/22 10:00
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Appendix B

Analytical Data

(provided separately in Excel electronic format)

Appendix C

Laboratory Report

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-118426-1
Client Project/Site: Northwest Pipe Company stormwater 2022

For:
Jacobs Engineering Group, Inc.
2525 Airpark Drive
Redding, California 96001

Attn: Bernice Kidd

Authorized for release by:
10/21/2022 9:00:21 PM

Pauline Matlock, Project Manager
(253)922-2310
Pauline.Matlock@et.eurofinsus.com

Table of Contents

Job ID: 580-118426-1

Laboratory: Eurofins Seattle

Narrative

Job Narrative
580-118426-1

Comments
No additional comments.

Receipt
The samples were received on 9/30/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.9º C.

Dioxin
Method 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD associated with the following samples run on instrument DFS 1 exceeded this criteria: SYSTEM01-09299022 (580-118426-1), SYSTEM02-09292022 (580-118426-2), SP-FD (580-118426-3), (CCV 320-623051/1), (LCS 320-622337/2-A), (LCSD 320-622337/3-A) and (MB 320-622337/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

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

Dioxin Prep
Method 1613B: Elevated reporting limits are provided for the following samples due to insufficient sample provided for preparation: SYSTEM01-09299022 (580-118426-1), SYSTEM02-09292022 (580-118426-2) and SP-FD (580-118426-3). Nominal volume required by method is 1 liter.

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

Definitions/Glossary

Client: Jacobs Engineering Group, Inc. Job ID: 580-118426-1
Project/Site: Northwest Pipe Company stormwater 2022

Qualifiers

Dioxin

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client: Jacobs Engineering Group, Inc.
Job ID: 580-118426-1
Project/Site: Northwest Pipe Company stormwater 2022

Client Sample ID: SYSTEM01-09299022
Lab Sample ID: 580-118426-1
Date Collected: 09/29/22 10:33
Matrix: Water
Date Received: 09/30/22 10:00

Method: EPA 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		11	0.19	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,7,8-PeCDD	ND		55	0.23	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,4,7,8-HxCDD	**2.3**	**J B**	55	0.13	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,6,7,8-HxCDD	**1.5**	**J B**	55	0.15	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,7,8,9-HxCDD	**1.2**	**J B q**	55	0.12	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,4,6,7,8-HpCDD	**7.3**	**J B**	55	0.17	pg/L		10/05/22 04:46	10/07/22 18:37	1
OCDD	**48**	**J B**	110	0.31	pg/L		10/05/22 04:46	10/07/22 18:37	1
2,3,7,8-TCDF	ND		11	0.11	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,7,8-PeCDF	**0.96**	**J q**	55	0.12	pg/L		10/05/22 04:46	10/07/22 18:37	1
2,3,4,7,8-PeCDF	**0.59**	**J**	55	0.13	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,4,7,8-HxCDF	**0.79**	**J B q**	55	0.12	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,6,7,8-HxCDF	**0.75**	**J B**	55	0.12	pg/L		10/05/22 04:46	10/07/22 18:37	1
2,3,4,6,7,8-HxCDF	**0.57**	**J B q**	55	0.12	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,7,8,9-HxCDF	**1.8**	**J B**	55	0.12	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,4,6,7,8-HpCDF	**2.6**	**J B**	55	0.31	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,4,7,8,9-HpCDF	ND		55	0.31	pg/L		10/05/22 04:46	10/07/22 18:37	1
OCDF	**4.8**	**J B**	110	0.21	pg/L		10/05/22 04:46	10/07/22 18:37	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*71*		*25 - 164*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,7,8-PeCDD	*90*		*25 - 181*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,6,7,8-HxCDD	*70*		*28 - 130*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*85*		*23 - 140*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-OCDD	*72*		*17 - 157*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-2,3,7,8-TCDF	*56*		*24 - 169*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,7,8-PeCDF	*70*		*24 - 185*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,4,7,8-HxCDF	*67*		*26 - 152*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*64*		*28 - 143*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,7,8,9-HxCDF	*62*		*29 - 147*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-OCDF	*68*		*17 - 157*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,4,7,8-HxCDD	*80*		*32 - 141*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,6,7,8-HxCDF	*65*		*26 - 123*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-2,3,4,7,8-PeCDF	*71*		*21 - 178*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-2,3,4,6,7,8-HxCDF	*62*		*28 - 136*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*72*		*26 - 138*	*10/05/22 04:46*	*10/07/22 18:37*	*1*

Client: Jacobs Engineering Group, Inc.
Job ID: 580-118426-1
Project/Site: Northwest Pipe Company stormwater 2022

Client Sample ID: SYSTEM02-09292022
Lab Sample ID: 580-118426-2
Date Collected: 09/29/22 10:57
Matrix: Water
Date Received: 09/30/22 10:00

Method: EPA 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		11	0.21	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,7,8-PeCDD	**2.1**	**J**	53	0.19	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,4,7,8-HxCDD	**3.9**	**J B**	53	0.16	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,6,7,8-HxCDD	**3.3**	**J B**	53	0.19	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,7,8,9-HxCDD	**3.4**	**J B**	53	0.15	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,4,6,7,8-HpCDD	**12**	**J B**	53	0.18	pg/L		10/05/22 04:46	10/07/22 19:25	1
OCDD	**110**	**B**	110	0.41	pg/L		10/05/22 04:46	10/07/22 19:25	1
2,3,7,8-TCDF	ND		11	0.070	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,7,8-PeCDF	**1.2**	**J q**	53	0.11	pg/L		10/05/22 04:46	10/07/22 19:25	1
2,3,4,7,8-PeCDF	**1.9**	**J**	53	0.12	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,4,7,8-HxCDF	**2.7**	**J B**	53	0.14	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,6,7,8-HxCDF	**2.3**	**J B**	53	0.14	pg/L		10/05/22 04:46	10/07/22 19:25	1
2,3,4,6,7,8-HxCDF	**2.7**	**J B**	53	0.14	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,7,8,9-HxCDF	**3.4**	**J B**	53	0.15	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,4,6,7,8-HpCDF	**5.3**	**J B q**	53	0.40	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,4,7,8,9-HpCDF	**3.3**	**J B**	53	0.39	pg/L		10/05/22 04:46	10/07/22 19:25	1
OCDF	**13**	**J B**	110	0.34	pg/L		10/05/22 04:46	10/07/22 19:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*63*		*25 - 164*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,7,8-PeCDD	*82*		*25 - 181*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,6,7,8-HxCDD	*66*		*28 - 130*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*78*		*23 - 140*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-OCDD	*68*		*17 - 157*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-2,3,7,8-TCDF	*53*		*24 - 169*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,7,8-PeCDF	*63*		*24 - 185*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,4,7,8-HxCDF	*64*		*26 - 152*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*57*		*28 - 143*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,7,8,9-HxCDF	*60*		*29 - 147*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-OCDF	*64*		*17 - 157*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,4,7,8-HxCDD	*75*		*32 - 141*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,6,7,8-HxCDF	*63*		*26 - 123*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-2,3,4,7,8-PeCDF	*66*		*21 - 178*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-2,3,4,6,7,8-HxCDF	*62*		*28 - 136*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*68*		*26 - 138*	*10/05/22 04:46*	*10/07/22 19:25*	*1*

Client Sample Results

Client: Jacobs Engineering Group, Inc.
Job ID: 580-118426-1
Project/Site: Northwest Pipe Company stormwater 2022

Client Sample ID: SP-FD
Date Collected: 09/29/22 12:00
Date Received: 09/30/22 10:00

Lab Sample ID: 580-118426-3
Matrix: Water

Method: EPA 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		11	0.15	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,7,8-PeCDD	ND		54	0.21	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,4,7,8-HxCDD	**3.0**	**J B**	54	0.16	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,6,7,8-HxCDD	**2.7**	**J B**	54	0.19	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,7,8,9-HxCDD	**2.2**	**J B**	54	0.15	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,4,6,7,8-HpCDD	**7.4**	**J B**	54	0.15	pg/L		10/05/22 04:46	10/07/22 20:12	1
OCDD	**50**	**J B**	110	0.42	pg/L		10/05/22 04:46	10/07/22 20:12	1
2,3,7,8-TCDF	ND		11	0.030	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,7,8-PeCDF	**1.1**	**J**	54	0.096	pg/L		10/05/22 04:46	10/07/22 20:12	1
2,3,4,7,8-PeCDF	**0.92**	**J q**	54	0.098	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,4,7,8-HxCDF	**1.6**	**J B**	54	0.14	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,6,7,8-HxCDF	**1.7**	**J B**	54	0.14	pg/L		10/05/22 04:46	10/07/22 20:12	1
2,3,4,6,7,8-HxCDF	**1.5**	**J B q**	54	0.14	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,7,8,9-HxCDF	**2.6**	**J B q**	54	0.16	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,4,6,7,8-HpCDF	**3.5**	**J B q**	54	0.38	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,4,7,8,9-HpCDF	**2.7**	**J B**	54	0.42	pg/L		10/05/22 04:46	10/07/22 20:12	1
OCDF	**8.5**	**J B**	110	0.31	pg/L		10/05/22 04:46	10/07/22 20:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*73*		*25 - 164*	*10/05/22 04:46*	*10/07/22 20:12*	*1*
13C-1,2,3,7,8-PeCDD	*101*		*25 - 181*	*10/05/22 04:46*	*10/07/22 20:12*	*1*
13C-1,2,3,6,7,8-HxCDD	*78*		*28 - 130*	*10/05/22 04:46*	*10/07/22 20:12*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*88*		*23 - 140*	*10/05/22 04:46*	*10/07/22 20:12*	*1*
13C-OCDD	*73*		*17 - 157*	*10/05/22 04:46*	*10/07/22 20:12*	*1*
13C-2,3,7,8-TCDF	*57*		*24 - 169*	*10/05/22 04:46*	*10/07/22 20:12*	*1*
13C-1,2,3,7,8-PeCDF	*81*		*24 - 185*	*10/05/22 04:46*	*10/07/22 20:12*	*1*
13C-1,2,3,4,7,8-HxCDF	*75*		*26 - 152*	*10/05/22 04:46*	*10/07/22 20:12*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*66*		*28 - 143*	*10/05/22 04:46*	*10/07/22 20:12*	*1*
13C-1,2,3,7,8,9-HxCDF	*67*		*29 - 147*	*10/05/22 04:46*	*10/07/22 20:12*	*1*
13C-OCDF	*68*		*17 - 157*	*10/05/22 04:46*	*10/07/22 20:12*	*1*
13C-1,2,3,4,7,8-HxCDD	*88*		*32 - 141*	*10/05/22 04:46*	*10/07/22 20:12*	*1*
13C-1,2,3,6,7,8-HxCDF	*76*		*26 - 123*	*10/05/22 04:46*	*10/07/22 20:12*	*1*
13C-2,3,4,7,8-PeCDF	*83*		*21 - 178*	*10/05/22 04:46*	*10/07/22 20:12*	*1*
13C-2,3,4,6,7,8-HxCDF	*73*		*28 - 136*	*10/05/22 04:46*	*10/07/22 20:12*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*73*		*26 - 138*	*10/05/22 04:46*	*10/07/22 20:12*	*1*

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-622337/1-A
Matrix: Water
Analysis Batch: 623051

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 622337

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		10	0.27	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,7,8-PeCDD	ND		50	0.29	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,4,7,8-HxCDD	2.18	J q	50	0.19	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,6,7,8-HxCDD	0.968	J q	50	0.22	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,7,8,9-HxCDD	1.33	J q	50	0.18	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,4,6,7,8-HpCDD	2.22	J	50	0.13	pg/L		10/05/22 04:46	10/07/22 15:26	1
OCDD	5.72	J	100	0.51	pg/L		10/05/22 04:46	10/07/22 15:26	1
2,3,7,8-TCDF	ND		10	0.11	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,7,8-PeCDF	ND		50	0.13	pg/L		10/05/22 04:46	10/07/22 15:26	1
2,3,4,7,8-PeCDF	ND		50	0.13	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,4,7,8-HxCDF	0.817	J	50	0.17	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,6,7,8-HxCDF	0.831	J	50	0.18	pg/L		10/05/22 04:46	10/07/22 15:26	1
2,3,4,6,7,8-HxCDF	0.844	J q	50	0.18	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,7,8,9-HxCDF	1.56	J q	50	0.19	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,4,6,7,8-HpCDF	2.28	J q	50	0.32	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,4,7,8,9-HpCDF	2.14	J	50	0.35	pg/L		10/05/22 04:46	10/07/22 15:26	1
OCDF	2.65	J q	100	0.48	pg/L		10/05/22 04:46	10/07/22 15:26	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*59*		*25 - 164*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,7,8-PeCDD	*75*		*25 - 181*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,6,7,8-HxCDD	*67*		*28 - 130*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*76*		*23 - 140*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-OCDD	*62*		*17 - 157*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-2,3,7,8-TCDF	*48*		*24 - 169*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,7,8-PeCDF	*58*		*24 - 185*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,4,7,8-HxCDF	*64*		*26 - 152*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*57*		*28 - 143*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,7,8,9-HxCDF	*57*		*29 - 147*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-OCDF	*57*		*17 - 157*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,4,7,8-HxCDD	*76*		*32 - 141*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,6,7,8-HxCDF	*64*		*26 - 123*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-2,3,4,7,8-PeCDF	*59*		*21 - 178*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-2,3,4,6,7,8-HxCDF	*61*		*28 - 136*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*63*		*26 - 138*	*10/05/22 04:46*	*10/07/22 15:26*	*1*

Lab Sample ID: LCS 320-622337/2-A
Matrix: Water
Analysis Batch: 623051

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 622337

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,3,7,8-TCDD	200	178		pg/L		89	67 - 158
1,2,3,7,8-PeCDD	1000	840		pg/L		84	70 - 142
1,2,3,4,7,8-HxCDD	1000	833		pg/L		83	70 - 164
1,2,3,6,7,8-HxCDD	1000	969		pg/L		97	76 - 134
1,2,3,7,8,9-HxCDD	1000	872		pg/L		87	64 - 162
1,2,3,4,6,7,8-HpCDD	1000	859		pg/L		86	70 - 140
OCDD	2000	1960		pg/L		98	78 - 144
2,3,7,8-TCDF	200	215		pg/L		108	75 - 158

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-622337/2-A
Matrix: Water
Analysis Batch: 623051

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 622337

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,2,3,7,8-PeCDF			1000	802		pg/L		80	80 - 134		
2,3,4,7,8-PeCDF			1000	796		pg/L		80	68 - 160		
1,2,3,4,7,8-HxCDF			1000	883		pg/L		88	72 - 134		
1,2,3,6,7,8-HxCDF			1000	910		pg/L		91	84 - 130		
2,3,4,6,7,8-HxCDF			1000	913		pg/L		91	70 - 156		
1,2,3,7,8,9-HxCDF			1000	904		pg/L		90	78 - 130		
1,2,3,4,6,7,8-HpCDF			1000	1000		pg/L		100	82 - 122		
1,2,3,4,7,8,9-HpCDF			1000	874		pg/L		87	78 - 138		
OCDF			2000	1900		pg/L		95	63 - 170		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*58*		*20 - 175*
13C-1,2,3,7,8-PeCDD	*64*		*21 - 227*
13C-1,2,3,6,7,8-HxCDD	*54*		*25 - 163*
13C-1,2,3,4,6,7,8-HpCDD	*60*		*26 - 166*
13C-OCDD	*50*		*13 - 199*
13C-2,3,7,8-TCDF	*46*		*22 - 152*
13C-1,2,3,7,8-PeCDF	*52*		*21 - 192*
13C-1,2,3,4,7,8-HxCDF	*50*		*19 - 202*
13C-1,2,3,4,6,7,8-HpCDF	*46*		*21 - 158*
13C-1,2,3,7,8,9-HxCDF	*47*		*17 - 205*
13C-OCDF	*45*		*13 - 199*
13C-1,2,3,4,7,8-HxCDD	*58*		*21 - 193*
13C-1,2,3,6,7,8-HxCDF	*51*		*21 - 159*
13C-2,3,4,7,8-PeCDF	*55*		*13 - 328*
13C-2,3,4,6,7,8-HxCDF	*50*		*22 - 176*
13C-1,2,3,4,7,8,9-HpCDF	*50*		*20 - 186*

Lab Sample ID: LCSD 320-622337/3-A
Matrix: Water
Analysis Batch: 623051

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 622337

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,3,7,8-TCDD			200	182		pg/L		91	67 - 158	2	50
1,2,3,7,8-PeCDD			1000	836		pg/L		84	70 - 142	0	50
1,2,3,4,7,8-HxCDD			1000	831		pg/L		83	70 - 164	0	50
1,2,3,6,7,8-HxCDD			1000	989		pg/L		99	76 - 134	2	50
1,2,3,7,8,9-HxCDD			1000	875		pg/L		88	64 - 162	0	50
1,2,3,4,6,7,8-HpCDD			1000	873		pg/L		87	70 - 140	2	50
OCDD			2000	1960		pg/L		98	78 - 144	0	50
2,3,7,8-TCDF			200	221		pg/L		111	75 - 158	3	50
1,2,3,7,8-PeCDF			1000	830		pg/L		83	80 - 134	3	50
2,3,4,7,8-PeCDF			1000	804		pg/L		80	68 - 160	1	50
1,2,3,4,7,8-HxCDF			1000	901		pg/L		90	72 - 134	2	50
1,2,3,6,7,8-HxCDF			1000	914		pg/L		91	84 - 130	0	50
2,3,4,6,7,8-HxCDF			1000	939		pg/L		94	70 - 156	3	50
1,2,3,7,8,9-HxCDF			1000	935		pg/L		94	78 - 130	3	50
1,2,3,4,6,7,8-HpCDF			1000	1000		pg/L		100	82 - 122	0	50
1,2,3,4,7,8,9-HpCDF			1000	889		pg/L		89	78 - 138	2	50

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-622337/3-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 623051
Prep Batch: 622337

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
OCDF			2000	1880		pg/L		94	63 - 170	1	50

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*68*		*20 - 175*
13C-1,2,3,7,8-PeCDD	*84*		*21 - 227*
13C-1,2,3,6,7,8-HxCDD	*69*		*25 - 163*
13C-1,2,3,4,6,7,8-HpCDD	*80*		*26 - 166*
13C-OCDD	*70*		*13 - 199*
13C-2,3,7,8-TCDF	*54*		*22 - 152*
13C-1,2,3,7,8-PeCDF	*67*		*21 - 192*
13C-1,2,3,4,7,8-HxCDF	*67*		*19 - 202*
13C-1,2,3,4,6,7,8-HpCDF	*62*		*21 - 158*
13C-1,2,3,7,8,9-HxCDF	*60*		*17 - 205*
13C-OCDF	*65*		*13 - 199*
13C-1,2,3,4,7,8-HxCDD	*78*		*21 - 193*
13C-1,2,3,6,7,8-HxCDF	*66*		*21 - 159*
13C-2,3,4,7,8-PeCDF	*69*		*13 - 328*
13C-2,3,4,6,7,8-HxCDF	*65*		*22 - 176*
13C-1,2,3,4,7,8,9-HpCDF	*69*		*20 - 186*

Lab Chronicle

Client: Jacobs Engineering Group, Inc.
Job ID: 580-118426-1
Project/Site: Northwest Pipe Company stormwater 2022

Client Sample ID: SYSTEM01-09299022
Lab Sample ID: 580-118426-1
Date Collected: 09/29/22 10:33
Matrix: Water
Date Received: 09/30/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	1613B			622337	FC	EET SAC	10/05/22 04:46
Total/NA	Analysis	1613B		1	623051	GRB	EET SAC	10/07/22 18:37

Client Sample ID: SYSTEM02-09292022
Lab Sample ID: 580-118426-2
Date Collected: 09/29/22 10:57
Matrix: Water
Date Received: 09/30/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	1613B			622337	FC	EET SAC	10/05/22 04:46
Total/NA	Analysis	1613B		1	623051	GRB	EET SAC	10/07/22 19:25

Client Sample ID: SP-FD
Lab Sample ID: 580-118426-3
Date Collected: 09/29/22 12:00
Matrix: Water
Date Received: 09/30/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	1613B			622337	FC	EET SAC	10/05/22 04:46
Total/NA	Analysis	1613B		1	623051	GRB	EET SAC	10/07/22 20:12

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 580-118426-1
Project/Site: Northwest Pipe Company stormwater 2022

Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	4040	01-29-23

Sample Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 580-118426-1
Project/Site: Northwest Pipe Company stormwater 2022

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-118426-1	SYSTEM01-09299022	Water	09/29/22 10:33	09/30/22 10:00
580-118426-2	SYSTEM02-09292022	Water	09/29/22 10:57	09/30/22 10:00
580-118426-3	SP-FD	Water	09/29/22 12:00	09/30/22 10:00

Eurofins Seattle
5755 8th Street East

Tacoma, WA 98424-1317
phone 253.922.2310 fax 253.922.5047

Chain of Custody Record

eurofins | Environment Testing America

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

Eurofins Environment Testing Americ

Client Contact	Project Manager: Kris Ivarson	Site Contact:	Date:	COC No:
Jacobs Engineering Group, Inc.	Email: Kris.Ivarson@jacobs.com	Lab Contact: Matlock, Pauline M	Carrier:	1 of 1 COCs
Address: 2020 SW Fourth Ave, 3rd Floor	Tel/Fax:			TALS Project #:
City/State/Zip: Portland, OR, 97201	Analysis Turnaround Time			Sampler:
530-229-3202 Phone	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(xxx) xxx-xxxx FAX	TAT if different from Below _____			Walk-in Client:
Project Name: Northwest Pipe Company stormwater 2022	☐ 2 weeks			Lab Sampling:
Site:	☐ 1 week			Job / SDG No.:
P O #	☐ 2 days ☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	1613B- 17 Isomers List	Sample Specific Notes:
SYSTEM01-09299022	#######	1033	G	WATER	2	N	N	Y	
SYSTEM02-09292022	9/29/22	1057	G	WATER	2	N	N	Y	
SP-FD	9/29/22	1200	G	WATER	2	N	N	Y	

580-118426 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

1.9/1.8 A3/LgBlu/wet/Bub/FedEx P.O

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

Relinquished by:	Company: Jacobs	Date/Time: 9/29 @ 1300	Received by:	Company: EETN	Date/Time: 9/30/22 10:00
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310

Chain of Custody Record

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Client Information (Sub Contract Lab)	Sampler:	Lab PM: Matlock, Pauline M	Carrier Tracking No(s):	COC No: 580-109915.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Pauline.Matlock@et.eurofinsus.com	State of Origin: Oregon	Page: Page 1 of 1
Company: Eurofins Environment Testing Northern Ca		Accreditations Required (See note): NELAP - Oregon		Job #: 580-118426-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 10/20/2022			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Northwest Pipe Company stormwater 2022	Project #: 58017841			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1613B/1613B_Sox_Sep_P 17 Isomers List	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
SYSTEM01-09299022 (580-118426-1)	9/29/22	10:33 Pacific		Water			X	2	
SYSTEM02-09292022 (580-118426-2)	9/29/22	10:57 Pacific		Water			X	2	
SP-FD (580-118426-3)	9/29/22	12:00 Pacific		Water			X	2	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Environment Testing Northwest, LLC.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	[signature]	10/3/22	[illegible]	[signature]	10/4/22 945	[illegible]
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.: A81959	Cooler Temperature(s) °C and Other Remarks: 0.7c

Ver: 06/08/2021

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 580-118426-1

Login Number: 118426
List Number: 1
Creator: Holdener, Heather D

List Source: Eurofins Seattle

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

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 580-118426-1

Login Number: 118426
List Number: 2
Creator: Simmons, Jason C

List Source: Eurofins Sacramento
List Creation: 10/04/22 11:57 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1781959
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.7c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Sacramento
Sample Receiving Notes

580-118426 Field Sheet

Job: _____

Tracking # : 6087660572185

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier

GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Therm. ID: 202 Corr. Factor: (+ / -) — °C

Ice 1 Wet 1 Gel _____ Other _____

Cooler Custody Seal: 1787454

Cooler ID: _____

Temp Observed: 0.7 °C Corrected: 0.7 °C

From: Temp Blank ☒ Sample ☐

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☒	☐
Cooler Temperature is acceptable?	☒	☐	☐
Frozen samples show signs of thaw?	☐	☐	☒

Initials: LB Date: 10.4.22

Unpacking/Labeling The Samples	Yes	No	NA
COC is complete w/o discrepancies?	☒	☐	☐
Samples compromised/tampered with?	☐	☒	☐
Containers are not broken or leaking?	☒	☐	☐
Sample custody seal?	☐	☐	☒
Sample containers have legible labels?	☒	☐	☐
Sample date/times are provided?	☒	☐	☐
Appropriate containers are used?	☒	☐	☐
Sample bottles are completely filled?	☒	☐	☐
Sample preservatives verified?	☐	☐	☒
Is the Field Sampler's name on COC?	☐	☐	☒
Samples require splitting/compositing?	☐	☐	☒
Samples w/o discrepancies?	☒	☐	☐
Zero headspace?*	☐	☐	☒
Alkalinity has no headspace?	☐	☐	☒
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☒
Multiphasic samples are not present?	☒	☐	☐

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: LB Date: 10.4.22

Notes: _____

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	☒	☐	☐
Samples received within hold time?	☒	☐	☐
NCM Filed?	☐	☐	☒
Log Release checked in TALS?	☐	☐	☒

Initials: LB Date: 10.4.22

Isotope Dilution Summary

Client: Jacobs Engineering Group, Inc. Job ID: 580-118426-1
Project/Site: Northwest Pipe Company stormwater 2022

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (25-164)	PeCDD (25-181)	HxDD (28-130)	HpCDD (23-140)	OCDD (17-157)	TCDF (24-169)	PeCDF (24-185)	HxCDF (26-152)
580-118426-1	SYSTEM01-09299022	71	90	70	85	72	56	70	67
580-118426-2	SYSTEM02-09292022	63	82	66	78	68	53	63	64
580-118426-3	SP-FD	73	101	78	88	73	57	81	75
MB 320-622337/1-A	Method Blank	59	75	67	76	62	48	58	64

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDF (28-143)	HxCF (29-147)	OCDF (17-157)	HxCDD (32-141)	HxDF (26-123)	PeCF (21-178)	13CHxCF (28-136)	HpCDF2 (26-138)
580-118426-1	SYSTEM01-09299022	64	62	68	80	65	71	62	72
580-118426-2	SYSTEM02-09292022	57	60	64	75	63	66	62	68
580-118426-3	SP-FD	66	67	68	88	76	83	73	73
MB 320-622337/1-A	Method Blank	57	57	57	76	64	59	61	63

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
PeCDD = 13C-1,2,3,7,8-PeCDD
HxDD = 13C-1,2,3,6,7,8-HxCDD
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
OCDD = 13C-OCDD
TCDF = 13C-2,3,7,8-TCDF
PeCDF = 13C-1,2,3,7,8-PeCDF
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
OCDF = 13C-OCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxDF = 13C-1,2,3,6,7,8-HxCDF
PeCF = 13C-2,3,4,7,8-PeCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (20-175)	PeCDD (21-227)	HxDD (25-163)	HpCDD (26-166)	OCDD (13-199)	TCDF (22-152)	PeCDF (21-192)	HxCDF (19-202)
LCS 320-622337/2-A	Lab Control Sample	58	64	54	60	50	46	52	50
LCSD 320-622337/3-A	Lab Control Sample Dup	68	84	69	80	70	54	67	67

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDF (21-158)	HxCF (17-205)	OCDF (13-199)	HxCDD (21-193)	HxDF (21-159)	PeCF (13-328)	13CHxCF (22-176)	HpCDF2 (20-186)
LCS 320-622337/2-A	Lab Control Sample	46	47	45	58	51	55	50	50
LCSD 320-622337/3-A	Lab Control Sample Dup	62	60	65	78	66	69	65	69

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
PeCDD = 13C-1,2,3,7,8-PeCDD
HxDD = 13C-1,2,3,6,7,8-HxCDD
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
OCDD = 13C-OCDD

Isotope Dilution Summary

Client: Jacobs Engineering Group, Inc.
Job ID: 580-118426-1
Project/Site: Northwest Pipe Company stormwater 2022

TCDF = 13C-2,3,7,8-TCDF
PeCDF = 13C-1,2,3,7,8-PeCDF
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
OCDF = 13C-OCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxDF = 13C-1,2,3,6,7,8-HxCDF
PeCF = 13C-2,3,4,7,8-PeCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF

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ANALYTICAL REPORT

Job Number: 580-118426-1

Job Description: Northwest Pipe Company stormwater 2022

For:
Jacobs Engineering Group, Inc.
2525 Airpark Drive
Redding, CA 96001

Attention: Bernice Kidd

Approved for release.
Pauline M Matlock
Project Manager
10/28/2022 4:14 PM

Pauline M Matlock, Project Manager
5755 8th Street East, Tacoma, WA, 98424
(253)922-2310
Pauline.Matlock@et.eurofinsus.com
10/28/2022

The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Table of Contents

Table of Contents

Qualifiers

Dioxin

Qualifier	Qualifier Description
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
q	The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job Narrative
580-118426-1

Comments
No additional comments.

Receipt
The samples were received on 9/30/2022 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.9º C.

Dioxin
Method 1613B: EPA Method 1613B specifies a +/- 15 second retention time difference between the recovery standard in the initial calibration (ICAL) and the continuing calibration verification (CCV). The 13C-1,2,3,4-TCDD associated with the following samples run on instrument DFS 1 exceeded this criteria: SYSTEM01-09299022 (580-118426-1), SYSTEM02-09292022 (580-118426-2), SP-FD (580-118426-3), (CCV 320-623051/1), (LCS 320-622337/2-A), (LCSD 320-622337/3-A) and (MB 320-622337/1-A). This retention time shift is due to normal and reasonable column maintenance and does not affect the instrument chromatography resolution, sensitivity, or identification of target analytes. System retention times have been updated for proper analyte identification.

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

Dioxin Prep
Method 1613B: Elevated reporting limits are provided for the following samples due to insufficient sample provided for preparation: SYSTEM01-09299022 (580-118426-1), SYSTEM02-09292022 (580-118426-2) and SP-FD (580-118426-3). Nominal volume required by method is 1 liter.

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

Detection Summary

Client: Jacobs Engineering Group, Inc. Job ID: 580-118426-1
Project/Site: Northwest Pipe Company stormwater 2022

Client Sample ID: SYSTEM01-09299022 Lab Sample ID: 580-118426-1

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
1,2,3,4,7,8-HxCDD	2.3	J B	55	0.13	pg/L	1		1613B	Total/NA
1,2,3,6,7,8-HxCDD	1.5	J B	55	0.15	pg/L	1		1613B	Total/NA
1,2,3,7,8,9-HxCDD	1.2	J B q	55	0.12	pg/L	1		1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	7.3	J B	55	0.17	pg/L	1		1613B	Total/NA
OCDD	48	J B	110	0.31	pg/L	1		1613B	Total/NA
1,2,3,7,8-PeCDF	0.96	J q	55	0.12	pg/L	1		1613B	Total/NA
2,3,4,7,8-PeCDF	0.59	J	55	0.13	pg/L	1		1613B	Total/NA
1,2,3,4,7,8-HxCDF	0.79	J B q	55	0.12	pg/L	1		1613B	Total/NA
1,2,3,6,7,8-HxCDF	0.75	J B	55	0.12	pg/L	1		1613B	Total/NA
2,3,4,6,7,8-HxCDF	0.57	J B q	55	0.12	pg/L	1		1613B	Total/NA
1,2,3,7,8,9-HxCDF	1.8	J B	55	0.12	pg/L	1		1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	2.6	J B	55	0.31	pg/L	1		1613B	Total/NA
OCDF	4.8	J B	110	0.21	pg/L	1		1613B	Total/NA

Client Sample ID: SYSTEM02-09292022 Lab Sample ID: 580-118426-2

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
1,2,3,7,8-PeCDD	2.1	J	53	0.19	pg/L	1		1613B	Total/NA
1,2,3,4,7,8-HxCDD	3.9	J B	53	0.16	pg/L	1		1613B	Total/NA
1,2,3,6,7,8-HxCDD	3.3	J B	53	0.19	pg/L	1		1613B	Total/NA
1,2,3,7,8,9-HxCDD	3.4	J B	53	0.15	pg/L	1		1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	12	J B	53	0.18	pg/L	1		1613B	Total/NA
OCDD	110	B	110	0.41	pg/L	1		1613B	Total/NA
1,2,3,7,8-PeCDF	1.2	J q	53	0.11	pg/L	1		1613B	Total/NA
2,3,4,7,8-PeCDF	1.9	J	53	0.12	pg/L	1		1613B	Total/NA
1,2,3,4,7,8-HxCDF	2.7	J B	53	0.14	pg/L	1		1613B	Total/NA
1,2,3,6,7,8-HxCDF	2.3	J B	53	0.14	pg/L	1		1613B	Total/NA
2,3,4,6,7,8-HxCDF	2.7	J B	53	0.14	pg/L	1		1613B	Total/NA
1,2,3,7,8,9-HxCDF	3.4	J B	53	0.15	pg/L	1		1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	5.3	J B q	53	0.40	pg/L	1		1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	3.3	J B	53	0.39	pg/L	1		1613B	Total/NA
OCDF	13	J B	110	0.34	pg/L	1		1613B	Total/NA

Client Sample ID: SP-FD Lab Sample ID: 580-118426-3

Analyte	Result	Qualifier	RL	EDL	Unit	Dil Fac	D	Method	Prep Type
1,2,3,4,7,8-HxCDD	3.0	J B	54	0.16	pg/L	1		1613B	Total/NA
1,2,3,6,7,8-HxCDD	2.7	J B	54	0.19	pg/L	1		1613B	Total/NA
1,2,3,7,8,9-HxCDD	2.2	J B	54	0.15	pg/L	1		1613B	Total/NA
1,2,3,4,6,7,8-HpCDD	7.4	J B	54	0.15	pg/L	1		1613B	Total/NA
OCDD	50	J B	110	0.42	pg/L	1		1613B	Total/NA
1,2,3,7,8-PeCDF	1.1	J	54	0.096	pg/L	1		1613B	Total/NA
2,3,4,7,8-PeCDF	0.92	J q	54	0.098	pg/L	1		1613B	Total/NA
1,2,3,4,7,8-HxCDF	1.6	J B	54	0.14	pg/L	1		1613B	Total/NA
1,2,3,6,7,8-HxCDF	1.7	J B	54	0.14	pg/L	1		1613B	Total/NA
2,3,4,6,7,8-HxCDF	1.5	J B q	54	0.14	pg/L	1		1613B	Total/NA
1,2,3,7,8,9-HxCDF	2.6	J B q	54	0.16	pg/L	1		1613B	Total/NA
1,2,3,4,6,7,8-HpCDF	3.5	J B q	54	0.38	pg/L	1		1613B	Total/NA
1,2,3,4,7,8,9-HpCDF	2.7	J B	54	0.42	pg/L	1		1613B	Total/NA
OCDF	8.5	J B	110	0.31	pg/L	1		1613B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: SYSTEM01-09299022 — Lab Sample ID: 580-118426-1

Date Collected: 09/29/22 10:33 — **Matrix: Water**
Date Received: 09/30/22 10:00

Method: EPA 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		11	0.19	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,7,8-PeCDD	ND		55	0.23	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,4,7,8-HxCDD	**2.3**	**J B**	55	0.13	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,6,7,8-HxCDD	**1.5**	**J B**	55	0.15	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,7,8,9-HxCDD	**1.2**	**J B q**	55	0.12	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,4,6,7,8-HpCDD	**7.3**	**J B**	55	0.17	pg/L		10/05/22 04:46	10/07/22 18:37	1
OCDD	**48**	**J B**	110	0.31	pg/L		10/05/22 04:46	10/07/22 18:37	1
2,3,7,8-TCDF	ND		11	0.11	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,7,8-PeCDF	**0.96**	**J q**	55	0.12	pg/L		10/05/22 04:46	10/07/22 18:37	1
2,3,4,7,8-PeCDF	**0.59**	**J**	55	0.13	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,4,7,8-HxCDF	**0.79**	**J B q**	55	0.12	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,6,7,8-HxCDF	**0.75**	**J B**	55	0.12	pg/L		10/05/22 04:46	10/07/22 18:37	1
2,3,4,6,7,8-HxCDF	**0.57**	**J B q**	55	0.12	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,7,8,9-HxCDF	**1.8**	**J B**	55	0.12	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,4,6,7,8-HpCDF	**2.6**	**J B**	55	0.31	pg/L		10/05/22 04:46	10/07/22 18:37	1
1,2,3,4,7,8,9-HpCDF	ND		55	0.31	pg/L		10/05/22 04:46	10/07/22 18:37	1
OCDF	**4.8**	**J B**	110	0.21	pg/L		10/05/22 04:46	10/07/22 18:37	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*71*		*25 - 164*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,7,8-PeCDD	*90*		*25 - 181*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,6,7,8-HxCDD	*70*		*28 - 130*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*85*		*23 - 140*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-OCDD	*72*		*17 - 157*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-2,3,7,8-TCDF	*56*		*24 - 169*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,7,8-PeCDF	*70*		*24 - 185*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,4,7,8-HxCDF	*67*		*26 - 152*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*64*		*28 - 143*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,7,8,9-HxCDF	*62*		*29 - 147*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-OCDF	*68*		*17 - 157*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,4,7,8-HxCDD	*80*		*32 - 141*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,6,7,8-HxCDF	*65*		*26 - 123*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-2,3,4,7,8-PeCDF	*71*		*21 - 178*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-2,3,4,6,7,8-HxCDF	*62*		*28 - 136*	*10/05/22 04:46*	*10/07/22 18:37*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*72*		*26 - 138*	*10/05/22 04:46*	*10/07/22 18:37*	*1*

Client Sample ID: SYSTEM02-09292022 — Lab Sample ID: 580-118426-2

Date Collected: 09/29/22 10:57 — **Matrix: Water**
Date Received: 09/30/22 10:00

Method: EPA 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		11	0.21	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,7,8-PeCDD	**2.1**	**J**	53	0.19	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,4,7,8-HxCDD	**3.9**	**J B**	53	0.16	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,6,7,8-HxCDD	**3.3**	**J B**	53	0.19	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,7,8,9-HxCDD	**3.4**	**J B**	53	0.15	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,4,6,7,8-HpCDD	**12**	**J B**	53	0.18	pg/L		10/05/22 04:46	10/07/22 19:25	1
OCDD	**110**	**B**	110	0.41	pg/L		10/05/22 04:46	10/07/22 19:25	1
2,3,7,8-TCDF	ND		11	0.070	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,7,8-PeCDF	**1.2**	**J q**	53	0.11	pg/L		10/05/22 04:46	10/07/22 19:25	1

Client Sample ID: SYSTEM02-09292022 — Lab Sample ID: 580-118426-2

Date Collected: 09/29/22 10:57 — **Matrix: Water**
Date Received: 09/30/22 10:00

Method: EPA 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,4,7,8-PeCDF	1.9	J	53	0.12	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,4,7,8-HxCDF	2.7	J B	53	0.14	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,6,7,8-HxCDF	2.3	J B	53	0.14	pg/L		10/05/22 04:46	10/07/22 19:25	1
2,3,4,6,7,8-HxCDF	2.7	J B	53	0.14	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,7,8,9-HxCDF	3.4	J B	53	0.15	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,4,6,7,8-HpCDF	5.3	J B q	53	0.40	pg/L		10/05/22 04:46	10/07/22 19:25	1
1,2,3,4,7,8,9-HpCDF	3.3	J B	53	0.39	pg/L		10/05/22 04:46	10/07/22 19:25	1
OCDF	13	J B	110	0.34	pg/L		10/05/22 04:46	10/07/22 19:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*63*		*25 - 164*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,7,8-PeCDD	*82*		*25 - 181*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,6,7,8-HxCDD	*66*		*28 - 130*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*78*		*23 - 140*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-OCDD	*68*		*17 - 157*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-2,3,7,8-TCDF	*53*		*24 - 169*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,7,8-PeCDF	*63*		*24 - 185*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,4,7,8-HxCDF	*64*		*26 - 152*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*57*		*28 - 143*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,7,8,9-HxCDF	*60*		*29 - 147*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-OCDF	*64*		*17 - 157*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,4,7,8-HxCDD	*75*		*32 - 141*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,6,7,8-HxCDF	*63*		*26 - 123*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-2,3,4,7,8-PeCDF	*66*		*21 - 178*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-2,3,4,6,7,8-HxCDF	*62*		*28 - 136*	*10/05/22 04:46*	*10/07/22 19:25*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*68*		*26 - 138*	*10/05/22 04:46*	*10/07/22 19:25*	*1*

Client Sample ID: SP-FD — Lab Sample ID: 580-118426-3

Date Collected: 09/29/22 12:00 — **Matrix: Water**
Date Received: 09/30/22 10:00

Method: EPA 1613B - Dioxins and Furans (HRGC/HRMS)

Analyte	Result	Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		11	0.15	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,7,8-PeCDD	ND		54	0.21	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,4,7,8-HxCDD	3.0	J B	54	0.16	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,6,7,8-HxCDD	2.7	J B	54	0.19	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,7,8,9-HxCDD	2.2	J B	54	0.15	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,4,6,7,8-HpCDD	7.4	J B	54	0.15	pg/L		10/05/22 04:46	10/07/22 20:12	1
OCDD	50	J B	110	0.42	pg/L		10/05/22 04:46	10/07/22 20:12	1
2,3,7,8-TCDF	ND		11	0.030	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,7,8-PeCDF	1.1	J	54	0.096	pg/L		10/05/22 04:46	10/07/22 20:12	1
2,3,4,7,8-PeCDF	0.92	J q	54	0.098	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,4,7,8-HxCDF	1.6	J B	54	0.14	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,6,7,8-HxCDF	1.7	J B	54	0.14	pg/L		10/05/22 04:46	10/07/22 20:12	1
2,3,4,6,7,8-HxCDF	1.5	J B q	54	0.14	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,7,8,9-HxCDF	2.6	J B q	54	0.16	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,4,6,7,8-HpCDF	3.5	J B q	54	0.38	pg/L		10/05/22 04:46	10/07/22 20:12	1
1,2,3,4,7,8,9-HpCDF	2.7	J B	54	0.42	pg/L		10/05/22 04:46	10/07/22 20:12	1
OCDF	8.5	J B	110	0.31	pg/L		10/05/22 04:46	10/07/22 20:12	1

Client Sample ID: SP-FD
Date Collected: 09/29/22 12:00
Date Received: 09/30/22 10:00

Lab Sample ID: 580-118426-3
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-2,3,7,8-TCDD	73		25 - 164	10/05/22 04:46	10/07/22 20:12	1
13C-1,2,3,7,8-PeCDD	101		25 - 181	10/05/22 04:46	10/07/22 20:12	1
13C-1,2,3,6,7,8-HxCDD	78		28 - 130	10/05/22 04:46	10/07/22 20:12	1
13C-1,2,3,4,6,7,8-HpCDD	88		23 - 140	10/05/22 04:46	10/07/22 20:12	1
13C-OCDD	73		17 - 157	10/05/22 04:46	10/07/22 20:12	1
13C-2,3,7,8-TCDF	57		24 - 169	10/05/22 04:46	10/07/22 20:12	1
13C-1,2,3,7,8-PeCDF	81		24 - 185	10/05/22 04:46	10/07/22 20:12	1
13C-1,2,3,4,7,8-HxCDF	75		26 - 152	10/05/22 04:46	10/07/22 20:12	1
13C-1,2,3,4,6,7,8-HpCDF	66		28 - 143	10/05/22 04:46	10/07/22 20:12	1
13C-1,2,3,7,8,9-HxCDF	67		29 - 147	10/05/22 04:46	10/07/22 20:12	1
13C-OCDF	68		17 - 157	10/05/22 04:46	10/07/22 20:12	1
13C-1,2,3,4,7,8-HxCDD	88		32 - 141	10/05/22 04:46	10/07/22 20:12	1
13C-1,2,3,6,7,8-HxCDF	76		26 - 123	10/05/22 04:46	10/07/22 20:12	1
13C-2,3,4,7,8-PeCDF	83		21 - 178	10/05/22 04:46	10/07/22 20:12	1
13C-2,3,4,6,7,8-HxCDF	73		28 - 136	10/05/22 04:46	10/07/22 20:12	1
13C-1,2,3,4,7,8,9-HpCDF	73		26 - 138	10/05/22 04:46	10/07/22 20:12	1

Default Detection Limits

Client: Jacobs Engineering Group, Inc. Job ID: 580-118426-1
Project/Site: Northwest Pipe Company stormwater 2022

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Prep: 1613B

Analyte	RL		Units
1,2,3,4,6,7,8-HpCDD	50		pg/L
1,2,3,4,6,7,8-HpCDF	50		pg/L
1,2,3,4,7,8,9-HpCDF	50		pg/L
1,2,3,4,7,8-HxCDD	50		pg/L
1,2,3,4,7,8-HxCDF	50		pg/L
1,2,3,6,7,8-HxCDD	50		pg/L
1,2,3,6,7,8-HxCDF	50		pg/L
1,2,3,7,8,9-HxCDD	50		pg/L
1,2,3,7,8,9-HxCDF	50		pg/L
1,2,3,7,8-PeCDD	50		pg/L
1,2,3,7,8-PeCDF	50		pg/L
2,3,4,6,7,8-HxCDF	50		pg/L
2,3,4,7,8-PeCDF	50		pg/L
2,3,7,8-TCDD	10		pg/L
2,3,7,8-TCDF	10		pg/L
OCDD	100		pg/L
OCDF	100		pg/L

Isotope Dilution Summary

Client: Jacobs Engineering Group, Inc. Job ID: 580-118426-1
Project/Site: Northwest Pipe Company stormwater 2022

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (25-164)	PeCDD (25-181)	HxDD (28-130)	HpCDD (23-140)	OCDD (17-157)	TCDF (24-169)	PeCDF (24-185)	HxCDF (26-152)
580-118426-1	SYSTEM01-09299022	71	90	70	85	72	56	70	67
580-118426-2	SYSTEM02-09292022	63	82	66	78	68	53	63	64
580-118426-3	SP-FD	73	101	78	88	73	57	81	75
MB 320-622337/1-A	Method Blank	59	75	67	76	62	48	58	64

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDF (28-143)	HxCF (29-147)	OCDF (17-157)	HxCDD (32-141)	HxDF (26-123)	PeCF (21-178)	13CHxCF (28-136)	HpCDF2 (26-138)
580-118426-1	SYSTEM01-09299022	64	62	68	80	65	71	62	72
580-118426-2	SYSTEM02-09292022	57	60	64	75	63	66	62	68
580-118426-3	SP-FD	66	67	68	88	76	83	73	73
MB 320-622337/1-A	Method Blank	57	57	57	76	64	59	61	63

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
PeCDD = 13C-1,2,3,7,8-PeCDD
HxDD = 13C-1,2,3,6,7,8-HxCDD
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
OCDD = 13C-OCDD
TCDF = 13C-2,3,7,8-TCDF
PeCDF = 13C-1,2,3,7,8-PeCDF
HxCDF = 13C-1,2,3,4,7,8-HxCDF
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF
HxCF = 13C-1,2,3,7,8,9-HxCDF
OCDF = 13C-OCDF
HxCDD = 13C-1,2,3,4,7,8-HxCDD
HxDF = 13C-1,2,3,6,7,8-HxCDF
PeCF = 13C-2,3,4,7,8-PeCDF
13CHxCF = 13C-2,3,4,6,7,8-HxCDF
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	TCDD (20-175)	PeCDD (21-227)	HxDD (25-163)	HpCDD (26-166)	OCDD (13-199)	TCDF (22-152)	PeCDF (21-192)	HxCDF (19-202)
LCS 320-622337/2-A	Lab Control Sample	58	64	54	60	50	46	52	50
LCSD 320-622337/3-A	Lab Control Sample Dup	68	84	69	80	70	54	67	67

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	HpCDF (21-158)	HxCF (17-205)	OCDF (13-199)	HxCDD (21-193)	HxDF (21-159)	PeCF (13-328)	13CHxCF (22-176)	HpCDF2 (20-186)
LCS 320-622337/2-A	Lab Control Sample	46	47	45	58	51	55	50	50
LCSD 320-622337/3-A	Lab Control Sample Dup	62	60	65	78	66	69	65	69

Surrogate Legend

TCDD = 13C-2,3,7,8-TCDD
PeCDD = 13C-1,2,3,7,8-PeCDD
HxDD = 13C-1,2,3,6,7,8-HxCDD
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD
OCDD = 13C-OCDD

Isotope Dilution Summary

Client: Jacobs Engineering Group, Inc. Job ID: 580-118426-1

Project/Site: Northwest Pipe Company stormwater 2022

TCDF = 13C-2,3,7,8-TCDF

PeCDF = 13C-1,2,3,7,8-PeCDF

HxCDF = 13C-1,2,3,4,7,8-HxCDF

HpCDF = 13C-1,2,3,4,6,7,8-HpCDF

HxCF = 13C-1,2,3,7,8,9-HxCDF

OCDF = 13C-OCDF

HxCDD = 13C-1,2,3,4,7,8-HxCDD

HxDF = 13C-1,2,3,6,7,8-HxCDF

PeCF = 13C-2,3,4,7,8-PeCDF

13CHxCF = 13C-2,3,4,6,7,8-HxCDF

HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF

Method: 1613B - Dioxins and Furans (HRGC/HRMS)

Lab Sample ID: MB 320-622337/1-A **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 623051 **Prep Batch: 622337**

Analyte	MB Result	MB Qualifier	RL	EDL	Unit	D	Prepared	Analyzed	Dil Fac
2,3,7,8-TCDD	ND		10	0.27	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,7,8-PeCDD	ND		50	0.29	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,4,7,8-HxCDD	2.18	J q	50	0.19	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,6,7,8-HxCDD	0.968	J q	50	0.22	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,7,8,9-HxCDD	1.33	J q	50	0.18	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,4,6,7,8-HpCDD	2.22	J	50	0.13	pg/L		10/05/22 04:46	10/07/22 15:26	1
OCDD	5.72	J	100	0.51	pg/L		10/05/22 04:46	10/07/22 15:26	1
2,3,7,8-TCDF	ND		10	0.11	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,7,8-PeCDF	ND		50	0.13	pg/L		10/05/22 04:46	10/07/22 15:26	1
2,3,4,7,8-PeCDF	ND		50	0.13	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,4,7,8-HxCDF	0.817	J	50	0.17	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,6,7,8-HxCDF	0.831	J	50	0.18	pg/L		10/05/22 04:46	10/07/22 15:26	1
2,3,4,6,7,8-HxCDF	0.844	J q	50	0.18	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,7,8,9-HxCDF	1.56	J q	50	0.19	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,4,6,7,8-HpCDF	2.28	J q	50	0.32	pg/L		10/05/22 04:46	10/07/22 15:26	1
1,2,3,4,7,8,9-HpCDF	2.14	J	50	0.35	pg/L		10/05/22 04:46	10/07/22 15:26	1
OCDF	2.65	J q	100	0.48	pg/L		10/05/22 04:46	10/07/22 15:26	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C-2,3,7,8-TCDD	*59*		*25 - 164*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,7,8-PeCDD	*75*		*25 - 181*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,6,7,8-HxCDD	*67*		*28 - 130*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,4,6,7,8-HpCDD	*76*		*23 - 140*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-OCDD	*62*		*17 - 157*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-2,3,7,8-TCDF	*48*		*24 - 169*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,7,8-PeCDF	*58*		*24 - 185*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,4,7,8-HxCDF	*64*		*26 - 152*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,4,6,7,8-HpCDF	*57*		*28 - 143*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,7,8,9-HxCDF	*57*		*29 - 147*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-OCDF	*57*		*17 - 157*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,4,7,8-HxCDD	*76*		*32 - 141*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,6,7,8-HxCDF	*64*		*26 - 123*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-2,3,4,7,8-PeCDF	*59*		*21 - 178*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-2,3,4,6,7,8-HxCDF	*61*		*28 - 136*	*10/05/22 04:46*	*10/07/22 15:26*	*1*
13C-1,2,3,4,7,8,9-HpCDF	*63*		*26 - 138*	*10/05/22 04:46*	*10/07/22 15:26*	*1*

Lab Sample ID: LCS 320-622337/2-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 623051 **Prep Batch: 622337**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,3,7,8-TCDD	200	178		pg/L		89	67 - 158
1,2,3,7,8-PeCDD	1000	840		pg/L		84	70 - 142
1,2,3,4,7,8-HxCDD	1000	833		pg/L		83	70 - 164
1,2,3,6,7,8-HxCDD	1000	969		pg/L		97	76 - 134
1,2,3,7,8,9-HxCDD	1000	872		pg/L		87	64 - 162
1,2,3,4,6,7,8-HpCDD	1000	859		pg/L		86	70 - 140
OCDD	2000	1960		pg/L		98	78 - 144
2,3,7,8-TCDF	200	215		pg/L		108	75 - 158

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCS 320-622337/2-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 623051 **Prep Batch: 622337**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,2,3,7,8-PeCDF			1000	802		pg/L		80	80 - 134		
2,3,4,7,8-PeCDF			1000	796		pg/L		80	68 - 160		
1,2,3,4,7,8-HxCDF			1000	883		pg/L		88	72 - 134		
1,2,3,6,7,8-HxCDF			1000	910		pg/L		91	84 - 130		
2,3,4,6,7,8-HxCDF			1000	913		pg/L		91	70 - 156		
1,2,3,7,8,9-HxCDF			1000	904		pg/L		90	78 - 130		
1,2,3,4,6,7,8-HpCDF			1000	1000		pg/L		100	82 - 122		
1,2,3,4,7,8,9-HpCDF			1000	874		pg/L		87	78 - 138		
OCDF			2000	1900		pg/L		95	63 - 170		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*58*		*20 - 175*
13C-1,2,3,7,8-PeCDD	*64*		*21 - 227*
13C-1,2,3,6,7,8-HxCDD	*54*		*25 - 163*
13C-1,2,3,4,6,7,8-HpCDD	*60*		*26 - 166*
13C-OCDD	*50*		*13 - 199*
13C-2,3,7,8-TCDF	*46*		*22 - 152*
13C-1,2,3,7,8-PeCDF	*52*		*21 - 192*
13C-1,2,3,4,7,8-HxCDF	*50*		*19 - 202*
13C-1,2,3,4,6,7,8-HpCDF	*46*		*21 - 158*
13C-1,2,3,7,8,9-HxCDF	*47*		*17 - 205*
13C-OCDF	*45*		*13 - 199*
13C-1,2,3,4,7,8-HxCDD	*58*		*21 - 193*
13C-1,2,3,6,7,8-HxCDF	*51*		*21 - 159*
13C-2,3,4,7,8-PeCDF	*55*		*13 - 328*
13C-2,3,4,6,7,8-HxCDF	*50*		*22 - 176*
13C-1,2,3,4,7,8,9-HpCDF	*50*		*20 - 186*

Lab Sample ID: LCSD 320-622337/3-A **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 623051 **Prep Batch: 622337**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,3,7,8-TCDD			200	182		pg/L		91	67 - 158	2	50
1,2,3,7,8-PeCDD			1000	836		pg/L		84	70 - 142	0	50
1,2,3,4,7,8-HxCDD			1000	831		pg/L		83	70 - 164	0	50
1,2,3,6,7,8-HxCDD			1000	989		pg/L		99	76 - 134	2	50
1,2,3,7,8,9-HxCDD			1000	875		pg/L		88	64 - 162	0	50
1,2,3,4,6,7,8-HpCDD			1000	873		pg/L		87	70 - 140	2	50
OCDD			2000	1960		pg/L		98	78 - 144	0	50
2,3,7,8-TCDF			200	221		pg/L		111	75 - 158	3	50
1,2,3,7,8-PeCDF			1000	830		pg/L		83	80 - 134	3	50
2,3,4,7,8-PeCDF			1000	804		pg/L		80	68 - 160	1	50
1,2,3,4,7,8-HxCDF			1000	901		pg/L		90	72 - 134	2	50
1,2,3,6,7,8-HxCDF			1000	914		pg/L		91	84 - 130	0	50
2,3,4,6,7,8-HxCDF			1000	939		pg/L		94	70 - 156	3	50
1,2,3,7,8,9-HxCDF			1000	935		pg/L		94	78 - 130	3	50
1,2,3,4,6,7,8-HpCDF			1000	1000		pg/L		100	82 - 122	0	50
1,2,3,4,7,8,9-HpCDF			1000	889		pg/L		89	78 - 138	2	50

Method: 1613B - Dioxins and Furans (HRGC/HRMS) (Continued)

Lab Sample ID: LCSD 320-622337/3-A **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 623051 **Prep Batch: 622337**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
OCDF			2000	1880		pg/L		94	63 - 170	1	50

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C-2,3,7,8-TCDD	*68*		*20 - 175*
13C-1,2,3,7,8-PeCDD	*84*		*21 - 227*
13C-1,2,3,6,7,8-HxCDD	*69*		*25 - 163*
13C-1,2,3,4,6,7,8-HpCDD	*80*		*26 - 166*
13C-OCDD	*70*		*13 - 199*
13C-2,3,7,8-TCDF	*54*		*22 - 152*
13C-1,2,3,7,8-PeCDF	*67*		*21 - 192*
13C-1,2,3,4,7,8-HxCDF	*67*		*19 - 202*
13C-1,2,3,4,6,7,8-HpCDF	*62*		*21 - 158*
13C-1,2,3,7,8,9-HxCDF	*60*		*17 - 205*
13C-OCDF	*65*		*13 - 199*
13C-1,2,3,4,7,8-HxCDD	*78*		*21 - 193*
13C-1,2,3,6,7,8-HxCDF	*66*		*21 - 159*
13C-2,3,4,7,8-PeCDF	*69*		*13 - 328*
13C-2,3,4,6,7,8-HxCDF	*65*		*22 - 176*
13C-1,2,3,4,7,8,9-HpCDF	*69*		*20 - 186*

Specialty Organics

Prep Batch: 622337

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-118426-1	SYSTEM01-09299022	Total/NA	Water	1613B	
580-118426-2	SYSTEM02-09292022	Total/NA	Water	1613B	
580-118426-3	SP-FD	Total/NA	Water	1613B	
MB 320-622337/1-A	Method Blank	Total/NA	Water	1613B	
LCS 320-622337/2-A	Lab Control Sample	Total/NA	Water	1613B	
LCSD 320-622337/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	

Analysis Batch: 623051

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
580-118426-1	SYSTEM01-09299022	Total/NA	Water	1613B	622337
580-118426-2	SYSTEM02-09292022	Total/NA	Water	1613B	622337
580-118426-3	SP-FD	Total/NA	Water	1613B	622337
MB 320-622337/1-A	Method Blank	Total/NA	Water	1613B	622337
LCS 320-622337/2-A	Lab Control Sample	Total/NA	Water	1613B	622337
LCSD 320-622337/3-A	Lab Control Sample Dup	Total/NA	Water	1613B	622337

Lab Chronicle

Client: Jacobs Engineering Group, Inc. Job ID: 580-118426-1
Project/Site: Northwest Pipe Company stormwater 2022

Client Sample ID: SYSTEM01-09299022 Lab Sample ID: 580-118426-1

Date Collected: 09/29/22 10:33 **Matrix: Water**
Date Received: 09/30/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	1613B			622337	FC	EET SAC	10/05/22 04:46
Total/NA	Analysis	1613B		1	623051	GRB	EET SAC	10/07/22 18:37

Client Sample ID: SYSTEM02-09292022 Lab Sample ID: 580-118426-2

Date Collected: 09/29/22 10:57 **Matrix: Water**
Date Received: 09/30/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	1613B			622337	FC	EET SAC	10/05/22 04:46
Total/NA	Analysis	1613B		1	623051	GRB	EET SAC	10/07/22 19:25

Client Sample ID: SP-FD Lab Sample ID: 580-118426-3

Date Collected: 09/29/22 12:00 **Matrix: Water**
Date Received: 09/30/22 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	1613B			622337	FC	EET SAC	10/05/22 04:46
Total/NA	Analysis	1613B		1	623051	GRB	EET SAC	10/07/22 20:12

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Jacobs Engineering Group, Inc. Job ID: 580-118426-1
Project/Site: Northwest Pipe Company stormwater 2022

Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Oregon	NELAP	4040	01-29-23

Method Summary

Client: Jacobs Engineering Group, Inc. Job ID: 580-118426-1
Project/Site: Northwest Pipe Company stormwater 2022

Method	Method Description	Protocol	Laboratory
1613B	Dioxins and Furans (HRGC/HRMS)	EPA	EET SAC
1613B	Separatory Funnel (L/L) Extraction with Soxhlet Extraction of Dioxin and Furans	EPA	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Jacobs Engineering Group, Inc. Job ID: 580-118426-1
Project/Site: Northwest Pipe Company stormwater 2022

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-118426-1	SYSTEM01-09299022	Water	09/29/22 10:33	09/30/22 10:00
580-118426-2	SYSTEM02-09292022	Water	09/29/22 10:57	09/30/22 10:00
580-118426-3	SP-FD	Water	09/29/22 12:00	09/30/22 10:00

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Instrument ID: DFS 1 Analysis Batch Number: 611807

Lab Sample ID: WDM 320-611807/1 Client Sample ID:

Date Analyzed: 08/24/22 12:50 Lab File ID: 24au22adfs1_2.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,4,6,7,9-HpCDD	39.76	Peak assignment corrected	U4PJ	08/25/22 07:48

Lab Sample ID: IC 320-611807/3 Client Sample ID:

Date Analyzed: 08/24/22 14:25 Lab File ID: 24au22adfs1_4.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C-1,2,3,4-TCDD	23.56	Peak assignment corrected	U4PJ	08/25/22 07:49

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Instrument ID: DFS 1 Analysis Batch Number: 623051

Lab Sample ID: CCV 320-623051/1 Client Sample ID:

Date Analyzed: 10/07/22 13:00 Lab File ID: 07oc22dfs1_2.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,7,8,9-HxCDF	37.66	Incomplete Integration	U4PJ	10/07/22 13:49

Lab Sample ID: WDM 320-623051/2 Client Sample ID:

Date Analyzed: 10/07/22 13:51 Lab File ID: 07oc22dfs1_3.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,3,6,8-TCDF	17.39	Baseline	U4PJ	10/07/22 14:47
1,3,6,8-TCDD	19.21	Baseline	U4PJ	10/07/22 14:46
2,3,4,7-TCDF	22.22	Baseline	U4PJ	10/07/22 14:47
2,3,7,8-TCDF	22.22	Baseline	U4PJ	10/07/22 14:47
1,2,3,7-TCDD	23.40	Baseline	U4PJ	10/07/22 14:47
2,3,7,8-TCDD	23.59	Baseline	U4PJ	10/07/22 14:46
1,2,3,9-TCDF	23.74	Baseline	U4PJ	10/07/22 14:47
1,2,3,9-TCDD	23.81	Baseline	U4PJ	10/07/22 14:47
1,2,8,9-TCDF	24.95	Baseline	U4PJ	10/07/22 14:48
1,2,8,9-TCDD	25.00	Baseline	U4PJ	10/07/22 14:47
1,3,4,6,8-PeCDF	25.36	Baseline	U4PJ	10/07/22 14:48
1,2,4,7,9-PeCDD	27.59	Baseline	U4PJ	10/07/22 14:48
1,2,3,8,9-PeCDF	32.78	Baseline	U4PJ	10/07/22 14:48
1,2,3,4,6,8-HxCDF	34.54	Poor chromatography	U4PJ	10/07/22 14:46
1,2,3,4,6,7,9-HpCDD	39.62	Poor chromatography	U4PJ	10/07/22 14:46

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Instrument ID: DFS 1 Analysis Batch Number: 623051

Lab Sample ID: MB 320-622337/1-A Client Sample ID:

Date Analyzed: 10/07/22 15:26 Lab File ID: 07oc22dfs1_5.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,7,8-PeCDF		Invalid Compound ID	dadunj	10/11/22 08:43
2,3,7,8-TCDF		Invalid Compound ID	dadunj	10/11/22 08:43
2,3,4,6,7,8-HxCDF	36.86	Baseline	dadunj	10/11/22 08:44
1,2,3,4,7,8-HxCDD	37.04	Baseline	dadunj	10/11/22 08:47
1,2,3,6,7,8-HxCDD	37.14	Invalid Compound ID	dadunj	10/11/22 08:47
1,2,3,7,8,9-HxCDD	37.47	Baseline	dadunj	10/11/22 08:47
1,2,3,7,8,9-HxCDF	37.67	Baseline	dadunj	10/11/22 08:46
1,2,3,4,6,7,8-HpCDD	40.20	Baseline	dadunj	10/11/22 08:47
1,2,3,4,7,8,9-HpCDF	40.53	Baseline	dadunj	10/11/22 08:47

Lab Sample ID: LCS 320-622337/2-A Client Sample ID:

Date Analyzed: 10/07/22 16:13 Lab File ID: 07oc22dfs1_6.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,7,8-PeCDD	31.47	Baseline	dadunj	10/11/22 08:50
1,2,3,7,8,9-HxCDF	37.68	Baseline	dadunj	10/11/22 08:51

Lab Sample ID: LCSD 320-622337/3-A Client Sample ID:

Date Analyzed: 10/07/22 17:01 Lab File ID: 07oc22dfs1_7.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDF	22.15	Baseline	dadunj	10/11/22 08:53
1,2,3,7,8,9-HxCDF	37.66	Baseline	dadunj	10/11/22 08:54

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Instrument ID: DFS 1 Analysis Batch Number: 623051

Lab Sample ID: 580-118426-1 Client Sample ID: SYSTEM01-09299022

Date Analyzed: 10/07/22 18:37 Lab File ID: 07oc22dfs1_9.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,7,8-PeCDD		Invalid Compound ID	dadunj	10/11/22 08:57
2,3,7,8-TCDF		Invalid Compound ID	dadunj	10/11/22 08:56
1,2,3,7,8-PeCDF	28.91	Baseline	dadunj	10/11/22 08:56
2,3,4,7,8-PeCDF	30.59	Baseline	dadunj	10/11/22 08:57
1,2,3,4,7,8-HxCDF	36.00	Split Peak	dadunj	10/11/22 08:58
1,2,3,6,7,8-HxCDF	36.13	Split Peak	dadunj	10/11/22 08:57
2,3,4,6,7,8-HxCDF	36.85	Baseline	dadunj	10/11/22 08:59
1,2,3,7,8,9-HxCDD	37.45	Baseline	dadunj	10/11/22 09:00
1,2,3,7,8,9-HxCDF	37.66	Baseline	dadunj	10/11/22 08:59

Lab Sample ID: 580-118426-2 Client Sample ID: SYSTEM02-09292022

Date Analyzed: 10/07/22 19:25 Lab File ID: 07oc22dfs1_10.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
2,3,7,8-TCDD		Invalid Compound ID	dadunj	10/11/22 09:08
2,3,7,8-TCDF		Invalid Compound ID	dadunj	10/11/22 09:08
2,3,4,7,8-PeCDF	30.54	Baseline	dadunj	10/11/22 09:08
1,2,3,7,8-PeCDD	31.44	Baseline	dadunj	10/11/22 09:08
2,3,4,6,7,8-HxCDF	36.85	Baseline	dadunj	10/11/22 09:09
1,2,3,6,7,8-HxCDD	37.12	Baseline	dadunj	10/11/22 09:09
1,2,3,7,8,9-HxCDF	37.65	Baseline	dadunj	10/11/22 09:09
1,2,3,4,7,8,9-HpCDF	40.52	Split Peak	dadunj	10/11/22 09:10

DIOXIN MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Instrument ID: DFS 1 Analysis Batch Number: 623051

Lab Sample ID: 580-118426-3 Client Sample ID: SP-FD

Date Analyzed: 10/07/22 20:12 Lab File ID: 07oc22dfs1_11.d GC Column: DB-5 ID: 0.32(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
1,2,3,7,8-PeCDD		Invalid Compound ID	dadunj	10/11/22 09:17
2,3,7,8-TCDF		Invalid Compound ID	dadunj	10/11/22 09:14
1,2,3,7,8-PeCDF	28.90	Baseline	dadunj	10/11/22 09:15
2,3,4,7,8-PeCDF	30.55	Baseline	dadunj	10/11/22 09:15
1,2,3,4,7,8-HxCDF	35.98	Split Peak	dadunj	10/11/22 09:17
1,2,3,6,7,8-HxCDF	36.14	Split Peak	dadunj	10/11/22 09:18
1,2,3,7,8,9-HxCDD	37.47	Baseline	dadunj	10/11/22 09:19
1,2,3,7,8,9-HxCDF	37.65	Baseline	dadunj	10/11/22 09:18
1,2,3,4,6,7,8-HpCDD	40.19	Baseline	dadunj	10/11/22 09:20
OCDD	42.76	Split Peak	dadunj	10/11/22 09:20

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
HRDXNCP_00045	05/12/23	05/13/22	C14, Lot STBJ7343	6 mL	HRDXNCP_00043	1.2 mL	1,2,3,4,6,7,9-HpCDD	40 pg/uL
							1,2,3,4,6,7-HxCDD	40 pg/uL
							1,2,3,4,6,8-HxCDF	40 pg/uL
							1,2,3,4,8,9-HxCDF	40 pg/uL
							1,2,3,7-TCDD	40 pg/uL
							1,2,3,8,9-PeCDD	40 pg/uL
							1,2,3,8,9-PeCDF	40 pg/uL
							1,2,3,9-TCDD	40 pg/uL
							1,2,3,9-TCDF	40 pg/uL
							1,2,4,6,7,9-HxCDD	40 pg/uL
							1,2,4,7,9-PeCDD	40 pg/uL
							1,2,8,9-TCDD	40 pg/uL
							1,2,8,9-TCDF	40 pg/uL
							1,3,4,6,8-PeCDF	40 pg/uL
							1,3,6,8-TCDD	40 pg/uL
							1,3,6,8-TCDF	40 pg/uL
							13C-2,3,7,8-TCDD	40 pg/uL
							13C-2,3,7,8-TCDF	40 pg/uL
							2,3,4,7-TCDF	40 pg/uL
							2,3,7,8-TCDD	40 pg/uL
							2,3,7,8-TCDF	40 pg/uL
.HRDXNCP_00043	03/31/25		CIL, Lot ER03111502		(Purchased Reagent)		1,2,3,4,6,7,9-HpCDD	200 ng/mL
							1,2,3,4,6,7-HxCDD	200 ng/mL
							1,2,3,4,6,8-HxCDF	200 ng/mL
							1,2,3,4,8,9-HxCDF	200 ng/mL
							1,2,3,7-TCDD	200 ng/mL
							1,2,3,8,9-PeCDD	200 ng/mL
							1,2,3,8,9-PeCDF	200 ng/mL
							1,2,3,9-TCDD	200 ng/mL
							1,2,3,9-TCDF	200 ng/mL
							1,2,4,6,7,9-HxCDD	200 ng/mL
							1,2,4,7,9-PeCDD	200 ng/mL
							1,2,8,9-TCDD	200 ng/mL
							1,2,8,9-TCDF	200 ng/mL
							1,3,4,6,8-PeCDF	200 ng/mL
							1,3,6,8-TCDD	200 ng/mL
							1,3,6,8-TCDF	200 ng/mL
							13C-2,3,7,8-TCDD	200 ng/mL
							13C-2,3,7,8-TCDF	200 ng/mL
							2,3,4,7-TCDF	200 ng/mL
							2,3,7,8-TCDD	200 ng/mL
							2,3,7,8-TCDF	200 ng/mL
HRDXNIC_00051	01/21/23	04/29/22	C14, Lot STBK2282	0.5 mL	HRDXNIDA_00465	250 uL	13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C-1,2,3,7,8-PeCDD	100 ng/mL
					HRDXNIDA_00504	125 uL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIDA_00509	250 uL	13C-OCDD	200 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
					HRDXNIDA_00510	250 uL	13C-OCDF	200 ng/mL
					HRDXNTA_00143	500 uL	1,2,3,4,6,7,8-HpCDD	200 ng/mL
							1,2,3,4,6,7,8-HpCDF	200 ng/mL
							1,2,3,4,7,8,9-HpCDF	200 ng/mL
							1,2,3,4,7,8-HxCDD	200 ng/mL
							1,2,3,4,7,8-HxCDF	200 ng/mL
							1,2,3,6,7,8-HxCDD	200 ng/mL
							1,2,3,6,7,8-HxCDF	200 ng/mL
							1,2,3,7,8,9-HxCDD	200 ng/mL
							1,2,3,7,8,9-HxCDF	200 ng/mL
							1,2,3,7,8-PeCDD	200 ng/mL
							1,2,3,7,8-PeCDF	200 ng/mL
							2,3,4,6,7,8-HxCDF	200 ng/mL
							2,3,4,7,8-PeCDF	200 ng/mL
							2,3,7,8-TCDD	40 ng/mL
							2,3,7,8-TCDF	40 ng/mL
							OCDD	400 ng/mL
							OCDF	400 ng/mL
.HRDXNIDA_00465	08/31/24	01/19/21	Isooctane, Lot B00S6184	250 mL	HRDXNIDA_00457	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00458	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00459	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00460	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00461	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00462	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
..HRDXNIDA_00457	04/30/26		CIL, Lot ER02241603		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00458	01/31/30		CIL, Lot ER01062015		(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00459	12/31/30		CIL, Lot ER01062016		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00460	01/31/29		CIL, Lot ER102111904		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00461	10/31/26		CIL, Lot ER09271601		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00462	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
.HRDXNIDA_00504	05/31/26	02/02/22	Isooctane, Lot P2OH747	100 mL	HRDXNIDA_00490	800 uL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00491	800 uL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00493	800 uL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00494	800 uL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00490	05/31/26		CIL, Lot ER04251601		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00491	06/30/26		CIL, Lot ER04211601		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00493	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00494	07/31/27		CIL, Lot ER04211701		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.HRDXNIDA_00509	11/27/24	02/04/22	Isooctane, Lot P2OH747	25 mL	HRDXNIDA_00483	2.5 mL	13C-OCDD	0.4 ug/mL
							13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
							13C-2,3,7,8-TCDF	0.2 ug/mL
							13C-2,3,7,8-TCDD	0.2 ug/mL
							13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
..HRDXNIDA_00483	11/30/24	08/21/21	Acetone, Lot 0000274597	25 mL	HRDXNIDA_00398	10 mL	13C-OCDD	4 ug/mL
					HRDXNIDA_00475	1 mL	13C-1,2,3,6,7,8-HxCDD	2 ug/mL
					HRDXNIDA_00476	1 mL	13C-2,3,7,8-TCDF	2 ug/mL
					HRDXNIDA_00477	1 mL	13C-2,3,7,8-TCDD	2 ug/mL
					HRDXNIDA_00478	1 mL	13C-1,2,3,4,6,7,8-HpCDF	2 ug/mL
...HRDXNIDA_00398	04/30/27	CIL, Lot ER04051701			(Purchased Reagent)		13C-OCDD	10 ug/mL
...HRDXNIDA_00475	10/31/30	CIL, Lot ER10152004			(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
...HRDXNIDA_00476	09/30/26	CIL, Lot ER09131601			(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
...HRDXNIDA_00477	03/31/26	CIL, Lot ER03031601			(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
...HRDXNIDA_00478	11/30/24	CIL, Lot ER08101404			(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
.HRDXNIDA_00510	07/31/31	02/04/22	Isooctane, Lot P2OH747	25 mL	HRDXNIDA_00499	2.5 mL	13C-OCDF	0.4 ug/mL
..HRDXNIDA_00499	07/31/31	01/11/22	Isooctane, Lot B0771850	25 mL	HRDXNIDA_00496	2 mL	13C-OCDF	4 ug/mL
...HRDXNIDA_00496	07/31/31	CIL, Lot ER05072101			(Purchased Reagent)		13C-OCDF	50 ug/mL
.HRDXNTA_00143	11/17/27	Wellington Labs, Lot 13PAR1020			(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	200 ng/mL
							1,2,3,4,6,7,8-HpCDF	200 ng/mL
							1,2,3,4,7,8,9-HpCDF	200 ng/mL
							1,2,3,4,7,8-HxCDD	200 ng/mL
							1,2,3,4,7,8-HxCDF	200 ng/mL
							1,2,3,6,7,8-HxCDD	200 ng/mL
							1,2,3,6,7,8-HxCDF	200 ng/mL
							1,2,3,7,8,9-HxCDD	200 ng/mL
							1,2,3,7,8,9-HxCDF	200 ng/mL
							1,2,3,7,8-PeCDD	200 ng/mL
							1,2,3,7,8-PeCDF	200 ng/mL
							2,3,4,6,7,8-HxCDF	200 ng/mL
							2,3,4,7,8-PeCDF	200 ng/mL
							2,3,7,8-TCDD	40 ng/mL
							2,3,7,8-TCDF	40 ng/mL
							OCDD	400 ng/mL
							OCDF	400 ng/mL
HRDXNIDA_00534	09/09/23	09/09/22	Acetone, Lot 220977	500 mL	HRDXNIDA_00465	5 mL	13C-1,2,3,6,7,8-HxCDF	2 pg/uL
							13C-2,3,4,6,7,8-HxCDF	2 pg/uL
							13C-1,2,3,7,8,9-HxCDF	2 pg/uL
							13C-1,2,3,7,8-PeCDF	2 pg/uL
							13C-1,2,3,4,6,7,8-HpCDD	2 pg/uL
							13C-1,2,3,7,8-PeCDD	2 pg/uL
					HRDXNIDA_00499	500 uL	13C-OCDF	4 pg/uL
					HRDXNIDA_00504	2.5 mL	13C-1,2,3,4,7,8,9-HpCDF	2 pg/uL
							13C-1,2,3,4,7,8-HxCDD	2 pg/uL
							13C-2,3,4,7,8-PeCDF	2 pg/uL
							13C-1,2,3,4,7,8-HxCDF	2 pg/uL
					HRDXNIDA_00523	0.5 mL	13C-OCDD	4 pg/uL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C-1,2,3,6,7,8-HxCDD	2 pg/uL
							13C-2,3,7,8-TCDF	2 pg/uL
							13C-2,3,7,8-TCDD	2 pg/uL
							13C-1,2,3,4,6,7,8-HpCDF	2 pg/uL
.HRDXNIDA_00465	08/31/24	01/19/21	Isooctane, Lot B00S6184	250 mL	HRDXNIDA_00457	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00458	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00459	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00460	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00461	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00462	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
..HRDXNIDA_00457	04/30/26		CIL, Lot ER02241603		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00458	01/31/30		CIL, Lot ER01062015		(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00459	12/31/30		CIL, Lot ER01062016		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00460	01/31/29		CIL, Lot ER102111904		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00461	10/31/26		CIL, Lot ER09271601		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00462	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
.HRDXNIDA_00499	07/31/31	01/11/22	Isooctane, Lot B0771850	25 mL	HRDXNIDA_00496	2 mL	13C-OCDF	4 ug/mL
..HRDXNIDA_00496	07/31/31		CIL, Lot ER05072101		(Purchased Reagent)		13C-OCDF	50 ug/mL
.HRDXNIDA_00504	05/31/26	02/02/22	Isooctane, Lot P2OH747	100 mL	HRDXNIDA_00490	800 uL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00491	800 uL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00493	800 uL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00494	800 uL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00490	05/31/26		CIL, Lot ER04251601		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00491	06/30/26		CIL, Lot ER04211601		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00493	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00494	07/31/27		CIL, Lot ER04211701		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIDA_00523	11/30/24	05/13/22	Acetone, Lot 216543	25 mL	HRDXNIDA_00398	2 mL	13C-OCDD	4 ug/mL
					HRDXNIDA_00515	8 mL	13C-OCDD	4 ug/mL
					HRDXNIDA_00516	1 mL	13C-1,2,3,6,7,8-HxCDD	2 ug/mL
					HRDXNIDA_00517	1 mL	13C-2,3,7,8-TCDF	2 ug/mL
					HRDXNIDA_00518	1 mL	13C-2,3,7,8-TCDD	2 ug/mL
					HRDXNIDA_00519	1 mL	13C-1,2,3,4,6,7,8-HpCDF	2 ug/mL
..HRDXNIDA_00398	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
..HRDXNIDA_00515	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
..HRDXNIDA_00516	10/31/30		CIL, Lot ER10152004		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00517	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
..HRDXNIDA_00518	05/31/31		CIL, Lot ER05042105		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
..HRDXNIDA_00519	11/30/24		CIL, Lot ER08101404		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
HRDXNIS_00146	04/22/23	04/22/22	C14, Lot STBK0773525	50 mL	HRDXNIS_00143	1 mL	13C-1,2,3,4-TCDD	0.1 ug/mL
							13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
.HRDXNIS_00143	09/30/26	04/18/22	Isooctane, Lot B0773525	10 mL	HRDXNIS_00141	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
					HRDXNIS_00142	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
..HRDXNIS_00141	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL
..HRDXNIS_00142	09/30/26		CIL, Lot ER08221601		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
HRDXNL2_00036	01/10/23	04/29/22	C14, Lot STBK2282	1 mL	HRDXNIDA_00465	500 uL	13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
					HRDXNIDA_00504	250 uL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIDA_00509	500 uL	13C-OCDD	200 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
					HRDXNIDA_00510	500 uL	13C-OCDF	200 ng/mL
					HRDXNIS_00145	1000 uL	13C-1,2,3,4-TCDD	100 ng/mL
							13C-1,2,3,7,8,9-HxCDD	100 ng/mL
					HRDXNSU_00266	625 uL	37Cl4-2,3,7,8-TCDD	0.5 ng/mL
					HRDXNTA_00153	125 uL	1,2,3,4,6,7,8-HpCDD	2.5 ng/mL
							1,2,3,4,6,7,8-HpCDF	2.5 ng/mL
							1,2,3,4,7,8,9-HpCDF	2.5 ng/mL
							1,2,3,4,7,8-HxCDD	2.5 ng/mL
							1,2,3,4,7,8-HxCDF	2.5 ng/mL
							1,2,3,6,7,8-HxCDD	2.5 ng/mL
							1,2,3,6,7,8-HxCDF	2.5 ng/mL
							1,2,3,7,8,9-HxCDD	2.5 ng/mL
							1,2,3,7,8,9-HxCDF	2.5 ng/mL
							1,2,3,7,8-PeCDD	2.5 ng/mL
							1,2,3,7,8-PeCDF	2.5 ng/mL
							2,3,4,6,7,8-HxCDF	2.5 ng/mL
							2,3,4,7,8-PeCDF	2.5 ng/mL
							2,3,7,8-TCDD	0.5 ng/mL
							2,3,7,8-TCDF	0.5 ng/mL
							OCDD	5 ng/mL
							OCDF	5 ng/mL
.HRDXNIDA_00465	08/31/24	01/19/21	Isooctane, Lot B00S6184	250 mL	HRDXNIDA_00457	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00458	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00459	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00460	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00461	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00462	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
..HRDXNIDA_00457	04/30/26		CIL, Lot ER02241603		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00458	01/31/30		CIL, Lot ER01062015		(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00459	12/31/30		CIL, Lot ER01062016		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00460	01/31/29		CIL, Lot ER102111904		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00461	10/31/26		CIL, Lot ER09271601		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00462	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
.HRDXNIDA_00504	05/31/26	02/02/22	Isooctane, Lot P2OH747	100 mL	HRDXNIDA_00490	800 uL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00491	800 uL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00493	800 uL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					HRDXNIDA_00494	800 uL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00490	05/31/26		CIL, Lot ER04251601		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00491	06/30/26		CIL, Lot ER04211601		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00493	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00494	07/31/27		CIL, Lot ER04211701		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIDA_00509	11/27/24	02/04/22	Isooctane, Lot P2OH747	25 mL	HRDXNIDA_00483	2.5 mL	13C-OCDD	0.4 ug/mL
							13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
							13C-2,3,7,8-TCDF	0.2 ug/mL
							13C-2,3,7,8-TCDD	0.2 ug/mL
							13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
..HRDXNIDA_00483	11/30/24	08/21/21	Acetone, Lot 0000274597	25 mL	HRDXNIDA_00398	10 mL	13C-OCDD	4 ug/mL
					HRDXNIDA_00475	1 mL	13C-1,2,3,6,7,8-HxCDD	2 ug/mL
					HRDXNIDA_00476	1 mL	13C-2,3,7,8-TCDF	2 ug/mL
					HRDXNIDA_00477	1 mL	13C-2,3,7,8-TCDD	2 ug/mL
					HRDXNIDA_00478	1 mL	13C-1,2,3,4,6,7,8-HpCDF	2 ug/mL
...HRDXNIDA_00398	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
...HRDXNIDA_00475	10/31/30		CIL, Lot ER10152004		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
...HRDXNIDA_00476	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
...HRDXNIDA_00477	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
...HRDXNIDA_00478	11/30/24		CIL, Lot ER08101404		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
.HRDXNIDA_00510	07/31/31	02/04/22	Isooctane, Lot P2OH747	25 mL	HRDXNIDA_00499	2.5 mL	13C-OCDF	0.4 ug/mL
..HRDXNIDA_00499	07/31/31	01/11/22	Isooctane, Lot B0771850	25 mL	HRDXNIDA_00496	2 mL	13C-OCDF	4 ug/mL
...HRDXNIDA_00496	07/31/31		CIL, Lot ER05072101		(Purchased Reagent)		13C-OCDF	50 ug/mL
.HRDXNIS_00145	04/18/23	04/18/22	C14, Lot STBK0773525	50 mL	HRDXNIS_00143	1 mL	13C-1,2,3,4-TCDD	0.1 ug/mL
							13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
..HRDXNIS_00143	09/30/26	04/18/22	Isooctane, Lot B0773525	10 mL	HRDXNIS_00141	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
					HRDXNIS_00142	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
...HRDXNIS_00141	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL
...HRDXNIS_00142	09/30/26		CIL, Lot ER08221601		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
.HRDXNSU_00266	04/05/23	04/05/22	Isooctane, Lot B0771850	1000 mL	HRDXNSU_00233	0.16 mL	37Cl4-2,3,7,8-TCDD	0.8 pg/uL
..HRDXNSU_00233	08/01/24	01/22/20	Isooctane, Lot 0000221197	10 mL	HRDXNSU_00201	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
...HRDXNSU_00201	08/01/24		WELLINGTON LABS, Lot MCDD0480505		(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
.HRDXNTA_00153	04/29/23	04/29/22	Acetone, Lot 00000274597	25 mL	HRDXNTA_00134	0.25 mL	1,2,3,4,6,7,8-HpCDD	20 ng/mL
							1,2,3,4,6,7,8-HpCDF	20 ng/mL
							1,2,3,4,7,8,9-HpCDF	20 ng/mL
							1,2,3,4,7,8-HxCDD	20 ng/mL
							1,2,3,4,7,8-HxCDF	20 ng/mL
							1,2,3,6,7,8-HxCDD	20 ng/mL
							1,2,3,6,7,8-HxCDF	20 ng/mL
							1,2,3,7,8,9-HxCDD	20 ng/mL
							1,2,3,7,8,9-HxCDF	20 ng/mL
							1,2,3,7,8-PeCDD	20 ng/mL
							1,2,3,7,8-PeCDF	20 ng/mL
							2,3,4,6,7,8-HxCDF	20 ng/mL
							2,3,4,7,8-PeCDF	20 ng/mL
							2,3,7,8-TCDD	4 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							2,3,7,8-TCDF	4 ng/mL
							OCDD	40 ng/mL
							OCDF	40 ng/mL
..HRDXNTA_00134	08/31/30		CIL, Lot ER09031903		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2000 ng/mL
							1,2,3,4,6,7,8-HpCDF	2000 ng/mL
							1,2,3,4,7,8,9-HpCDF	2000 ng/mL
							1,2,3,4,7,8-HxCDD	2000 ng/mL
							1,2,3,4,7,8-HxCDF	2000 ng/mL
							1,2,3,6,7,8-HxCDD	2000 ng/mL
							1,2,3,6,7,8-HxCDF	2000 ng/mL
							1,2,3,7,8,9-HxCDD	2000 ng/mL
							1,2,3,7,8,9-HxCDF	2000 ng/mL
							1,2,3,7,8-PeCDD	2000 ng/mL
							1,2,3,7,8-PeCDF	2000 ng/mL
							2,3,4,6,7,8-HxCDF	2000 ng/mL
							2,3,4,7,8-PeCDF	2000 ng/mL
							2,3,7,8-TCDD	400 ng/mL
							2,3,7,8-TCDF	400 ng/mL
							OCDD	4000 ng/mL
							OCDF	4000 ng/mL
HRDXNL3_00033	01/10/23	04/29/22	C14, Lot STBK2282	0.5 mL	HRDXNIDA_00465	250 uL	13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
					HRDXNIDA_00504	125 uL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIDA_00509	250 uL	13C-OCDD	200 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
					HRDXNIDA_00510	250 uL	13C-OCDF	200 ng/mL
					HRDXNIS_00145	500 uL	13C-1,2,3,4-TCDD	100 ng/mL
							13C-1,2,3,7,8,9-HxCDD	100 ng/mL
					HRDXNSU_00266	1250 uL	37Cl4-2,3,7,8-TCDD	2 ng/mL
					HRDXNTA_00153	250 uL	1,2,3,4,6,7,8-HpCDD	10 ng/mL
							1,2,3,4,6,7,8-HpCDF	10 ng/mL
							1,2,3,4,7,8,9-HpCDF	10 ng/mL
							1,2,3,4,7,8-HxCDD	10 ng/mL
							1,2,3,4,7,8-HxCDF	10 ng/mL
							1,2,3,6,7,8-HxCDD	10 ng/mL
							1,2,3,6,7,8-HxCDF	10 ng/mL
							1,2,3,7,8,9-HxCDD	10 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2,3,7,8,9-HxCDF	10 ng/mL
							1,2,3,7,8-PeCDD	10 ng/mL
							1,2,3,7,8-PeCDF	10 ng/mL
							2,3,4,6,7,8-HxCDF	10 ng/mL
							2,3,4,7,8-PeCDF	10 ng/mL
							2,3,7,8-TCDD	2 ng/mL
							2,3,7,8-TCDF	2 ng/mL
							OCDD	20 ng/mL
							OCDF	20 ng/mL
.HRDXNIDA_00465	08/31/24	01/19/21	Isooctane, Lot B00S6184	250 mL	HRDXNIDA_00457	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00458	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00459	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00460	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00461	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00462	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
..HRDXNIDA_00457	04/30/26		CIL, Lot ER02241603		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00458	01/31/30		CIL, Lot ER01062015		(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00459	12/31/30		CIL, Lot ER01062016		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00460	01/31/29		CIL, Lot ER102111904		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00461	10/31/26		CIL, Lot ER09271601		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00462	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
.HRDXNIDA_00504	05/31/26	02/02/22	Isooctane, Lot P2OH747	100 mL	HRDXNIDA_00490	800 uL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00491	800 uL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00493	800 uL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00494	800 uL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00490	05/31/26		CIL, Lot ER04251601		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00491	06/30/26		CIL, Lot ER04211601		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00493	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00494	07/31/27		CIL, Lot ER04211701		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIDA_00509	11/27/24	02/04/22	Isooctane, Lot P2OH747	25 mL	HRDXNIDA_00483	2.5 mL	13C-OCDD	0.4 ug/mL
							13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
							13C-2,3,7,8-TCDF	0.2 ug/mL
							13C-2,3,7,8-TCDD	0.2 ug/mL
							13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
..HRDXNIDA_00483	11/30/24	08/21/21	Acetone, Lot 0000274597	25 mL	HRDXNIDA_00398	10 mL	13C-OCDD	4 ug/mL
					HRDXNIDA_00475	1 mL	13C-1,2,3,6,7,8-HxCDD	2 ug/mL
					HRDXNIDA_00476	1 mL	13C-2,3,7,8-TCDF	2 ug/mL
					HRDXNIDA_00477	1 mL	13C-2,3,7,8-TCDD	2 ug/mL
					HRDXNIDA_00478	1 mL	13C-1,2,3,4,6,7,8-HpCDF	2 ug/mL
...HRDXNIDA_00398	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
...HRDXNIDA_00475	10/31/30		CIL, Lot ER10152004		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
...HRDXNIDA_00476	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
...HRDXNIDA_00477	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
...HRDXNIDA_00478	11/30/24		CIL, Lot ER08101404		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
.HRDXNIDA_00510	07/31/31	02/04/22	Isooctane, Lot P2OH747	25 mL	HRDXNIDA_00499	2.5 mL	13C-OCDF	0.4 ug/mL
..HRDXNIDA_00499	07/31/31	01/11/22	Isooctane, Lot B0771850	25 mL	HRDXNIDA_00496	2 mL	13C-OCDF	4 ug/mL
...HRDXNIDA_00496	07/31/31		CIL, Lot ER05072101		(Purchased Reagent)		13C-OCDF	50 ug/mL
.HRDXNIS_00145	04/18/23	04/18/22	C14, Lot STBK0773525	50 mL	HRDXNIS_00143	1 mL	13C-1,2,3,4-TCDD	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
..HRDXNIS_00143	09/30/26	04/18/22	Isooctane, Lot B0773525	10 mL	HRDXNIS_00141	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
					HRDXNIS_00142	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
...HRDXNIS_00141	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL
...HRDXNIS_00142	09/30/26		CIL, Lot ER08221601		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
.HRDXNSU_00266	04/05/23	04/05/22	Isooctane, Lot B0771850	1000 mL	HRDXNSU_00233	0.16 mL	37Cl4-2,3,7,8-TCDD	0.8 pg/uL
..HRDXNSU_00233	08/01/24	01/22/20	Isooctane, Lot 0000221197	10 mL	HRDXNSU_00201	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
...HRDXNSU_00201	08/01/24		WELLINGTON LABS, Lot MCDD0480505		(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
.HRDXNTA_00153	04/29/23	04/29/22	Acetone, Lot 00000274597	25 mL	HRDXNTA_00134	0.25 mL	1,2,3,4,6,7,8-HpCDD	20 ng/mL
							1,2,3,4,6,7,8-HpCDF	20 ng/mL
							1,2,3,4,7,8,9-HpCDF	20 ng/mL
							1,2,3,4,7,8-HxCDD	20 ng/mL
							1,2,3,4,7,8-HxCDF	20 ng/mL
							1,2,3,6,7,8-HxCDD	20 ng/mL
							1,2,3,6,7,8-HxCDF	20 ng/mL
							1,2,3,7,8,9-HxCDD	20 ng/mL
							1,2,3,7,8,9-HxCDF	20 ng/mL
							1,2,3,7,8-PeCDD	20 ng/mL
							1,2,3,7,8-PeCDF	20 ng/mL
							2,3,4,6,7,8-HxCDF	20 ng/mL
							2,3,4,7,8-PeCDF	20 ng/mL
							2,3,7,8-TCDD	4 ng/mL
							2,3,7,8-TCDF	4 ng/mL
							OCDD	40 ng/mL
							OCDF	40 ng/mL
..HRDXNTA_00134	08/31/30		CIL, Lot ER09031903		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2000 ng/mL
							1,2,3,4,6,7,8-HpCDF	2000 ng/mL
							1,2,3,4,7,8,9-HpCDF	2000 ng/mL
							1,2,3,4,7,8-HxCDD	2000 ng/mL
							1,2,3,4,7,8-HxCDF	2000 ng/mL
							1,2,3,6,7,8-HxCDD	2000 ng/mL
							1,2,3,6,7,8-HxCDF	2000 ng/mL
							1,2,3,7,8,9-HxCDD	2000 ng/mL
							1,2,3,7,8,9-HxCDF	2000 ng/mL
							1,2,3,7,8-PeCDD	2000 ng/mL
							1,2,3,7,8-PeCDF	2000 ng/mL
							2,3,4,6,7,8-HxCDF	2000 ng/mL
							2,3,4,7,8-PeCDF	2000 ng/mL
							2,3,7,8-TCDD	400 ng/mL
							2,3,7,8-TCDF	400 ng/mL
							OCDD	4000 ng/mL
							OCDF	4000 ng/mL
HRDXNL4_00109	01/10/23	04/29/22	C14, Lot STBK2282	1 mL	HRDXNIDA_00465	500 uL	13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
					HRDXNIDA_00504	250 uL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIDA_00509	500 uL	13C-OCDD	200 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
					HRDXNIDA_00510	500 uL	13C-OCDF	200 ng/mL
					HRDXNIS_00145	1000 uL	13C-1,2,3,4-TCDD	100 ng/mL
							13C-1,2,3,7,8,9-HxCDD	100 ng/mL
					HRDXNSU_00258	25 uL	37Cl4-2,3,7,8-TCDD	10 ng/mL
					HRDXNTA_00134	25 uL	1,2,3,4,6,7,8-HpCDD	50 ng/mL
							1,2,3,4,6,7,8-HpCDF	50 ng/mL
							1,2,3,4,7,8,9-HpCDF	50 ng/mL
							1,2,3,4,7,8-HxCDD	50 ng/mL
							1,2,3,4,7,8-HxCDF	50 ng/mL
							1,2,3,6,7,8-HxCDD	50 ng/mL
							1,2,3,6,7,8-HxCDF	50 ng/mL
							1,2,3,7,8,9-HxCDD	50 ng/mL
							1,2,3,7,8,9-HxCDF	50 ng/mL
							1,2,3,7,8-PeCDD	50 ng/mL
							1,2,3,7,8-PeCDF	50 ng/mL
							2,3,4,6,7,8-HxCDF	50 ng/mL
							2,3,4,7,8-PeCDF	50 ng/mL
							2,3,7,8-TCDD	10 ng/mL
							2,3,7,8-TCDF	10 ng/mL
							OCDD	100 ng/mL
							OCDF	100 ng/mL
.HRDXNIDA_00465	08/31/24	01/19/21	Isooctane, Lot B00S6184	250 mL	HRDXNIDA_00457	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00458	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00459	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00460	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00461	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00462	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
..HRDXNIDA_00457	04/30/26		CIL, Lot ER02241603		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00458	01/31/30		CIL, Lot ER01062015		(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00459	12/31/30		CIL, Lot ER01062016		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00460	01/31/29		CIL, Lot ER102111904		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00461	10/31/26		CIL, Lot ER09271601		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00462	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
.HRDXNIDA_00504	05/31/26	02/02/22	Isooctane, Lot P2OH747	100 mL	HRDXNIDA_00490	800 uL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00491	800 uL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00493	800 uL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00494	800 uL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..HRDXNIDA_00490	05/31/26		CIL, Lot ER04251601		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00491	06/30/26		CIL, Lot ER04211601		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00493	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00494	07/31/27		CIL, Lot ER04211701		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIDA_00509	11/27/24	02/04/22	Isooctane, Lot P2OH747	25 mL	HRDXNIDA_00483	2.5 mL	13C-OCDD	0.4 ug/mL
							13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
							13C-2,3,7,8-TCDF	0.2 ug/mL
							13C-2,3,7,8-TCDD	0.2 ug/mL
							13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
..HRDXNIDA_00483	11/30/24	08/21/21	Acetone, Lot 0000274597	25 mL	HRDXNIDA_00398	10 mL	13C-OCDD	4 ug/mL
					HRDXNIDA_00475	1 mL	13C-1,2,3,6,7,8-HxCDD	2 ug/mL
					HRDXNIDA_00476	1 mL	13C-2,3,7,8-TCDF	2 ug/mL
					HRDXNIDA_00477	1 mL	13C-2,3,7,8-TCDD	2 ug/mL
					HRDXNIDA_00478	1 mL	13C-1,2,3,4,6,7,8-HpCDF	2 ug/mL
...HRDXNIDA_00398	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
...HRDXNIDA_00475	10/31/30		CIL, Lot ER10152004		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
...HRDXNIDA_00476	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
...HRDXNIDA_00477	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
...HRDXNIDA_00478	11/30/24		CIL, Lot ER08101404		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
.HRDXNIDA_00510	07/31/31	02/04/22	Isooctane, Lot P2OH747	25 mL	HRDXNIDA_00499	2.5 mL	13C-OCDF	0.4 ug/mL
..HRDXNIDA_00499	07/31/31	01/11/22	Isooctane, Lot B0771850	25 mL	HRDXNIDA_00496	2 mL	13C-OCDF	4 ug/mL
...HRDXNIDA_00496	07/31/31		CIL, Lot ER05072101		(Purchased Reagent)		13C-OCDF	50 ug/mL
.HRDXNIS_00145	04/18/23	04/18/22	C14, Lot STBK0773525	50 mL	HRDXNIS_00143	1 mL	13C-1,2,3,4-TCDD	0.1 ug/mL
							13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
..HRDXNIS_00143	09/30/26	04/18/22	Isooctane, Lot B0773525	10 mL	HRDXNIS_00141	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
					HRDXNIS_00142	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
...HRDXNIS_00141	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL
...HRDXNIS_00142	09/30/26		CIL, Lot ER08221601		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
.HRDXNSU_00258	08/01/24	09/09/21	Isooctane, Lot 0000221197	10 mL	HRDXNSU_00233	0.8 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
..HRDXNSU_00233	08/01/24	01/22/20	Isooctane, Lot 0000221197	10 mL	HRDXNSU_00201	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
...HRDXNSU_00201	08/01/24		WELLINGTON LABS, Lot MCDD0480505		(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
.HRDXNTA_00134	08/31/30		CIL, Lot ER09031903		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2000 ng/mL
							1,2,3,4,6,7,8-HpCDF	2000 ng/mL
							1,2,3,4,7,8,9-HpCDF	2000 ng/mL
							1,2,3,4,7,8-HxCDD	2000 ng/mL
							1,2,3,4,7,8-HxCDF	2000 ng/mL
							1,2,3,6,7,8-HxCDD	2000 ng/mL
							1,2,3,6,7,8-HxCDF	2000 ng/mL
							1,2,3,7,8,9-HxCDD	2000 ng/mL
							1,2,3,7,8,9-HxCDF	2000 ng/mL
							1,2,3,7,8-PeCDD	2000 ng/mL
							1,2,3,7,8-PeCDF	2000 ng/mL
							2,3,4,6,7,8-HxCDF	2000 ng/mL
							2,3,4,7,8-PeCDF	2000 ng/mL
							2,3,7,8-TCDD	400 ng/mL
							2,3,7,8-TCDF	400 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							OCDD	4000 ng/mL
							OCDF	4000 ng/mL
HRDXNL5_00036	01/10/23	04/29/22	C14, Lot STBK2282	0.2 mL	HRDXNIDA_00465	100 uL	13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
					HRDXNIDA_00504	50 uL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIDA_00509	100 uL	13C-OCDD	200 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
					HRDXNIDA_00510	100 uL	13C-OCDF	200 ng/mL
					HRDXNIS_00145	200 uL	13C-1,2,3,4-TCDD	100 ng/mL
							13C-1,2,3,7,8,9-HxCDD	100 ng/mL
					HRDXNSU_00258	20 uL	37Cl4-2,3,7,8-TCDD	40 ng/mL
					HRDXNTA_00134	20 uL	1,2,3,4,6,7,8-HpCDD	200 ng/mL
							1,2,3,4,6,7,8-HpCDF	200 ng/mL
							1,2,3,4,7,8,9-HpCDF	200 ng/mL
							1,2,3,4,7,8-HxCDD	200 ng/mL
							1,2,3,4,7,8-HxCDF	200 ng/mL
							1,2,3,6,7,8-HxCDD	200 ng/mL
							1,2,3,6,7,8-HxCDF	200 ng/mL
							1,2,3,7,8,9-HxCDD	200 ng/mL
							1,2,3,7,8,9-HxCDF	200 ng/mL
							1,2,3,7,8-PeCDD	200 ng/mL
							1,2,3,7,8-PeCDF	200 ng/mL
							2,3,4,6,7,8-HxCDF	200 ng/mL
							2,3,4,7,8-PeCDF	200 ng/mL
							2,3,7,8-TCDD	40 ng/mL
							2,3,7,8-TCDF	40 ng/mL
							OCDD	400 ng/mL
							OCDF	400 ng/mL
.HRDXNIDA_00465	08/31/24	01/19/21	Isooctane, Lot B00S6184	250 mL	HRDXNIDA_00457	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00458	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00459	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00460	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00461	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00462	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
..HRDXNIDA_00457	04/30/26	CIL, Lot ER02241603			(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00458	01/31/30	CIL, Lot ER01062015			(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00459	12/31/30	CIL, Lot ER01062016			(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..HRDXNIDA_00460	01/31/29		CIL, Lot ER102111904		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00461	10/31/26		CIL, Lot ER09271601		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00462	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
.HRDXNIDA_00504	05/31/26	02/02/22	Isooctane, Lot P2OH747	100 mL	HRDXNIDA_00490	800 uL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00491	800 uL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00493	800 uL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00494	800 uL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00490	05/31/26		CIL, Lot ER04251601		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00491	06/30/26		CIL, Lot ER04211601		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00493	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00494	07/31/27		CIL, Lot ER04211701		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIDA_00509	11/27/24	02/04/22	Isooctane, Lot P2OH747	25 mL	HRDXNIDA_00483	2.5 mL	13C-OCDD	0.4 ug/mL
							13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
							13C-2,3,7,8-TCDF	0.2 ug/mL
							13C-2,3,7,8-TCDD	0.2 ug/mL
							13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
..HRDXNIDA_00483	11/30/24	08/21/21	Acetone, Lot 0000274597	25 mL	HRDXNIDA_00398	10 mL	13C-OCDD	4 ug/mL
					HRDXNIDA_00475	1 mL	13C-1,2,3,6,7,8-HxCDD	2 ug/mL
					HRDXNIDA_00476	1 mL	13C-2,3,7,8-TCDF	2 ug/mL
					HRDXNIDA_00477	1 mL	13C-2,3,7,8-TCDD	2 ug/mL
					HRDXNIDA_00478	1 mL	13C-1,2,3,4,6,7,8-HpCDF	2 ug/mL
...HRDXNIDA_00398	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
...HRDXNIDA_00475	10/31/30		CIL, Lot ER10152004		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
...HRDXNIDA_00476	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
...HRDXNIDA_00477	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
...HRDXNIDA_00478	11/30/24		CIL, Lot ER08101404		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
.HRDXNIDA_00510	07/31/31	02/04/22	Isooctane, Lot P2OH747	25 mL	HRDXNIDA_00499	2.5 mL	13C-OCDF	0.4 ug/mL
..HRDXNIDA_00499	07/31/31	01/11/22	Isooctane, Lot B0771850	25 mL	HRDXNIDA_00496	2 mL	13C-OCDF	4 ug/mL
...HRDXNIDA_00496	07/31/31		CIL, Lot ER05072101		(Purchased Reagent)		13C-OCDF	50 ug/mL
.HRDXNIS_00145	04/18/23	04/18/22	C14, Lot STBK0773525	50 mL	HRDXNIS_00143	1 mL	13C-1,2,3,4-TCDD	0.1 ug/mL
							13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
..HRDXNIS_00143	09/30/26	04/18/22	Isooctane, Lot B0773525	10 mL	HRDXNIS_00141	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
					HRDXNIS_00142	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
...HRDXNIS_00141	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL
...HRDXNIS_00142	09/30/26		CIL, Lot ER08221601		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
.HRDXNSU_00258	08/01/24	09/09/21	Isooctane, Lot 0000221197	10 mL	HRDXNSU_00233	0.8 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
..HRDXNSU_00233	08/01/24	01/22/20	Isooctane, Lot 0000221197	10 mL	HRDXNSU_00201	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
...HRDXNSU_00201	08/01/24		WELLINGTON LABS, Lot MCDD0480505		(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
.HRDXNTA_00134	08/31/30		CIL, Lot ER09031903		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2000 ng/mL
							1,2,3,4,6,7,8-HpCDF	2000 ng/mL
							1,2,3,4,7,8,9-HpCDF	2000 ng/mL
							1,2,3,4,7,8-HxCDD	2000 ng/mL
							1,2,3,4,7,8-HxCDF	2000 ng/mL
							1,2,3,6,7,8-HxCDD	2000 ng/mL
							1,2,3,6,7,8-HxCDF	2000 ng/mL
							1,2,3,7,8,9-HxCDD	2000 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2,3,7,8,9-HxCDF	2000 ng/mL
							1,2,3,7,8-PeCDD	2000 ng/mL
							1,2,3,7,8-PeCDF	2000 ng/mL
							2,3,4,6,7,8-HxCDF	2000 ng/mL
							2,3,4,7,8-PeCDF	2000 ng/mL
							2,3,7,8-TCDD	400 ng/mL
							2,3,7,8-TCDF	400 ng/mL
							OCDD	4000 ng/mL
							OCDF	4000 ng/mL
HRDXNL6_00033	01/10/23	04/29/22	C14, Lot STBK2282	0.2 mL	HRDXNIDA_00465	100 uL	13C-1,2,3,6,7,8-HxCDF	100 ng/mL
							13C-2,3,4,6,7,8-HxCDF	100 ng/mL
							13C-1,2,3,7,8,9-HxCDF	100 ng/mL
							13C-1,2,3,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDD	100 ng/mL
							13C-1,2,3,7,8-PeCDD	100 ng/mL
					HRDXNIDA_00504	50 uL	13C-1,2,3,4,7,8,9-HpCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDD	100 ng/mL
							13C-2,3,4,7,8-PeCDF	100 ng/mL
							13C-1,2,3,4,7,8-HxCDF	100 ng/mL
					HRDXNIDA_00509	100 uL	13C-OCDD	200 ng/mL
							13C-1,2,3,6,7,8-HxCDD	100 ng/mL
							13C-2,3,7,8-TCDF	100 ng/mL
							13C-2,3,7,8-TCDD	100 ng/mL
							13C-1,2,3,4,6,7,8-HpCDF	100 ng/mL
					HRDXNIDA_00510	100 uL	13C-OCDF	200 ng/mL
					HRDXNIS_00145	200 uL	13C-1,2,3,4-TCDD	100 ng/mL
							13C-1,2,3,7,8,9-HxCDD	100 ng/mL
					HRDXNSU_00258	100 uL	37Cl4-2,3,7,8-TCDD	200 ng/mL
					HRDXNTA_00134	100 uL	1,2,3,4,6,7,8-HpCDD	1000 ng/mL
							1,2,3,4,6,7,8-HpCDF	1000 ng/mL
							1,2,3,4,7,8,9-HpCDF	1000 ng/mL
							1,2,3,4,7,8-HxCDD	1000 ng/mL
							1,2,3,4,7,8-HxCDF	1000 ng/mL
							1,2,3,6,7,8-HxCDD	1000 ng/mL
							1,2,3,6,7,8-HxCDF	1000 ng/mL
							1,2,3,7,8,9-HxCDD	1000 ng/mL
							1,2,3,7,8,9-HxCDF	1000 ng/mL
							1,2,3,7,8-PeCDD	1000 ng/mL
							1,2,3,7,8-PeCDF	1000 ng/mL
							2,3,4,6,7,8-HxCDF	1000 ng/mL
							2,3,4,7,8-PeCDF	1000 ng/mL
							2,3,7,8-TCDD	200 ng/mL
							2,3,7,8-TCDF	200 ng/mL
							OCDD	2000 ng/mL
							OCDF	2000 ng/mL
.HRDXNIDA_00465	08/31/24	01/19/21	Isooctane, Lot B00S6184	250 mL	HRDXNIDA_00457	1 mL	13C-1,2,3,6,7,8-HxCDF	0.2 ug/mL
					HRDXNIDA_00458	1 mL	13C-2,3,4,6,7,8-HxCDF	0.2 ug/mL

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					HRDXNIDA_00459	1 mL	13C-1,2,3,7,8,9-HxCDF	0.2 ug/mL
					HRDXNIDA_00460	1 mL	13C-1,2,3,7,8-PeCDF	0.2 ug/mL
					HRDXNIDA_00461	1 mL	13C-1,2,3,4,6,7,8-HpCDD	0.2 ug/mL
					HRDXNIDA_00462	1 mL	13C-1,2,3,7,8-PeCDD	0.2 ug/mL
..HRDXNIDA_00457	04/30/26		CIL, Lot ER02241603		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00458	01/31/30		CIL, Lot ER01062015		(Purchased Reagent)		13C-2,3,4,6,7,8-HxCDF	50 ug/mL
..HRDXNIDA_00459	12/31/30		CIL, Lot ER01062016		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDF	50 ug/mL
..HRDXNIDA_00460	01/31/29		CIL, Lot ER102111904		(Purchased Reagent)		13C-1,2,3,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00461	10/31/26		CIL, Lot ER09271601		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDD	50 ug/mL
..HRDXNIDA_00462	08/31/24		CIL, Lot ER08041401		(Purchased Reagent)		13C-1,2,3,7,8-PeCDD	50 ug/mL
.HRDXNIDA_00504	05/31/26	02/02/22	Isooctane, Lot P2OH747	100 mL	HRDXNIDA_00490	800 uL	13C-1,2,3,4,7,8,9-HpCDF	0.4 ug/mL
					HRDXNIDA_00491	800 uL	13C-1,2,3,4,7,8-HxCDD	0.4 ug/mL
					HRDXNIDA_00493	800 uL	13C-2,3,4,7,8-PeCDF	0.4 ug/mL
					HRDXNIDA_00494	800 uL	13C-1,2,3,4,7,8-HxCDF	0.4 ug/mL
..HRDXNIDA_00490	05/31/26		CIL, Lot ER04251601		(Purchased Reagent)		13C-1,2,3,4,7,8,9-HpCDF	50 ug/mL
..HRDXNIDA_00491	06/30/26		CIL, Lot ER04211601		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDD	50 ug/mL
..HRDXNIDA_00493	01/31/27		CIL, Lot ER01061701		(Purchased Reagent)		13C-2,3,4,7,8-PeCDF	50 ug/mL
..HRDXNIDA_00494	07/31/27		CIL, Lot ER04211701		(Purchased Reagent)		13C-1,2,3,4,7,8-HxCDF	50 ug/mL
.HRDXNIDA_00509	11/27/24	02/04/22	Isooctane, Lot P2OH747	25 mL	HRDXNIDA_00483	2.5 mL	13C-OCDD	0.4 ug/mL
							13C-1,2,3,6,7,8-HxCDD	0.2 ug/mL
							13C-2,3,7,8-TCDF	0.2 ug/mL
							13C-2,3,7,8-TCDD	0.2 ug/mL
							13C-1,2,3,4,6,7,8-HpCDF	0.2 ug/mL
..HRDXNIDA_00483	11/30/24	08/21/21	Acetone, Lot 0000274597	25 mL	HRDXNIDA_00398	10 mL	13C-OCDD	4 ug/mL
					HRDXNIDA_00475	1 mL	13C-1,2,3,6,7,8-HxCDD	2 ug/mL
					HRDXNIDA_00476	1 mL	13C-2,3,7,8-TCDF	2 ug/mL
					HRDXNIDA_00477	1 mL	13C-2,3,7,8-TCDD	2 ug/mL
					HRDXNIDA_00478	1 mL	13C-1,2,3,4,6,7,8-HpCDF	2 ug/mL
...HRDXNIDA_00398	04/30/27		CIL, Lot ER04051701		(Purchased Reagent)		13C-OCDD	10 ug/mL
...HRDXNIDA_00475	10/31/30		CIL, Lot ER10152004		(Purchased Reagent)		13C-1,2,3,6,7,8-HxCDD	50 ug/mL
...HRDXNIDA_00476	09/30/26		CIL, Lot ER09131601		(Purchased Reagent)		13C-2,3,7,8-TCDF	50 ug/mL
...HRDXNIDA_00477	03/31/26		CIL, Lot ER03031601		(Purchased Reagent)		13C-2,3,7,8-TCDD	50 ug/mL
...HRDXNIDA_00478	11/30/24		CIL, Lot ER08101404		(Purchased Reagent)		13C-1,2,3,4,6,7,8-HpCDF	50 ug/mL
.HRDXNIDA_00510	07/31/31	02/04/22	Isooctane, Lot P2OH747	25 mL	HRDXNIDA_00499	2.5 mL	13C-OCDF	0.4 ug/mL
..HRDXNIDA_00499	07/31/31	01/11/22	Isooctane, Lot B0771850	25 mL	HRDXNIDA_00496	2 mL	13C-OCDF	4 ug/mL
...HRDXNIDA_00496	07/31/31		CIL, Lot ER05072101		(Purchased Reagent)		13C-OCDF	50 ug/mL
.HRDXNIS_00145	04/18/23	04/18/22	C14, Lot STBK0773525	50 mL	HRDXNIS_00143	1 mL	13C-1,2,3,4-TCDD	0.1 ug/mL
							13C-1,2,3,7,8,9-HxCDD	0.1 ug/mL
..HRDXNIS_00143	09/30/26	04/18/22	Isooctane, Lot B0773525	10 mL	HRDXNIS_00141	1 mL	13C-1,2,3,4-TCDD	5 ug/mL
					HRDXNIS_00142	1 mL	13C-1,2,3,7,8,9-HxCDD	5 ug/mL
...HRDXNIS_00141	01/31/27		CIL, Lot ER11081602		(Purchased Reagent)		13C-1,2,3,4-TCDD	50 ug/mL
...HRDXNIS_00142	09/30/26		CIL, Lot ER08221601		(Purchased Reagent)		13C-1,2,3,7,8,9-HxCDD	50 ug/mL
.HRDXNSU_00258	08/01/24	09/09/21	Isooctane, Lot 0000221197	10 mL	HRDXNSU_00233	0.8 mL	37Cl4-2,3,7,8-TCDD	0.4 ug/mL
..HRDXNSU_00233	08/01/24	01/22/20	Isooctane, Lot 0000221197	10 mL	HRDXNSU_00201	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
...HRDXNSU_00201	08/01/24		WELLINGTON LABS, Lot MCDD0480505		(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
.HRDXNTA_00134	08/31/30		CIL, Lot ER09031903		(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2000 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2,3,4,6,7,8-HpCDF	2000 ng/mL
							1,2,3,4,7,8,9-HpCDF	2000 ng/mL
							1,2,3,4,7,8-HxCDD	2000 ng/mL
							1,2,3,4,7,8-HxCDF	2000 ng/mL
							1,2,3,6,7,8-HxCDD	2000 ng/mL
							1,2,3,6,7,8-HxCDF	2000 ng/mL
							1,2,3,7,8,9-HxCDD	2000 ng/mL
							1,2,3,7,8,9-HxCDF	2000 ng/mL
							1,2,3,7,8-PeCDD	2000 ng/mL
							1,2,3,7,8-PeCDF	2000 ng/mL
							2,3,4,6,7,8-HxCDF	2000 ng/mL
							2,3,4,7,8-PeCDF	2000 ng/mL
							2,3,7,8-TCDD	400 ng/mL
							2,3,7,8-TCDF	400 ng/mL
							OCDD	4000 ng/mL
							OCDF	4000 ng/mL
HRDXNSU_00271	08/18/23	08/18/22	Isooctane, Lot B0776019	500 mL	HRDXNSU_00233	0.08 mL	37Cl4-2,3,7,8-TCDD	0.8 pg/uL
.HRDXNSU_00233	08/01/24	01/22/20	Isooctane, Lot 0000221197	10 mL	HRDXNSU_00201	1 mL	37Cl4-2,3,7,8-TCDD	5 ug/mL
..HRDXNSU_00201	08/01/24	WELLINGTON LABS, Lot MCDD0480505			(Purchased Reagent)		37Cl4-2,3,7,8-TCDD	50 ug/mL
HRDXNTA_00160	04/29/23	08/24/22	Acetone, Lot 220983	50 mL	HRDXNTA_00158	0.5 mL	1,2,3,4,6,7,8-HpCDD	20 ng/mL
							1,2,3,4,6,7,8-HpCDF	20 ng/mL
							1,2,3,4,7,8,9-HpCDF	20 ng/mL
							1,2,3,4,7,8-HxCDD	20 ng/mL
							1,2,3,4,7,8-HxCDF	20 ng/mL
							1,2,3,6,7,8-HxCDD	20 ng/mL
							1,2,3,6,7,8-HxCDF	20 ng/mL
							1,2,3,7,8,9-HxCDD	20 ng/mL
							1,2,3,7,8,9-HxCDF	20 ng/mL
							1,2,3,7,8-PeCDD	20 ng/mL
							1,2,3,7,8-PeCDF	20 ng/mL
							2,3,4,6,7,8-HxCDF	20 ng/mL
							2,3,4,7,8-PeCDF	20 ng/mL
							2,3,7,8-TCDD	4 ng/mL
							2,3,7,8-TCDF	4 ng/mL
							OCDD	40 ng/mL
							OCDF	40 ng/mL
.HRDXNTA_00158	08/31/30	CIL, Lot ER09031903			(Purchased Reagent)		1,2,3,4,6,7,8-HpCDD	2000 ng/mL
							1,2,3,4,6,7,8-HpCDF	2000 ng/mL
							1,2,3,4,7,8,9-HpCDF	2000 ng/mL
							1,2,3,4,7,8-HxCDD	2000 ng/mL
							1,2,3,4,7,8-HxCDF	2000 ng/mL
							1,2,3,6,7,8-HxCDD	2000 ng/mL
							1,2,3,6,7,8-HxCDF	2000 ng/mL
							1,2,3,7,8,9-HxCDD	2000 ng/mL
							1,2,3,7,8,9-HxCDF	2000 ng/mL
							1,2,3,7,8-PeCDD	2000 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							1,2,3,7,8-PeCDF	2000 ng/mL
							2,3,4,6,7,8-HxCDF	2000 ng/mL
							2,3,4,7,8-PeCDF	2000 ng/mL
							2,3,7,8-TCDD	400 ng/mL
							2,3,7,8-TCDF	400 ng/mL
							OCDD	4000 ng/mL
							OCDF	4000 ng/mL

Method 1613B

Dioxins and Furans (HRGC/HRMS) by Method 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): DB-5 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	TCDF #	TCDD #	PeCDF #	PeCF #	PeCDD #	HxCDF #	HxDF #	13CHxCF #
	LCS 320-622337/2-A	46	58	52	55	64	50	51	50
	LCSD 320-622337/3-A	54	68	67	69	84	67	66	65

	QC LIMITS
TCDF = 13C-2,3,7,8-TCDF	22-152
TCDD = 13C-2,3,7,8-TCDD	20-175
PeCDF = 13C-1,2,3,7,8-PeCDF	21-192
PeCF = 13C-2,3,4,7,8-PeCDF	13-328
PeCDD = 13C-1,2,3,7,8-PeCDD	21-227
HxCDF = 13C-1,2,3,4,7,8-HxCDF	19-202
HxDF = 13C-1,2,3,6,7,8-HxCDF	21-159
13CHxCF = 13C-2,3,4,6,7,8-HxCDF	22-176

Column to be used to flag recovery values

FORM II 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): DB-5 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	HxCDD #	HxDD #	HxCF #	HpCDF #	HpCDD #	HpCDF2 #	OCDD #	OCDF #
	LCS 320-622337/2-A	58	54	47	46	60	50	50	45
	LCSD 320-622337/3-A	78	69	60	62	80	69	70	65

	QC LIMITS
HxCDD = 13C-1,2,3,4,7,8-HxCDD	21-193
HxDD = 13C-1,2,3,6,7,8-HxCDD	25-163
HxCF = 13C-1,2,3,7,8,9-HxCDF	17-205
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF	21-158
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD	26-166
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF	20-186
OCDD = 13C-OCDD	13-199
OCDF = 13C-OCDF	13-199

Column to be used to flag recovery values

FORM II 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): DB-5 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	TCDF #	TCDD #	PeCDF #	PeCF #	PeCDD #	HxCDF #	HxDF #	13CHxCF #
SYSTEM01-09299022	580-118426-1	56	71	70	71	90	67	65	62
SYSTEM02-09292022	580-118426-2	53	63	63	66	82	64	63	62
SP-FD	580-118426-3	57	73	81	83	101	75	76	73
	MB 320-622337/1-A	48	59	58	59	75	64	64	61

	QC LIMITS
TCDF = 13C-2,3,7,8-TCDF	24-169
TCDD = 13C-2,3,7,8-TCDD	25-164
PeCDF = 13C-1,2,3,7,8-PeCDF	24-185
PeCF = 13C-2,3,4,7,8-PeCDF	21-178
PeCDD = 13C-1,2,3,7,8-PeCDD	25-181
HxCDF = 13C-1,2,3,4,7,8-HxCDF	26-152
HxDF = 13C-1,2,3,6,7,8-HxCDF	26-123
13CHxCF = 13C-2,3,4,6,7,8-HxCDF	28-136

Column to be used to flag recovery values

FORM II 1613B

FORM II
DIOXIN SURROGATE RECOVERY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): DB-5 ID: 0.32(mm)

Client Sample ID	Lab Sample ID	HxCDD #	HxDD #	HxCF #	HpCDF #	HpCDD #	HpCDF2 #	OCDD #	OCDF #
SYSTEM01-09299022	580-118426-1	80	70	62	64	85	72	72	68
SYSTEM02-09292022	580-118426-2	75	66	60	57	78	68	68	64
SP-FD	580-118426-3	88	78	67	66	88	73	73	68
	MB 320-622337/1-A	76	67	57	57	76	63	62	57

	QC LIMITS
HxCDD = 13C-1,2,3,4,7,8-HxCDD	32-141
HxDD = 13C-1,2,3,6,7,8-HxCDD	28-130
HxCF = 13C-1,2,3,7,8,9-HxCDF	29-147
HpCDF = 13C-1,2,3,4,6,7,8-HpCDF	28-143
HpCDD = 13C-1,2,3,4,6,7,8-HpCDD	23-140
HpCDF2 = 13C-1,2,3,4,7,8,9-HpCDF	26-138
OCDD = 13C-OCDD	17-157
OCDF = 13C-OCDF	17-157

Column to be used to flag recovery values

FORM II 1613B

FORM III
DIOXIN LAB CONTROL SAMPLE RECOVERY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 07oc22dfs1_6.d

Lab ID: LCS 320-622337/2-A Client ID:

COMPOUND	SPIKE ADDED (pg/L)	LCS CONCENTRATION (pg/L)	LCS % REC	QC LIMITS REC	#
2,3,7,8-TCDD	200	178	89	67-158	
1,2,3,7,8-PeCDD	1000	840	84	70-142	
1,2,3,4,7,8-HxCDD	1000	833	83	70-164	
1,2,3,6,7,8-HxCDD	1000	969	97	76-134	
1,2,3,7,8,9-HxCDD	1000	872	87	64-162	
1,2,3,4,6,7,8-HpCDD	1000	859	86	70-140	
OCDD	2000	1960	98	78-144	
2,3,7,8-TCDF	200	215	108	75-158	
1,2,3,7,8-PeCDF	1000	802	80	80-134	
2,3,4,7,8-PeCDF	1000	796	80	68-160	
1,2,3,4,7,8-HxCDF	1000	883	88	72-134	
1,2,3,6,7,8-HxCDF	1000	910	91	84-130	
2,3,4,6,7,8-HxCDF	1000	913	91	70-156	
1,2,3,7,8,9-HxCDF	1000	904	90	78-130	
1,2,3,4,6,7,8-HpCDF	1000	1000	100	82-122	
1,2,3,4,7,8,9-HpCDF	1000	874	87	78-138	
OCDF	2000	1900	95	63-170	
13C-2,3,7,8-TCDD	2000	1170	58	20-175	
13C-1,2,3,7,8-PeCDD	2000	1280	64	21-227	
13C-1,2,3,6,7,8-HxCDD	2000	1070	54	25-163	
13C-1,2,3,4,6,7,8-HpCDD	2000	1200	60	26-166	
13C-OCDD	4000	2000	50	13-199	
13C-2,3,7,8-TCDF	2000	929	46	22-152	
13C-1,2,3,7,8-PeCDF	2000	1030	52	21-192	
13C-1,2,3,4,7,8-HxCDF	2000	1000	50	19-202	
13C-1,2,3,4,6,7,8-HpCDF	2000	911	46	21-158	
13C-1,2,3,7,8,9-HxCDF	2000	935	47	17-205	
13C-OCDF	4000	1810	45	13-199	
13C-1,2,3,4,7,8-HxCDD	2000	1160	58	21-193	
13C-1,2,3,6,7,8-HxCDF	2000	1020	51	21-159	
13C-2,3,4,7,8-PeCDF	2000	1100	55	13-328	
13C-2,3,4,6,7,8-HxCDF	2000	1000	50	22-176	
13C-1,2,3,4,7,8,9-HpCDF	2000	1010	50	20-186	

Column to be used to flag recovery and RPD values

FORM III 1613B

FORM III
DIOXIN LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 07oc22dfs1_7.d

Lab ID: LCSD 320-622337/3-A Client ID:

COMPOUND	SPIKE ADDED (pg/L)	LCSD CONCENTRATION (pg/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
2,3,7,8-TCDD	200	182	91	2	50	67-158	
1,2,3,7,8-PeCDD	1000	836	84	0	50	70-142	
1,2,3,4,7,8-HxCDD	1000	831	83	0	50	70-164	
1,2,3,6,7,8-HxCDD	1000	989	99	2	50	76-134	
1,2,3,7,8,9-HxCDD	1000	875	88	0	50	64-162	
1,2,3,4,6,7,8-HpCDD	1000	873	87	2	50	70-140	
OCDD	2000	1960	98	0	50	78-144	
2,3,7,8-TCDF	200	221	111	3	50	75-158	
1,2,3,7,8-PeCDF	1000	830	83	3	50	80-134	
2,3,4,7,8-PeCDF	1000	804	80	1	50	68-160	
1,2,3,4,7,8-HxCDF	1000	901	90	2	50	72-134	
1,2,3,6,7,8-HxCDF	1000	914	91	0	50	84-130	
2,3,4,6,7,8-HxCDF	1000	939	94	3	50	70-156	
1,2,3,7,8,9-HxCDF	1000	935	94	3	50	78-130	
1,2,3,4,6,7,8-HpCDF	1000	1000	100	0	50	82-122	
1,2,3,4,7,8,9-HpCDF	1000	889	89	2	50	78-138	
OCDF	2000	1880	94	1	50	63-170	
13C-2,3,7,8-TCDD	2000	1360	68			20-175	
13C-1,2,3,7,8-PeCDD	2000	1680	84			21-227	
13C-1,2,3,6,7,8-HxCDD	2000	1380	69			25-163	
13C-1,2,3,4,6,7,8-HpCDD	2000	1610	80			26-166	
13C-OCDD	4000	2780	70			13-199	
13C-2,3,7,8-TCDF	2000	1090	54			22-152	
13C-1,2,3,7,8-PeCDF	2000	1340	67			21-192	
13C-1,2,3,4,7,8-HxCDF	2000	1330	67			19-202	
13C-1,2,3,4,6,7,8-HpCDF	2000	1240	62			21-158	
13C-1,2,3,7,8,9-HxCDF	2000	1210	60			17-205	
13C-OCDF	4000	2600	65			13-199	
13C-1,2,3,4,7,8-HxCDD	2000	1550	78			21-193	
13C-1,2,3,6,7,8-HxCDF	2000	1320	66			21-159	
13C-2,3,4,7,8-PeCDF	2000	1380	69			13-328	
13C-2,3,4,6,7,8-HxCDF	2000	1290	65			22-176	
13C-1,2,3,4,7,8,9-HpCDF	2000	1380	69			20-186	

Column to be used to flag recovery and RPD values

FORM III 1613B

FORM IV
DIOXIN METHOD BLANK SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Lab File ID: 07oc22dfs1_5.d Lab Sample ID: MB 320-622337/1-A

Matrix: Water Date Extracted: 10/05/2022 04:46

Instrument ID: DFS 1 Date Analyzed: 10/07/2022 15:26

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-622337/2-A	07oc22dfs1_6.d	10/07/2022 16:13
	LCSD 320-622337/3-A	07oc22dfs1_7.d	10/07/2022 17:01
SYSTEM01-09299022	580-118426-1	07oc22dfs1_9.d	10/07/2022 18:37
SYSTEM02-09292022	580-118426-2	07oc22dfs1_10.d	10/07/2022 19:25
SP-FD	580-118426-3	07oc22dfs1_11.d	10/07/2022 20:12

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Sacramento | Job No.: 580-118426-1

SDG No.:

Client Sample ID: SYSTEM01-09299022 | Lab Sample ID: 580-118426-1

Matrix: Water | Lab File ID: 07oc22dfs1_9.d

Analysis Method: 1613B | Date Collected: 09/29/2022 10:33

Extract. Method: 1613B | Date Extracted: 10/05/2022 04:46

Sample wt/vol: 902.7(mL) | Date Analyzed: 10/07/2022 18:37

Con. Extract Vol.: 20.0(uL) | Dilution Factor: 1

Injection Volume: 1(uL) | GC Column: DB-5 ID: 0.32(mm)

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

Cleanup Factor: | Level: (low/med) Low

Analysis Batch No.: 623051 | Units: pg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	ND		11	0.19
40321-76-4	1,2,3,7,8-PeCDD	ND		55	0.23
39227-28-6	1,2,3,4,7,8-HxCDD	2.3	J B	55	0.13
57653-85-7	1,2,3,6,7,8-HxCDD	1.5	J B	55	0.15
19408-74-3	1,2,3,7,8,9-HxCDD	1.2	J B q	55	0.12
35822-46-9	1,2,3,4,6,7,8-HpCDD	7.3	J B	55	0.17
3268-87-9	OCDD	48	J B	110	0.31
51207-31-9	2,3,7,8-TCDF	ND		11	0.11
57117-41-6	1,2,3,7,8-PeCDF	0.96	J q	55	0.12
57117-31-4	2,3,4,7,8-PeCDF	0.59	J	55	0.13
70648-26-9	1,2,3,4,7,8-HxCDF	0.79	J B q	55	0.12
57117-44-9	1,2,3,6,7,8-HxCDF	0.75	J B	55	0.12
60851-34-5	2,3,4,6,7,8-HxCDF	0.57	J B q	55	0.12
72918-21-9	1,2,3,7,8,9-HxCDF	1.8	J B	55	0.12
67562-39-4	1,2,3,4,6,7,8-HpCDF	2.6	J B	55	0.31
55673-89-7	1,2,3,4,7,8,9-HpCDF	ND		55	0.31
39001-02-0	OCDF	4.8	J B	110	0.21

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Sacramento | Job No.: 580-118426-1

SDG No.:

Client Sample ID: SYSTEM01-09299022 | Lab Sample ID: 580-118426-1

Matrix: Water | Lab File ID: 07oc22dfs1_9.d

Analysis Method: 1613B | Date Collected: 09/29/2022 10:33

Extract. Method: 1613B | Date Extracted: 10/05/2022 04:46

Sample wt/vol: 902.7(mL) | Date Analyzed: 10/07/2022 18:37

Con. Extract Vol.: 20.0(uL) | Dilution Factor: 1

Injection Volume: 1(uL) | GC Column: DB-5 ID: 0.32(mm)

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

Cleanup Factor: | Level: (low/med) Low

Analysis Batch No.: 623051 | Units: pg/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	71		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	90		25-181
109719-81-5	13C-1,2,3,6,7,8-HxCDD	70		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	85		23-140
114423-97-1	13C-OCDD	72		17-157
89059-46-1	13C-2,3,7,8-TCDF	56		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	70		24-185
114423-98-2	13C-1,2,3,4,7,8-HxCDF	67		26-152
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	64		28-143
116843-04-0	13C-1,2,3,7,8,9-HxCDF	62		29-147
109719-78-0	13C-OCDF	68		17-157
109719-80-4	13C-1,2,3,4,7,8-HxCDD	80		32-141
116843-03-9	13C-1,2,3,6,7,8-HxCDF	65		26-123
116843-02-8	13C-2,3,4,7,8-PeCDF	71		21-178
116843-05-1	13C-2,3,4,6,7,8-HxCDF	62		28-136
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	72		26-138

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Sacramento | Job No.: 580-118426-1

SDG No.:

Client Sample ID: SYSTEM02-09292022 | Lab Sample ID: 580-118426-2

Matrix: Water | Lab File ID: 07oc22dfs1_10.d

Analysis Method: 1613B | Date Collected: 09/29/2022 10:57

Extract. Method: 1613B | Date Extracted: 10/05/2022 04:46

Sample wt/vol: 938.6(mL) | Date Analyzed: 10/07/2022 19:25

Con. Extract Vol.: 20.0(uL) | Dilution Factor: 1

Injection Volume: 1(uL) | GC Column: DB-5 ID: 0.32(mm)

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

Cleanup Factor: | Level: (low/med) Low

Analysis Batch No.: 623051 | Units: pg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	ND		11	0.21
40321-76-4	1,2,3,7,8-PeCDD	2.1	J	53	0.19
39227-28-6	1,2,3,4,7,8-HxCDD	3.9	J B	53	0.16
57653-85-7	1,2,3,6,7,8-HxCDD	3.3	J B	53	0.19
19408-74-3	1,2,3,7,8,9-HxCDD	3.4	J B	53	0.15
35822-46-9	1,2,3,4,6,7,8-HpCDD	12	J B	53	0.18
3268-87-9	OCDD	110	B	110	0.41
51207-31-9	2,3,7,8-TCDF	ND		11	0.070
57117-41-6	1,2,3,7,8-PeCDF	1.2	J q	53	0.11
57117-31-4	2,3,4,7,8-PeCDF	1.9	J	53	0.12
70648-26-9	1,2,3,4,7,8-HxCDF	2.7	J B	53	0.14
57117-44-9	1,2,3,6,7,8-HxCDF	2.3	J B	53	0.14
60851-34-5	2,3,4,6,7,8-HxCDF	2.7	J B	53	0.14
72918-21-9	1,2,3,7,8,9-HxCDF	3.4	J B	53	0.15
67562-39-4	1,2,3,4,6,7,8-HpCDF	5.3	J B q	53	0.40
55673-89-7	1,2,3,4,7,8,9-HpCDF	3.3	J B	53	0.39
39001-02-0	OCDF	13	J B	110	0.34

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Sacramento | Job No.: 580-118426-1

SDG No.:

Client Sample ID: SYSTEM02-09292022 | Lab Sample ID: 580-118426-2

Matrix: Water | Lab File ID: 07oc22dfs1_10.d

Analysis Method: 1613B | Date Collected: 09/29/2022 10:57

Extract. Method: 1613B | Date Extracted: 10/05/2022 04:46

Sample wt/vol: 938.6(mL) | Date Analyzed: 10/07/2022 19:25

Con. Extract Vol.: 20.0(uL) | Dilution Factor: 1

Injection Volume: 1(uL) | GC Column: DB-5 ID: 0.32(mm)

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

Cleanup Factor: | Level: (low/med) Low

Analysis Batch No.: 623051 | Units: pg/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	63		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	82		25-181
109719-81-5	13C-1,2,3,6,7,8-HxCDD	66		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	78		23-140
114423-97-1	13C-OCDD	68		17-157
89059-46-1	13C-2,3,7,8-TCDF	53		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	63		24-185
114423-98-2	13C-1,2,3,4,7,8-HxCDF	64		26-152
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	57		28-143
116843-04-0	13C-1,2,3,7,8,9-HxCDF	60		29-147
109719-78-0	13C-OCDF	64		17-157
109719-80-4	13C-1,2,3,4,7,8-HxCDD	75		32-141
116843-03-9	13C-1,2,3,6,7,8-HxCDF	63		26-123
116843-02-8	13C-2,3,4,7,8-PeCDF	66		21-178
116843-05-1	13C-2,3,4,6,7,8-HxCDF	62		28-136
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	68		26-138

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Sacramento | Job No.: 580-118426-1

SDG No.:

Client Sample ID: SP-FD | Lab Sample ID: 580-118426-3

Matrix: Water | Lab File ID: 07oc22dfs1_11.d

Analysis Method: 1613B | Date Collected: 09/29/2022 12:00

Extract. Method: 1613B | Date Extracted: 10/05/2022 04:46

Sample wt/vol: 917.6(mL) | Date Analyzed: 10/07/2022 20:12

Con. Extract Vol.: 20.0(uL) | Dilution Factor: 1

Injection Volume: 1(uL) | GC Column: DB-5 ID: 0.32(mm)

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

Cleanup Factor: | Level: (low/med) Low

Analysis Batch No.: 623051 | Units: pg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	ND		11	0.15
40321-76-4	1,2,3,7,8-PeCDD	ND		54	0.21
39227-28-6	1,2,3,4,7,8-HxCDD	3.0	J B	54	0.16
57653-85-7	1,2,3,6,7,8-HxCDD	2.7	J B	54	0.19
19408-74-3	1,2,3,7,8,9-HxCDD	2.2	J B	54	0.15
35822-46-9	1,2,3,4,6,7,8-HpCDD	7.4	J B	54	0.15
3268-87-9	OCDD	50	J B	110	0.42
51207-31-9	2,3,7,8-TCDF	ND		11	0.030
57117-41-6	1,2,3,7,8-PeCDF	1.1	J	54	0.096
57117-31-4	2,3,4,7,8-PeCDF	0.92	J q	54	0.098
70648-26-9	1,2,3,4,7,8-HxCDF	1.6	J B	54	0.14
57117-44-9	1,2,3,6,7,8-HxCDF	1.7	J B	54	0.14
60851-34-5	2,3,4,6,7,8-HxCDF	1.5	J B q	54	0.14
72918-21-9	1,2,3,7,8,9-HxCDF	2.6	J B q	54	0.16
67562-39-4	1,2,3,4,6,7,8-HpCDF	3.5	J B q	54	0.38
55673-89-7	1,2,3,4,7,8,9-HpCDF	2.7	J B	54	0.42
39001-02-0	OCDF	8.5	J B	110	0.31

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Sacramento | Job No.: 580-118426-1

SDG No.:

Client Sample ID: SP-FD | Lab Sample ID: 580-118426-3

Matrix: Water | Lab File ID: 07oc22dfs1_11.d

Analysis Method: 1613B | Date Collected: 09/29/2022 12:00

Extract. Method: 1613B | Date Extracted: 10/05/2022 04:46

Sample wt/vol: 917.6(mL) | Date Analyzed: 10/07/2022 20:12

Con. Extract Vol.: 20.0(uL) | Dilution Factor: 1

Injection Volume: 1(uL) | GC Column: DB-5 ID: 0.32(mm)

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

Cleanup Factor: | Level: (low/med) Low

Analysis Batch No.: 623051 | Units: pg/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	73		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	101		25-181
109719-81-5	13C-1,2,3,6,7,8-HxCDD	78		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	88		23-140
114423-97-1	13C-OCDD	73		17-157
89059-46-1	13C-2,3,7,8-TCDF	57		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	81		24-185
114423-98-2	13C-1,2,3,4,7,8-HxCDF	75		26-152
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	66		28-143
116843-04-0	13C-1,2,3,7,8,9-HxCDF	67		29-147
109719-78-0	13C-OCDF	68		17-157
109719-80-4	13C-1,2,3,4,7,8-HxCDD	88		32-141
116843-03-9	13C-1,2,3,6,7,8-HxCDF	76		26-123
116843-02-8	13C-2,3,4,7,8-PeCDF	83		21-178
116843-05-1	13C-2,3,4,6,7,8-HxCDF	73		28-136
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	73		26-138

FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins Sacramento Job No.: 580-118426-1 Analy Batch No.: 611807

SDG No.:

Instrument ID: DFS 1 GC Column: DB-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/24/2022 14:25 Calibration End Date: 08/24/2022 17:39 Calibration ID: 61619

Calibration Files

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-611807/3	24au22adfs1_4.d
Level 2	IC 320-611807/4	24au22adfs1_5.d
Level 3	IC 320-611807/5	24au22adfs1_6.d
Level 4	IC 320-611807/6	24au22adfs1_7.d
Level 5	IC 320-611807/7	24au22adfs1_8.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
2,3,7,8-TCDF	0.9529	1.0711	1.0637	1.0099	0.9646	AveID		1.0124				5.4		20.0			
2,3,7,8-TCDD	1.1637	1.2114	1.2053	1.1793	1.1005	AveID		1.1720				3.8		20.0			
1,2,3,7,8-PeCDF	1.1212	1.2289	1.2422	1.2159	1.2519	AveID		1.2120				4.3		20.0			
2,3,4,7,8-PeCDF	1.2603	1.3064	1.3723	1.2914	1.3463	AveID		1.3154				3.4		20.0			
1,2,3,7,8-PeCDD	1.1206	1.2230	1.2744	1.2059	1.1943	AveID		1.2036				4.6		20.0			
1,2,3,4,7,8-HxCDF	1.2260	1.2889	1.3443	1.2997	1.3937	AveID		1.3105				4.8		20.0			
1,2,3,6,7,8-HxCDF	1.1283	1.2891	1.2402	1.2473	1.3223	AveID		1.2454				5.9		20.0			
2,3,4,6,7,8-HxCDF	1.1474	1.2482	1.2715	1.2467	1.3170	AveID		1.2461				5.0		20.0			
1,2,3,4,7,8-HxCDD	1.2207	1.3051	1.3568	1.2622	1.3132	AveID		1.2916				4.0		20.0			
1,2,3,6,7,8-HxCDD	1.0265	1.0794	1.0895	1.0351	1.0577	AveID		1.0576				2.6		20.0			
1,2,3,7,8,9-HxCDD	1.2972	1.3672	1.4059	1.2986	1.3026	AveID		1.3343				3.7		20.0			
1,2,3,7,8,9-HxCDF	1.1141	1.2723	1.2579	1.2187	1.3124	AveID		1.2351				6.1		20.0			
1,2,3,4,6,7,8-HpCDF	1.3997	1.5090	1.4767	1.4216	1.5608	AveID		1.4736				4.4		20.0			
1,2,3,4,6,7,8-HpCDD	1.0622	1.1566	1.1669	1.1390	1.1477	AveID		1.1345				3.7		20.0			
1,2,3,4,7,8,9-HpCDF	1.4292	1.5292	1.5561	1.4858	1.5667	AveID		1.5134				3.7		20.0			
OCDD	1.0921	1.1406	1.1451	1.1121	1.1735	AveID		1.1327				2.8		20.0			
OCDF	0.9079	1.0321	1.0135	0.9978	1.0822	AveID		1.0067				6.3		20.0			
13C-2,3,7,8-TCDF	2.0942	2.0415	2.1605	2.2305	2.2373	Ave		2.1528				4.0		35.0			
13C-2,3,7,8-TCDD	1.1722	1.1639	1.1800	1.2202	1.2800	Ave		1.2032				4.0		35.0			
13C-1,2,3,7,8-PeCDF	1.4647	1.4592	1.4156	1.5004	1.6202	Ave		1.4920				5.2		35.0			
13C-2,3,4,7,8-PeCDF	1.3124	1.3508	1.2462	1.3959	1.4771	Ave		1.3565				6.4		35.0			
13C-1,2,3,7,8-PeCDD	0.7305	0.6879	0.6710	0.7395	0.8136	Ave		0.7285				7.6		35.0			
13C-1,2,3,4,7,8-HxCDF	1.4088	1.5051	1.3981	1.4479	1.4460	Ave		1.4412				2.9		35.0			
13C-1,2,3,6,7,8-HxCDF	1.5365	1.5670	1.5515	1.5624	1.6193	Ave		1.5674				2.0		35.0			
13C-2,3,4,6,7,8-HxCDF	1.4436	1.5100	1.4156	1.4712	1.5308	Ave		1.4742				3.2		35.0			
13C-1,2,3,4,7,8-HxCDD	0.8362	0.8388	0.7859	0.8610	0.8726	Ave		0.8389				4.0		35.0			
13C-1,2,3,6,7,8-HxCDD	1.0264	1.0192	0.9833	1.0606	1.1087	Ave		1.0396				4.6		35.0			
13C-1,2,3,7,8,9-HxCDF	1.3561	1.3756	1.3758	1.4212	1.4204	Ave		1.3898				2.1		35.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins Sacramento Job No.: 580-118426-1 Analy Batch No.: 611807

SDG No.:

Instrument ID: DFS 1 GC Column: DB-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/24/2022 14:25 Calibration End Date: 08/24/2022 17:39 Calibration ID: 61619

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
13C-1,2,3,4,6,7,8-HpCDF	1.1237	1.1202	1.0868	1.1811	1.1824	Ave		1.1389				3.7		35.0			
13C-1,2,3,4,6,7,8-HpCDD	0.8756	0.8324	0.8005	0.8496	0.8667	Ave		0.8450				3.5		35.0			
13C-1,2,3,4,7,8,9-HpCDF	0.9237	0.9433	0.8867	0.9657	0.9749	Ave		0.9389				3.8		35.0			
13C-OCDD	0.7384	0.7275	0.6611	0.7415	0.7424	Ave		0.7222				4.8		35.0			
13C-OCDF	1.2296	1.1894	1.0813	1.2407	1.2759	Ave		1.2034				6.2		35.0			
37Cl4-2,3,7,8-TCDD	1.2422	1.2938	1.3119	1.3397	1.3409	Ave		1.3057				3.1					

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins Sacramento Job No.: 580-118426-1 Analy Batch No.: 611807

SDG No.:

Instrument ID: DFS 1 GC Column: DB-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/24/2022 14:25 Calibration End Date: 08/24/2022 17:39 Calibration ID: 61619

Calibration Files

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-611807/3	24au22adfs1_4.d
Level 2	IC 320-611807/4	24au22adfs1_5.d
Level 3	IC 320-611807/5	24au22adfs1_6.d
Level 4	IC 320-611807/6	24au22adfs1_7.d
Level 5	IC 320-611807/7	24au22adfs1_8.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (PG/UL)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
2,3,7,8-TCDF		AveID	203981	829767	1795810	13861817	69810459	0.500	2.00	10.0	40.0	200
2,3,7,8-TCDD		AveID	139428	535027	1111395	8855515	45567447	0.500	2.00	10.0	40.0	200
1,2,3,7,8-PeCDF		AveID	839270	3402494	6870911	56134305	328065459	2.50	10.0	50.0	200	1000
2,3,4,7,8-PeCDF		AveID	845290	3348355	6682237	55469936	321658539	2.50	10.0	50.0	200	1000
1,2,3,7,8-PeCDD		AveID	418351	1596182	3341374	27440842	157166241	2.50	10.0	50.0	200	1000
1,2,3,4,7,8-HxCDF		AveID	884933	3525805	6997574	59771694	366164460	2.50	10.0	50.0	200	1000
1,2,3,6,7,8-HxCDF		AveID	888277	3671614	7163571	61891756	389046359	2.50	10.0	50.0	200	1000
2,3,4,6,7,8-HxCDF		AveID	848673	3425579	6701090	58252317	366322773	2.50	10.0	50.0	200	1000
1,2,3,4,7,8-HxCDD		AveID	523024	1989685	3969938	34517699	208211256	2.50	10.0	50.0	200	1000
1,2,3,6,7,8-HxCDD		AveID	539862	1999494	3988263	34868135	213076672	2.50	10.0	50.0	200	1000
1,2,3,7,8,9-HxCDD		AveID	618980	2308409	4630072	39629221	234484083	2.50	10.0	50.0	200	1000
1,2,3,7,8,9-HxCDF		AveID	774103	3180945	6443004	55008819	338720883	2.50	10.0	50.0	200	1000
1,2,3,4,6,7,8-HpCDF		AveID	805928	3072358	5975202	53325907	335334169	2.50	10.0	50.0	200	1000
1,2,3,4,6,7,8-HpCDD		AveID	476578	1750005	3477502	30732206	180738943	2.50	10.0	50.0	200	1000

FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins Sacramento Job No.: 580-118426-1 Analy Batch No.: 611807

SDG No.:

Instrument ID: DFS 1 GC Column: DB-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/24/2022 14:25 Calibration End Date: 08/24/2022 17:39 Calibration ID: 61619

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (PG/UL)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
1,2,3,4,7,8,9-HpCDF		AveID	676404	2622007	5137140	45572514	277538676	2.50	10.0	50.0	200	1000
OCDD		AveID	826434	3016136	5636846	52378995	316571328	5.00	20.0	100	400	2000
OCDF		AveID	1143918	4462454	8160349	78637795	501774432	5.00	20.0	100	400	2000
13C-2,3,7,8-TCDF	13CTCDD	Ave	42810524	38734547	16883422	34316204	36187243	100	100	100	100	100
13C-2,3,7,8-TCDD	13CTCDD	Ave	23962210	22083020	9220921	18773036	20703409	100	100	100	100	100
13C-1,2,3,7,8-PeCDF	13CTCDD	Ave	29941834	27687041	11062637	23083179	26205686	100	100	100	100	100
13C-2,3,4,7,8-PeCDF	13CTCDD	Ave	26828722	25629471	9738422	21476320	23891234	100	100	100	100	100
13C-1,2,3,7,8-PeCDD	13CTCDD	Ave	14933694	13051343	5243966	11377488	13159910	100	100	100	100	100
13C-1,2,3,4,7,8-HxCDF	13CHxCD	Ave	28872674	27355967	10410420	22993744	26273178	100	100	100	100	100
13C-1,2,3,6,7,8-HxCDF	13CHxCD	Ave	31491302	28482077	11552628	24810904	29423048	100	100	100	100	100
13C-2,3,4,6,7,8-HxCDF	13CHxCD	Ave	29587200	27444442	10540566	23363414	27814237	100	100	100	100	100
13C-1,2,3,4,7,8-HxCDD	13CHxCD	Ave	17137927	15245065	5852016	13673089	15855568	100	100	100	100	100
13C-1,2,3,6,7,8-HxCDD	13CHxCD	Ave	21036692	18524524	7321238	16843008	20145645	100	100	100	100	100
13C-1,2,3,7,8,9-HxCDF	13CHxCD	Ave	27792392	25001777	10243880	22568925	25808914	100	100	100	100	100
13C-1,2,3,4,6,7,8-HpCDF	13CHxCD	Ave	23031064	20360428	8092560	18756027	21484763	100	100	100	100	100
13C-1,2,3,4,6,7,8-HpCDD	13CHxCD	Ave	17946207	15130004	5960245	13491234	15747831	100	100	100	100	100
13C-1,2,3,4,7,8,9-HpCDF	13CHxCD	Ave	18930590	17145723	6602373	15336168	17714859	100	100	100	100	100
13C-OCDD	13CHxCD	Ave	30268551	26444367	9845471	23550324	26977713	200	200	200	200	200

FORM VI
DIOXIN BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins Sacramento Job No.: 580-118426-1 Analy Batch No.: 611807

SDG No.:

Instrument ID: DFS 1 GC Column: DB-5 ID: 0.32(mm) Heated Purge: (Y/N) N

Calibration Start Date: 08/24/2022 14:25 Calibration End Date: 08/24/2022 17:39 Calibration ID: 61619

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (PG/UL)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
13C-OCDF	13CH xCD	Ave	50400126	43237408	16103142	39406239	46367435	200	200	200	200	200
37Cl4-2,3,7,8-TCDD	13CT CDD	Ave	126969	490971	1025207	8244554	43376374	0.500	2.00	10.0	40.0	200

Curve Type Legend
Ave = Average ISTD
AveID = Average isotope dilution

	File Name	SampleName	Sample ID	Position	Method/Matrix	Box	User	Sample Vol	Units
1	24AU22ADFS1_1	Resolution Check	RC 082422	162			GRB	1.000	
2	24AU22ADFS1_2	WDM HRDXNCP_00045	WDM 082422	1	Dioxin		GRB	1.000	
3	24AU22ADFS1_3	SB Solvent Blank C14	SB 082422	3	Dioxin		GRB	1.000	
4	24AU22ADFS1_4	IC CS2_HRDXNL2_00036	IC CS2_HRDXNL2_00036	4	DXN/ICAL		GRB	1.000	
5	24AU22ADFS1_5	IC CS3_HRDXNL3_00033	IC CS3_HRDXNL3_00033	5	DXN/ICAL		GRB	1.000	
6	24AU22ADFS1_6	IC CS4_HRDXNL4_00109	IC CS4_HRDXNL4_00109	2	DXN/ICAL		GRB	1.000	
7	24AU22ADFS1_7	IC CS5_HRDXNL5_00036	IC CS5_HRDXNL5_00036	6	DXN/ICAL		GRB	1.000	
8	24AU22ADFS1_8	IC CS6_HRDXNL6_00033	IC CS6_HRDXNL6_00033	7	DXN/ICAL		GRB	1.000	
9	24AU22ADFS1_9	SB Solvent Blank C14	SB 082422A	3	Dioxin		GRB	1.000	
10	24AU22ADFS1_10	Resolution Check	RC 082422A	162			GRB	1.000	
11	24AU22ADFS1_11	ICV HRDXNIC_00051	ICV HRDXNIC_00051	8	DXN/ICAL		GRB	1.000	
12	24AU22ADFS1_12	Resolution Check	RC 082422B	162			GRB	1.000	

Log File V'd 8/25/22 BBC

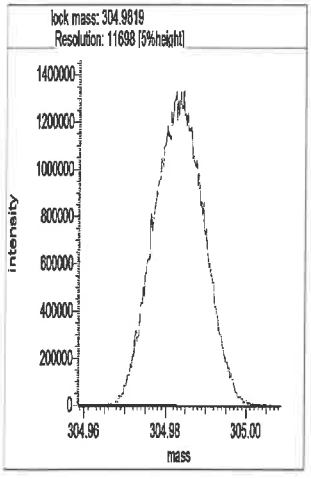
Resolution Check Report (DFS SN: 3487)

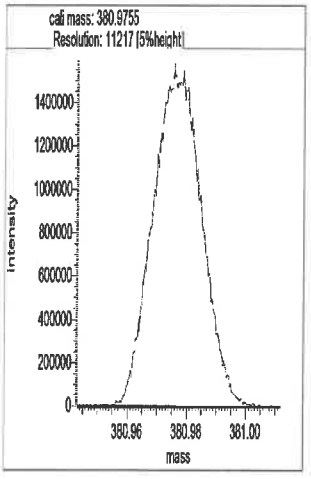
eurofins | Environment Testing TestAmerica

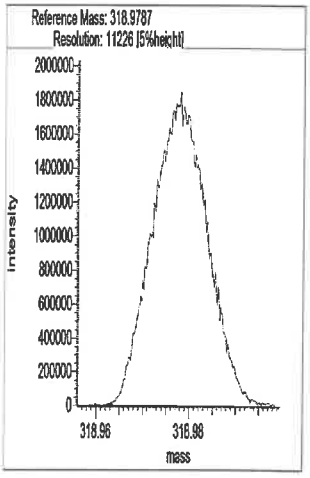
Date:	24 Aug 2022 12:31
MID Experiment:	5w_db5_pfk_singleGC01_RS
Target Resolution:	10000
Resolution Warning :	9950
Resolution Error :	9000
Reference:	pfk
Status:	RESOLUTION PASSED

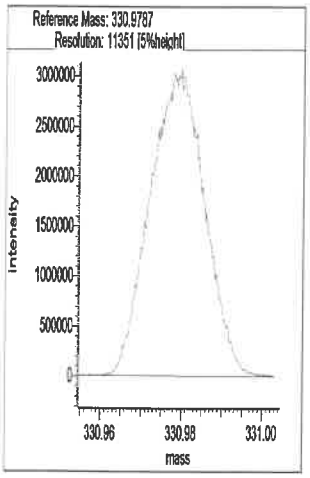
Segment 1

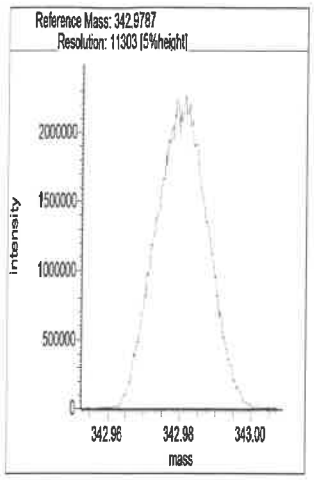
Lock mass 304.9819 [m/z] Resolution: 11698 [5%height]
Cali. mass 380.9755 [m/z] Resolution: 11217 [5%height]
Ref. mass 318.9787 [m/z] Resolution: 11226 [5%height]
Ref. mass 330.9787 [m/z] Resolution: 11351 [5%height]
Ref. mass 342.9787 [m/z] Resolution: 11303 [5%height]
Ref. mass 354.9787 [m/z] Resolution: 11483 [5%height]
Ref. mass 368.9755 [m/z] Resolution: 11051 [5%height]
Ref. mass 392.9755 [m/z] Resolution: 11282 [5%height]
Ref. mass 404.9755 [m/z] Resolution: 11115 [5%height]

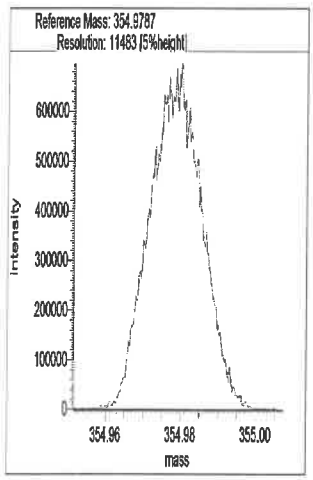


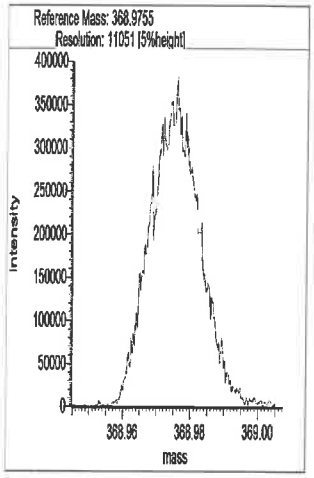


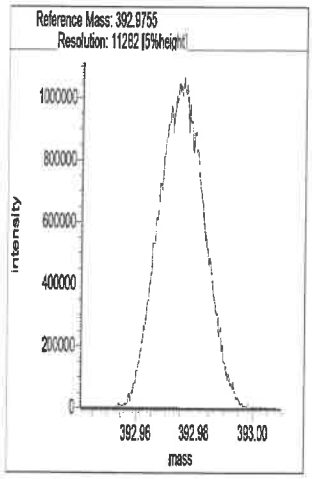


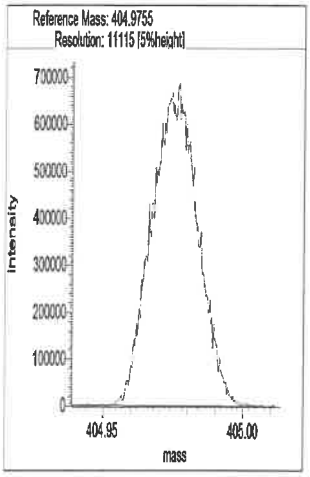












Segment 2

Lock mass 330.9787 [m/z] Resolution: 11346 [5%height]

Cali. mass 380.9755 [m/z] Resolution: 11366 [5%height]

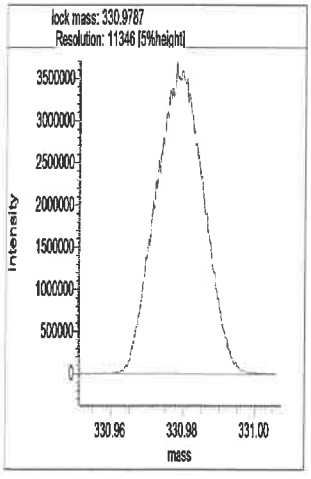
Ref. mass 342.9787 [m/z] Resolution: 11468 [5%height]

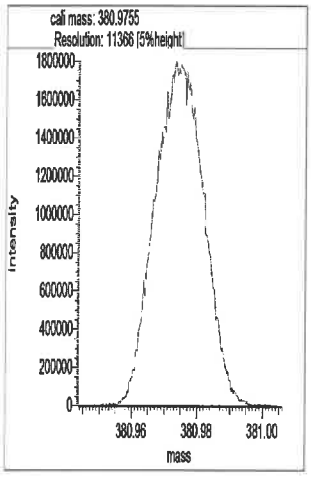
Ref. mass 354.9787 [m/z] Resolution: 11481 [5%height]

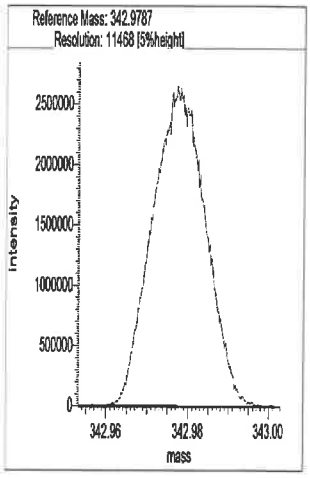
Ref. mass 368.9755 [m/z] Resolution: 11453 [5%height]

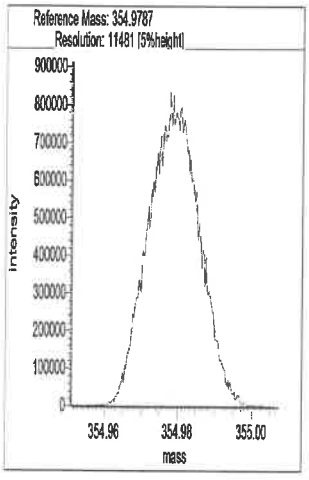
Ref. mass 392.9755 [m/z] Resolution: 11229 [5%height]

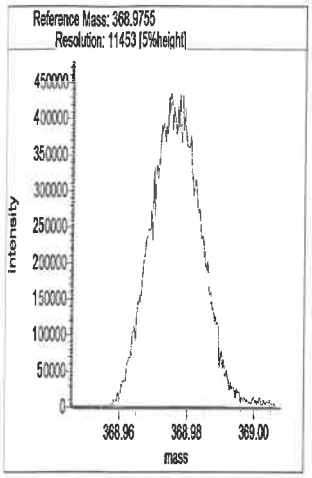
Ref. mass 404.9755 [m/z] Resolution: 11218 [5%height]

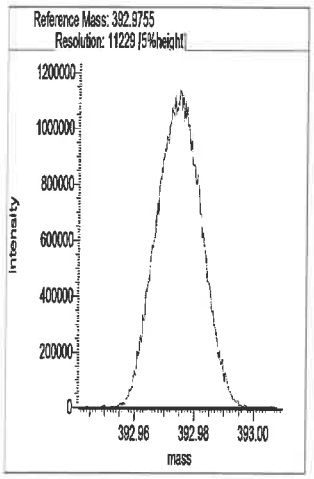


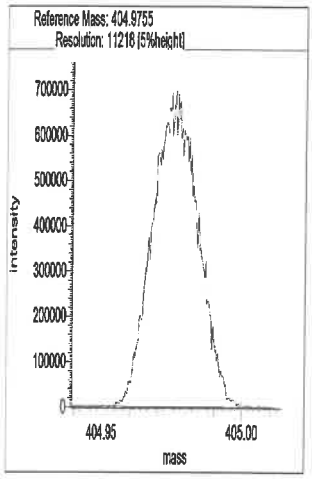












Segment 3

Lock mass 380.9755 [m/z] Resolution: 11554 [5%height]

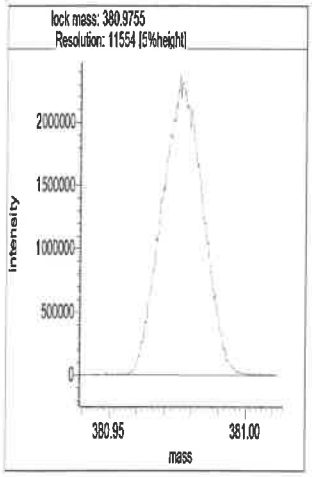
Cali. mass 430.9723 [m/z] Resolution: 11401 [5%height]

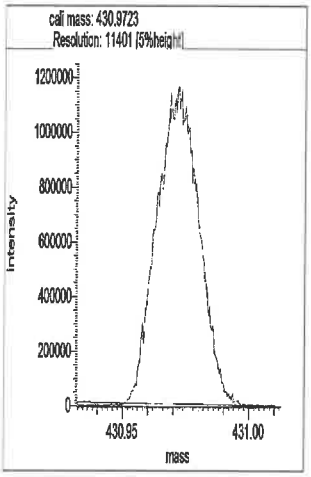
Ref. mass 392.9755 [m/z] Resolution: 11804 [5%height]

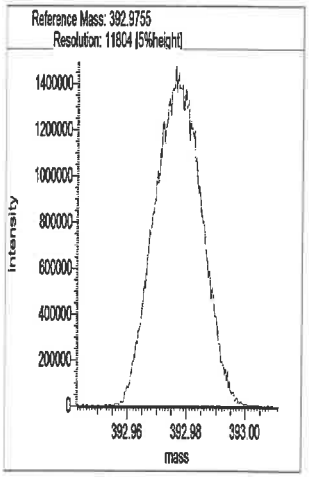
Ref. mass 404.9755 [m/z] Resolution: 11508 [5%height]

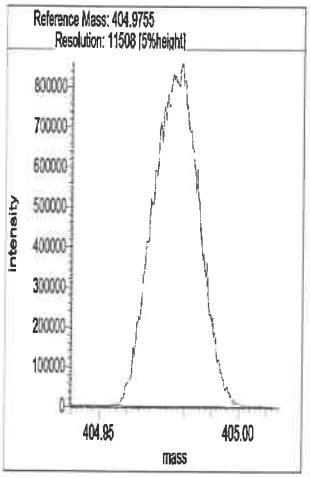
Ref. mass 416.9755 [m/z] Resolution: 11293 [5%height]

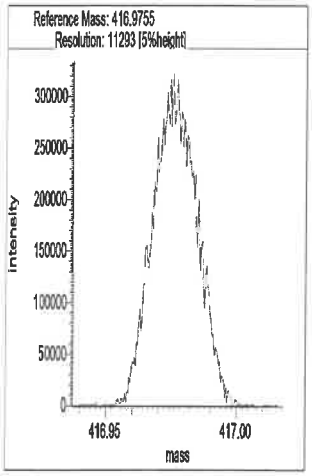
Ref. mass 442.9723 [m/z] Resolution: 11566 [5%height]

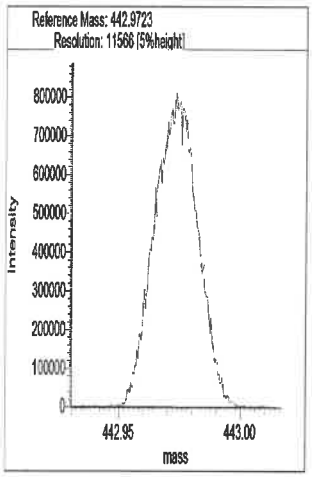












Segment 4

Lock mass 392.9754 [m/z] Resolution: 11545 [5%height]

Cali. mass 480.9691 [m/z] Resolution: 11501 [5%height]

Ref. mass 404.9755 [m/z] Resolution: 11727 [5%height]

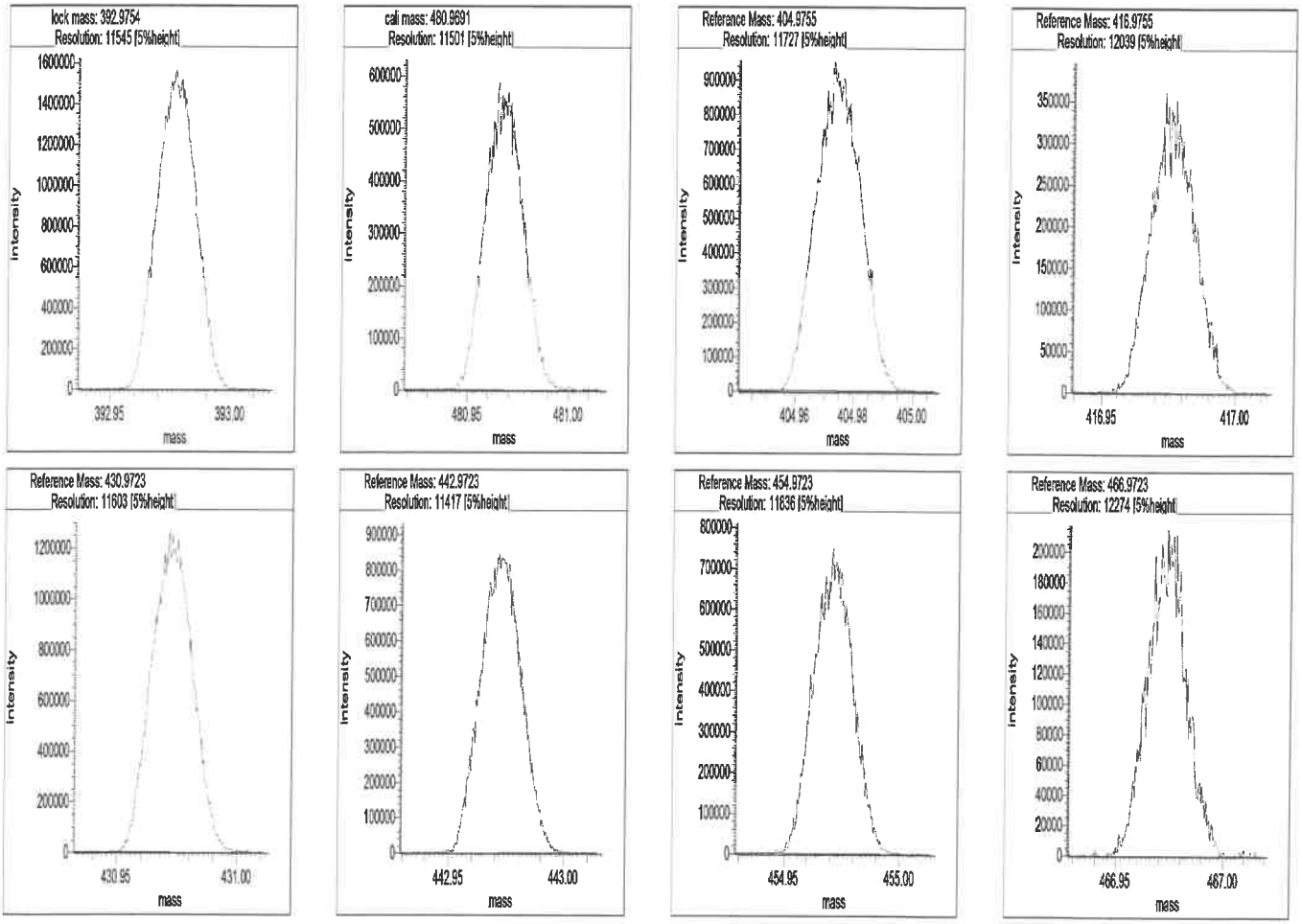
Ref. mass 416.9755 [m/z] Resolution: 12039 [5%height]

Ref. mass 430.9723 [m/z] Resolution: 11603 [5%height]

Ref. mass 442.9723 [m/z] Resolution: 11417 [5%height]

Ref. mass 454.9723 [m/z] Resolution: 11836 [5%height]

Ref. mass 466.9723 [m/z] Resolution: 12274 [5%height]



Segment 5

Lock mass 442.9723 [m/z] Resolution: 11366 [5%height]

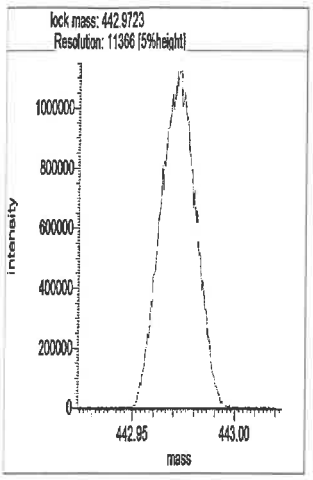
Cali. mass 504.9691 [m/z] Resolution: 11520 [5%height]

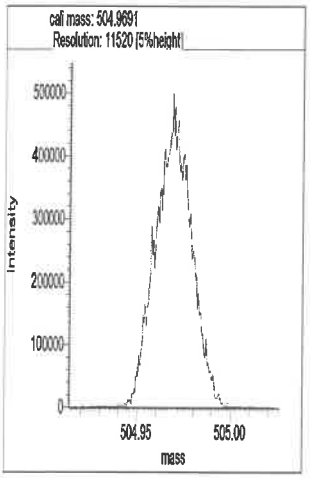
Ref. mass 454.9723 [m/z] Resolution: 11808 [5%height]

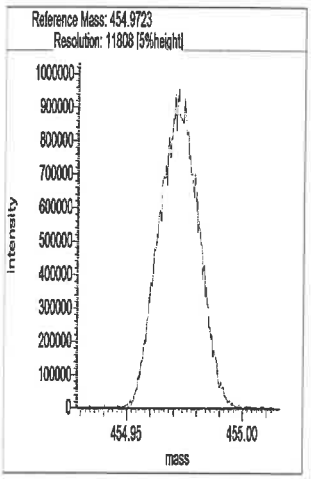
Ref. mass 466.9723 [m/z] Resolution: 12114 [5%height]

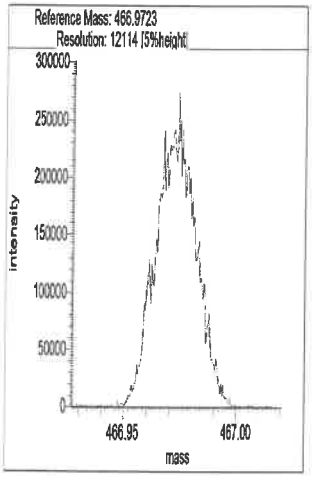
Ref. mass 480.9691 [m/z] Resolution: 11701 [5%height]

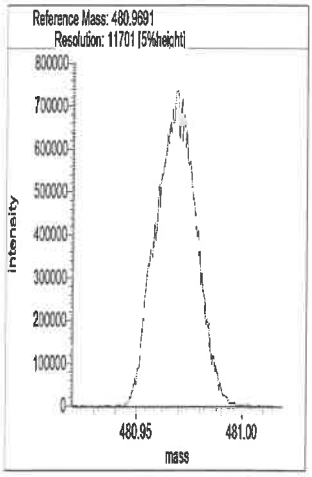
Ref. mass 492.9691 [m/z] Resolution: 11536 [5%height]

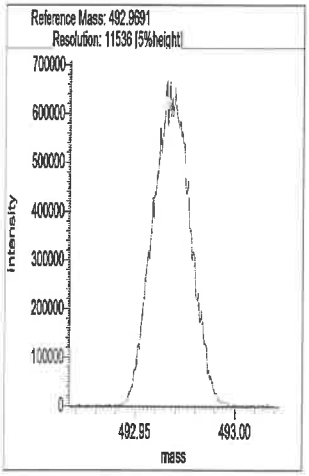

lock mass: 442.9723
Resolution: 11366 [5%height]
intensity
mass
442.95
443.00


cali mass: 504.9691
Resolution: 11520 [5%height]
intensity
mass
504.95
505.00


Reference Mass: 454.9723
Resolution: 11808 [5%height]
intensity
mass
454.95
455.00


Reference Mass: 466.9723
Resolution: 12114 [5%height]
intensity
mass
466.95
467.00


Reference Mass: 480.9691
Resolution: 11701 [5%height]
intensity
mass
480.95
481.00


Reference Mass: 492.9691
Resolution: 11536 [5%height]
intensity
mass
492.95
493.00

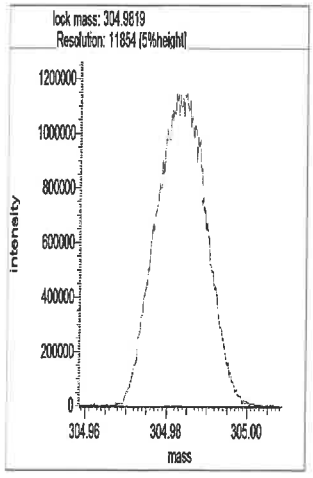
Resolution Check Report (DFS SN: 3487)

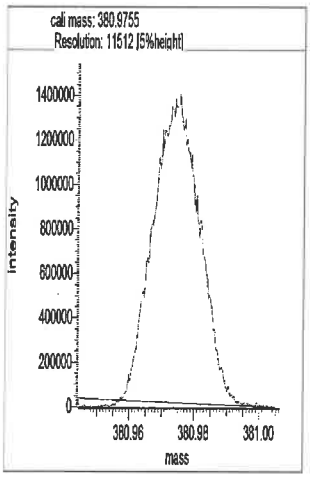
eurofins | Environment Testing TestAmerica

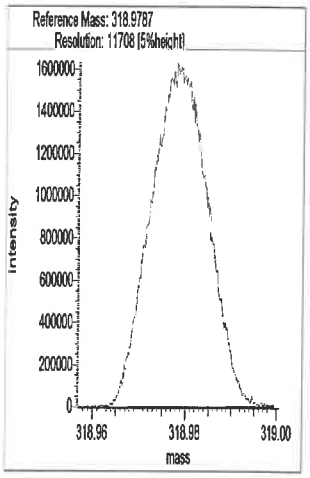
Date:	24 Aug 2022 19:14
MID Experiment:	5w_db5_pfk_singleGC01_RS
Target Resolution:	10000
Resolution Warning :	9950
Resolution Error :	9000
Reference:	pfk
Status:	RESOLUTION PASSED

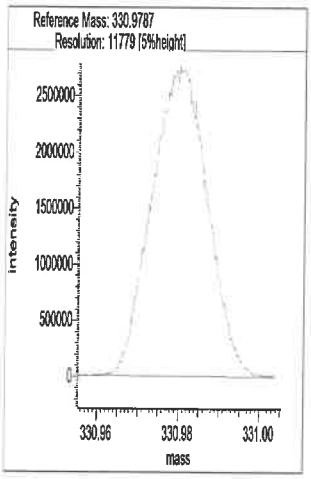
Segment 1

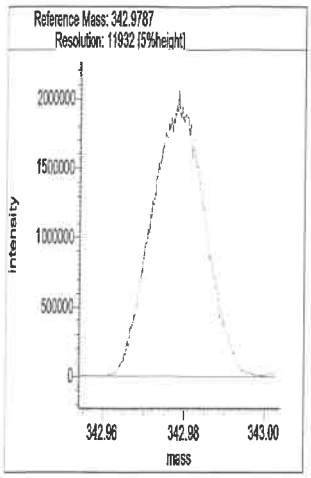
Lock mass 304.9819 [m/z] Resolution: 11854 [5%height]
Cali. mass 380.9755 [m/z] Resolution: 11512 [5%height]
Ref. mass 318.9787 [m/z] Resolution: 11708 [5%height]
Ref. mass 330.9787 [m/z] Resolution: 11779 [5%height]
Ref. mass 342.9787 [m/z] Resolution: 11932 [5%height]
Ref. mass 354.9787 [m/z] Resolution: 11697 [5%height]
Ref. mass 368.9755 [m/z] Resolution: 11467 [5%height]
Ref. mass 392.9755 [m/z] Resolution: 11533 [5%height]
Ref. mass 404.9755 [m/z] Resolution: 11637 [5%height]

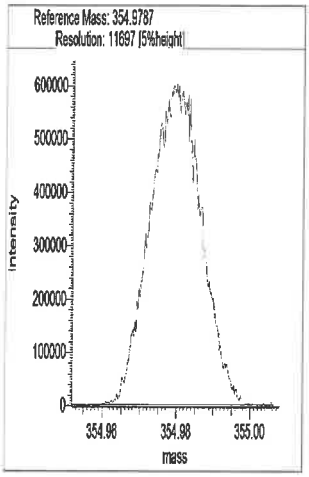


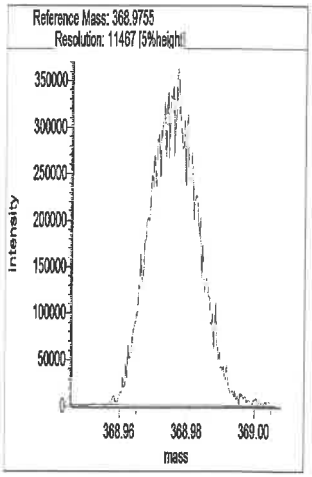


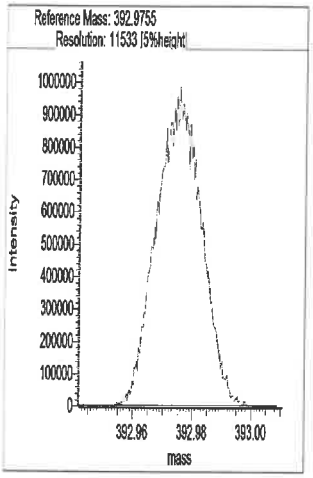


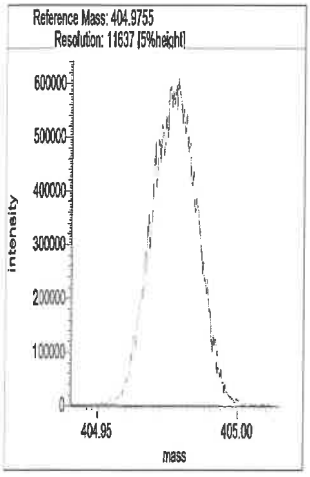












Segment 2

Lock mass 330.9787 [m/z] Resolution: 11949 [5%height]

Cali. mass 380.9755 [m/z] Resolution: 11616 [5%height]

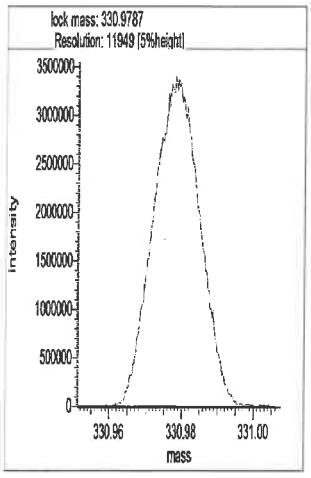
Ref. mass 342.9787 [m/z] Resolution: 11786 [5%height]

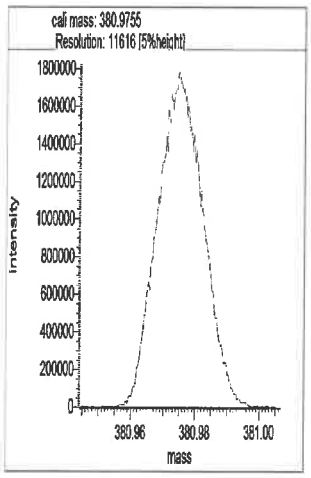
Ref. mass 354.9787 [m/z] Resolution: 11830 [5%height]

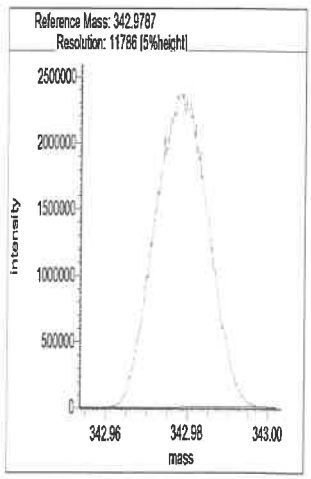
Ref. mass 368.9755 [m/z] Resolution: 11900 [5%height]

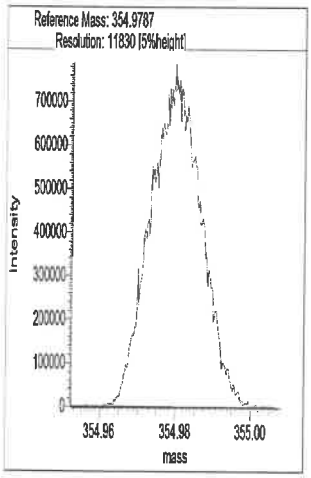
Ref. mass 392.9755 [m/z] Resolution: 11914 [5%height]

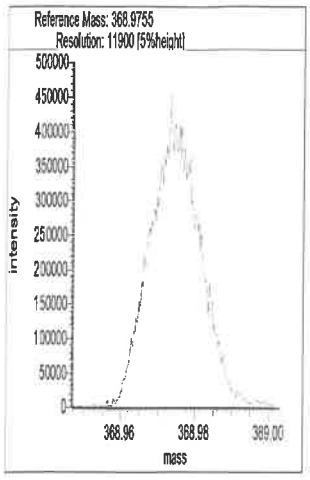
Ref. mass 404.9755 [m/z] Resolution: 11725 [5%height]

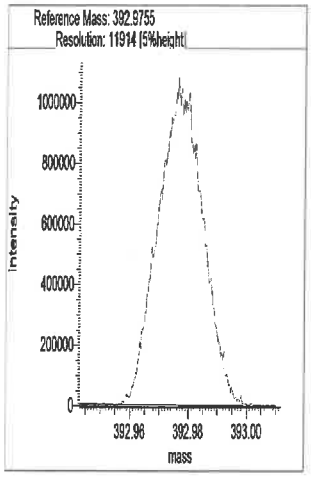


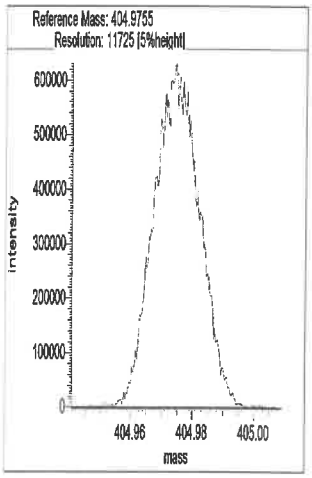












Segment 3

Lock mass 380.9755 [m/z] Resolution: 11792 [5%height]

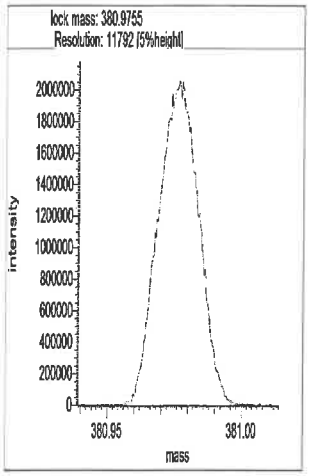
Cali. mass 430.9723 [m/z] Resolution: 11781 [5%height]

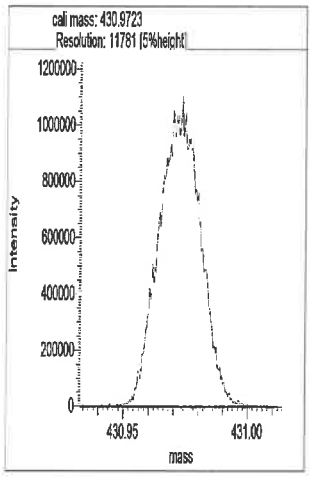
Ref. mass 392.9755 [m/z] Resolution: 11701 [5%height]

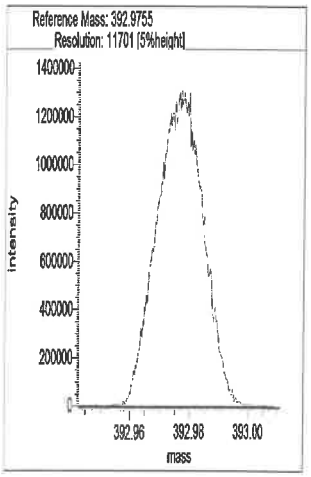
Ref. mass 404.9755 [m/z] Resolution: 11766 [5%height]

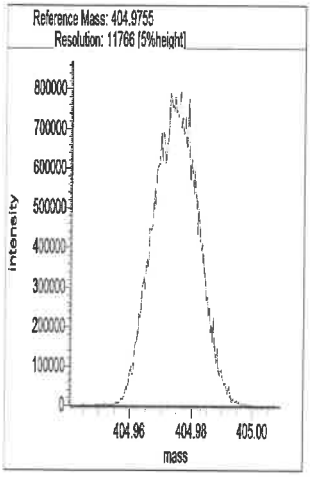
Ref. mass 416.9755 [m/z] Resolution: 12418 [5%height]

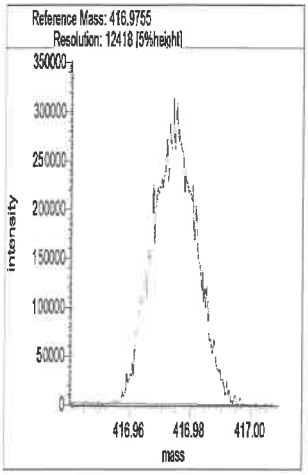
Ref. mass 442.9723 [m/z] Resolution: 11494 [5%height]

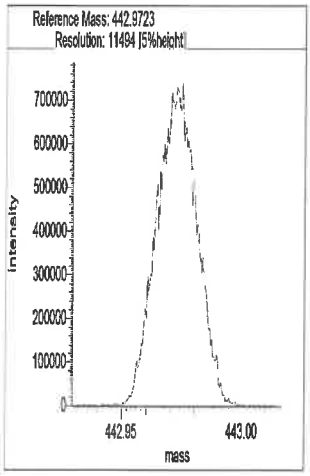












Segment 4

Lock mass 392.9754 [m/z] Resolution: 11761 [5%height]

Cali. mass 480.9691 [m/z] Resolution: 11820 [5%height]

Ref. mass 404.9755 [m/z] Resolution: 11795 [5%height]

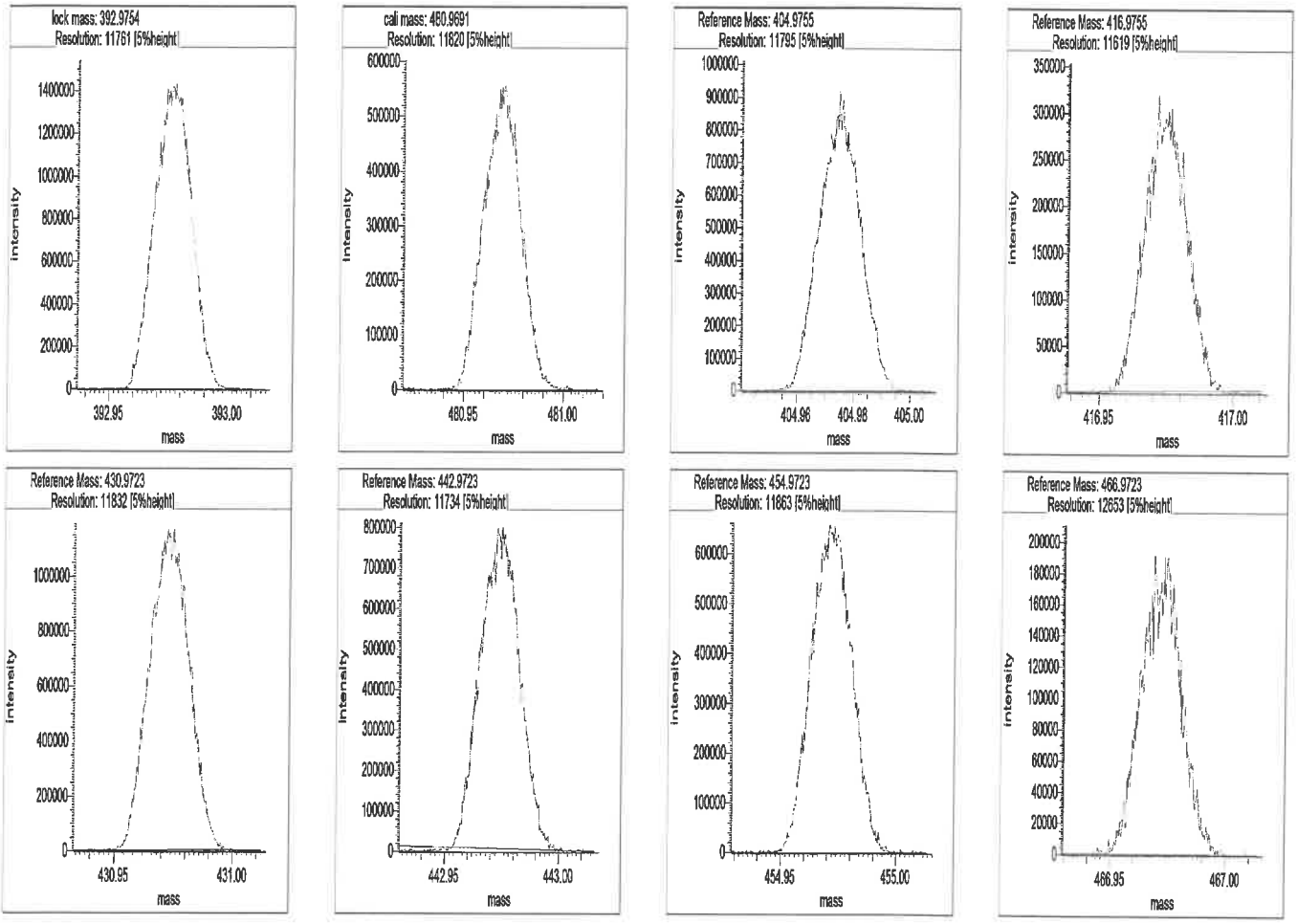
Ref. mass 416.9755 [m/z] Resolution: 11619 [5%height]

Ref. mass 430.9723 [m/z] Resolution: 11832 [5%height]

Ref. mass 442.9723 [m/z] Resolution: 11734 [5%height]

Ref. mass 454.9723 [m/z] Resolution: 11863 [5%height]

Ref. mass 466.9723 [m/z] Resolution: 12653 [5%height]



Segment 5

Lock mass 442.9723 [m/z] Resolution: 11680 [5%height]

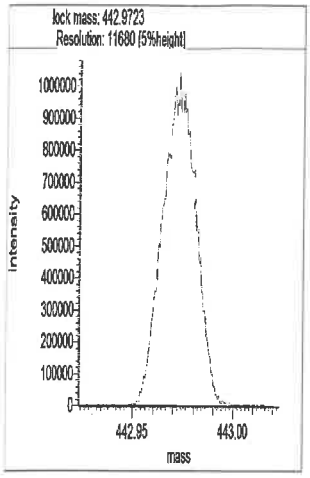
Cali. mass 504.9691 [m/z] Resolution: 11739 [5%height]

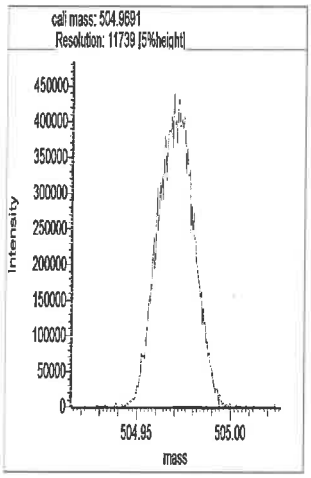
Ref. mass 454.9723 [m/z] Resolution: 11858 [5%height]

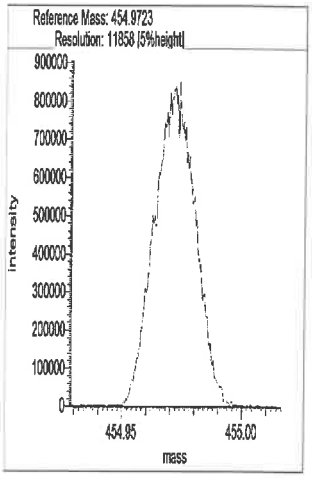
Ref. mass 466.9723 [m/z] Resolution: 12117 [5%height]

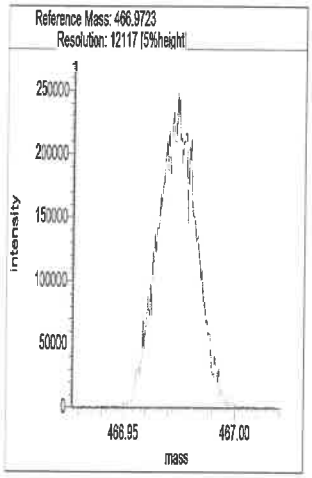
Ref. mass 480.9691 [m/z] Resolution: 11288 [5%height]

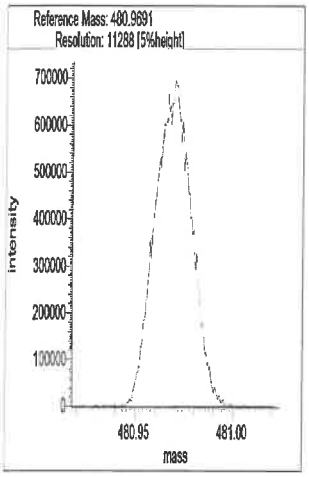
Ref. mass 492.9691 [m/z] Resolution: 11654 [5%height]

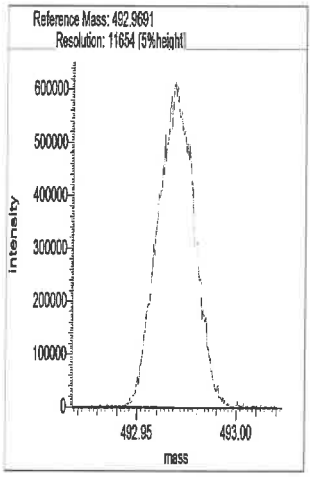

lock mass: 442.9723
Resolution: 11680 [5%height]
intensity
1000000
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
442.95
443.00
mass


cal mass: 504.9691
Resolution: 11739 [5%height]
intensity
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
504.95
505.00
mass


Reference Mass: 454.9723
Resolution: 11858 [5%height]
intensity
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
454.95
455.00
mass


Reference Mass: 466.9723
Resolution: 12117 [5%height]
intensity
250000
200000
150000
100000
50000
0
466.95
467.00
mass


Reference Mass: 480.9691
Resolution: 11288 [5%height]
intensity
700000
600000
500000
400000
300000
200000
100000
0
480.95
481.00
mass


Reference Mass: 492.9691
Resolution: 11654 [5%height]
intensity
600000
500000
400000
300000
200000
100000
0
492.95
493.00
mass

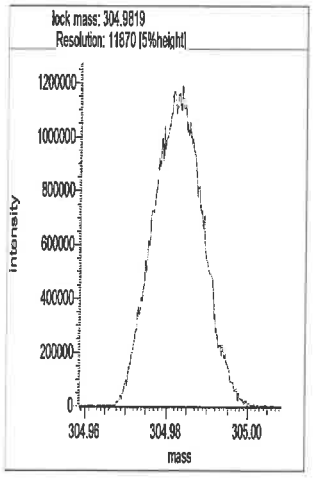
Resolution Check Report (DFS SN: 3487)

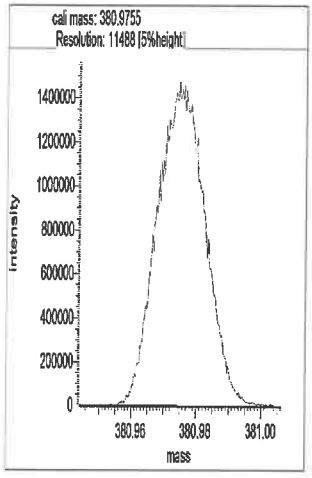
eurofins | Environment Testing TestAmerica

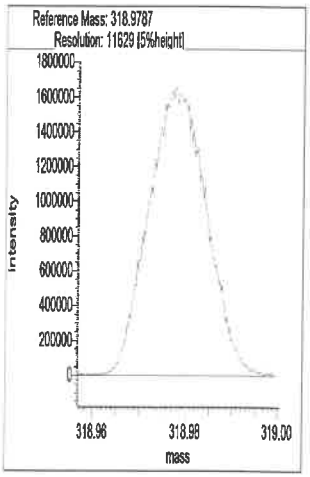
Date:	24 Aug 2022 20:20
MID Experiment:	5w_db5_pfk_singleGC01_RS
Target Resolution:	10000
Resolution Warning :	9950
Resolution Error :	9000
Reference:	pfk
Status:	RESOLUTION PASSED

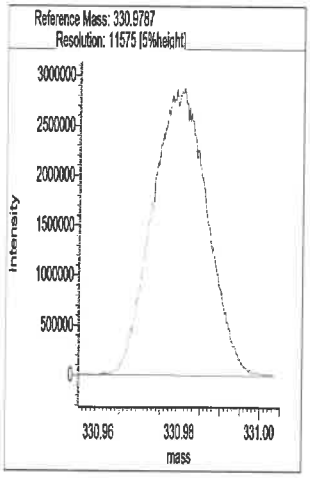
Segment 1

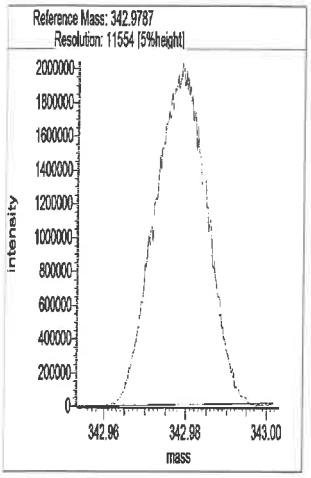
Lock mass 304.9819 [m/z] Resolution: 11870 [5%height]
Cali. mass 380.9755 [m/z] Resolution: 11488 [5%height]
Ref. mass 318.9787 [m/z] Resolution: 11629 [5%height]
Ref. mass 330.9787 [m/z] Resolution: 11575 [5%height]
Ref. mass 342.9787 [m/z] Resolution: 11554 [5%height]
Ref. mass 354.9787 [m/z] Resolution: 11598 [5%height]
Ref. mass 368.9755 [m/z] Resolution: 10940 [5%height]
Ref. mass 392.9755 [m/z] Resolution: 11566 [5%height]
Ref. mass 404.9755 [m/z] Resolution: 11735 [5%height]

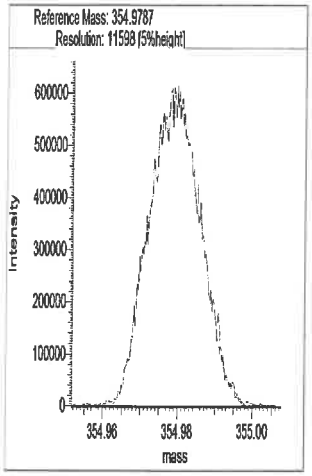


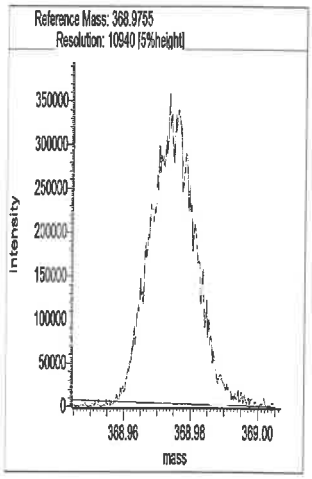


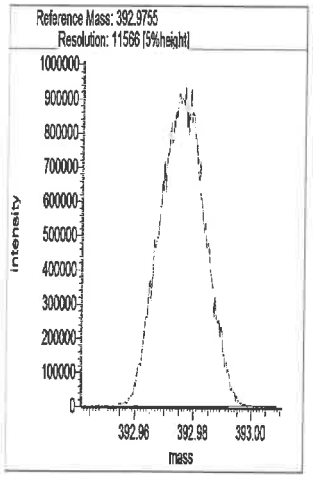


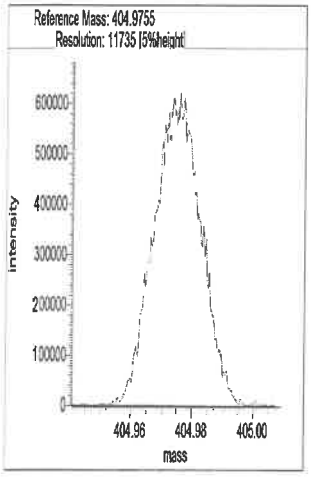












Segment 2

Lock mass 330.9787 [m/z] Resolution: 11655 [5%height]

Cali. mass 380.9755 [m/z] Resolution: 11897 [5%height]

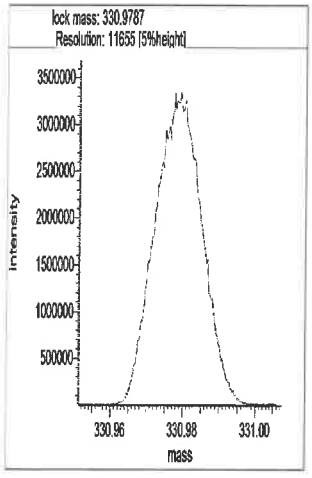
Ref. mass 342.9787 [m/z] Resolution: 11649 [5%height]

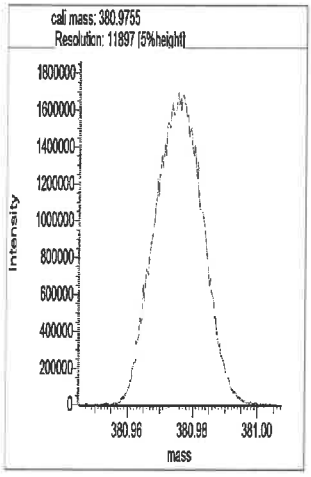
Ref. mass 354.9787 [m/z] Resolution: 12008 [5%height]

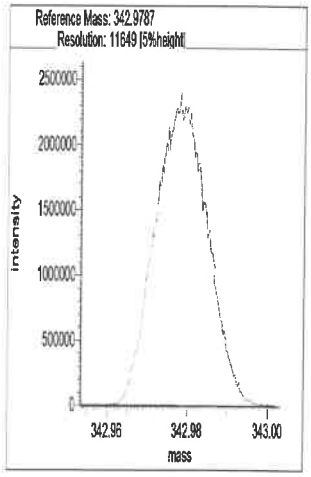
Ref. mass 368.9755 [m/z] Resolution: 11219 [5%height]

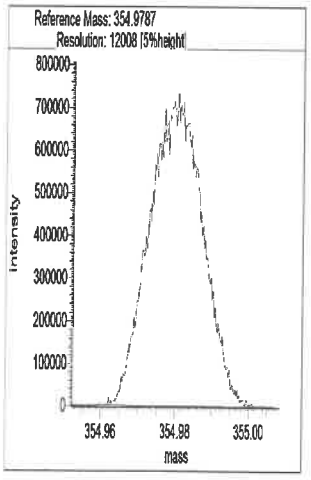
Ref. mass 392.9755 [m/z] Resolution: 11300 [5%height]

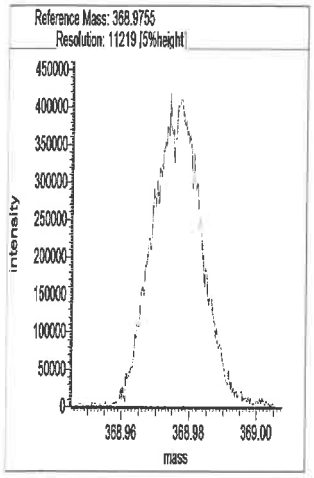
Ref. mass 404.9755 [m/z] Resolution: 11675 [5%height]

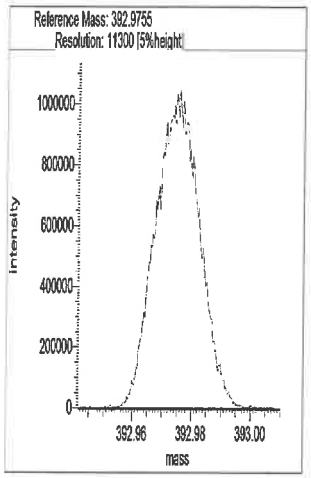


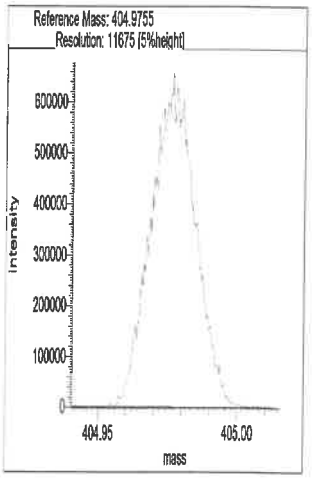












Segment 3

Lock mass 380.9755 [m/z] Resolution: 11581 [5%height]

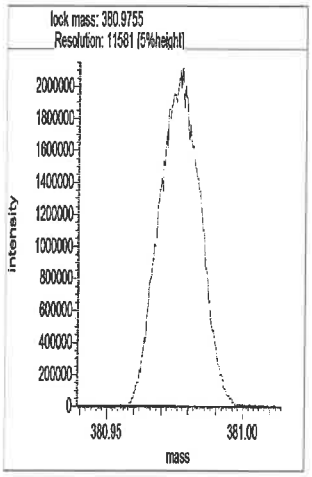
Cali. mass 430.9723 [m/z] Resolution: 11433 [5%height]

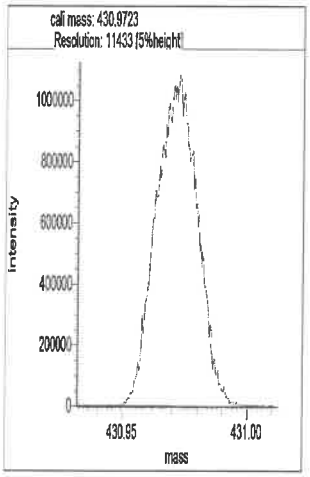
Ref. mass 392.9755 [m/z] Resolution: 11849 [5%height]

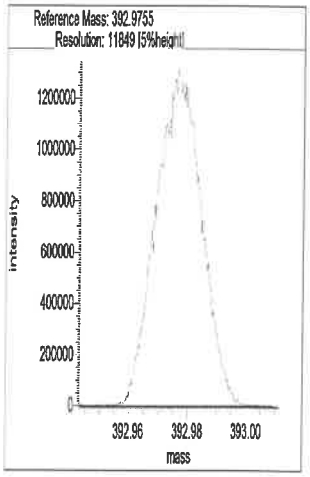
Ref. mass 404.9755 [m/z] Resolution: 11433 [5%height]

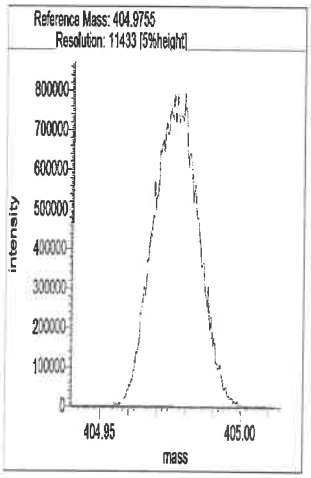
Ref. mass 416.9755 [m/z] Resolution: 11820 [5%height]

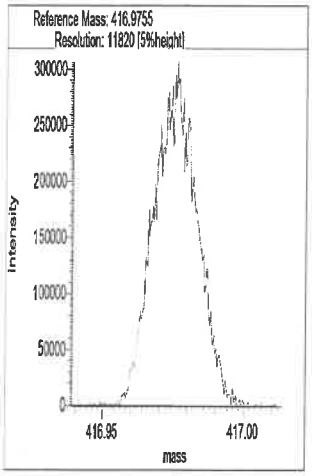
Ref. mass 442.9723 [m/z] Resolution: 11723 [5%height]

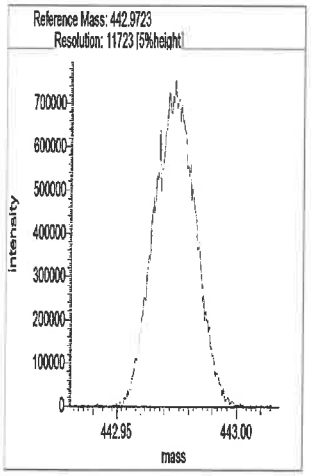












Segment 4

Lock mass 392.9754 [m/z] Resolution: 11645 [5%height]

Cali. mass 480.9691 [m/z] Resolution: 11466 [5%height]

Ref. mass 404.9755 [m/z] Resolution: 11959 [5%height]

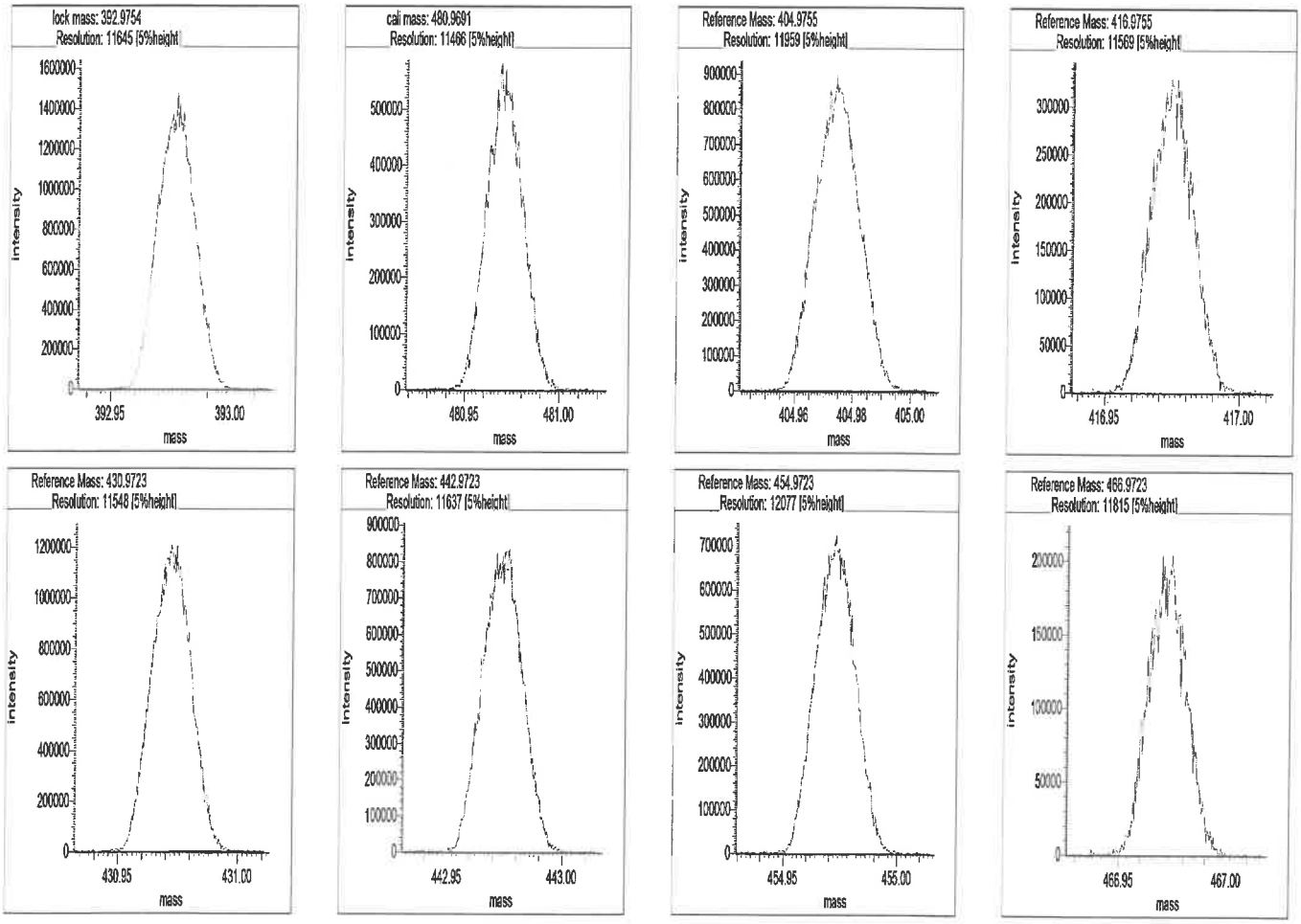
Ref. mass 416.9755 [m/z] Resolution: 11569 [5%height]

Ref. mass 430.9723 [m/z] Resolution: 11548 [5%height]

Ref. mass 442.9723 [m/z] Resolution: 11637 [5%height]

Ref. mass 454.9723 [m/z] Resolution: 12077 [5%height]

Ref. mass 466.9723 [m/z] Resolution: 11815 [5%height]



Segment 5

Lock mass 442.9723 [m/z] Resolution: 11810 [5%height]

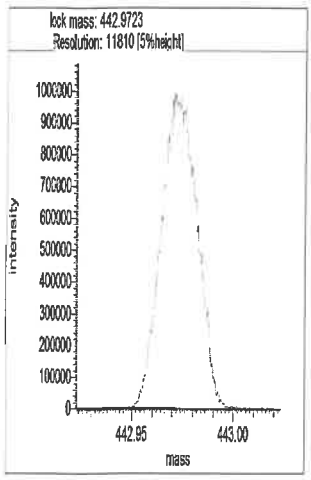
Cali. mass 504.9691 [m/z] Resolution: 11446 [5%height]

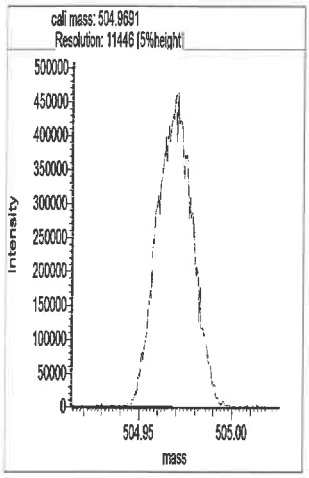
Ref. mass 454.9723 [m/z] Resolution: 11830 [5%height]

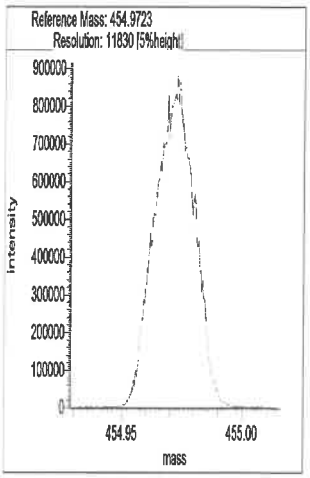
Ref. mass 466.9723 [m/z] Resolution: 11816 [5%height]

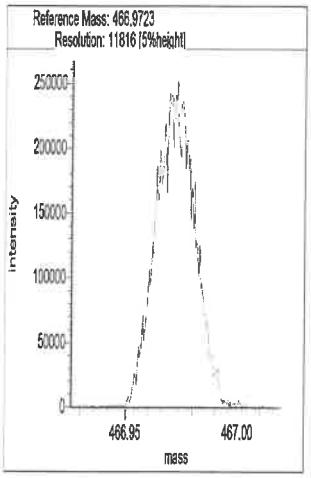
Ref. mass 480.9691 [m/z] Resolution: 11701 [5%height]

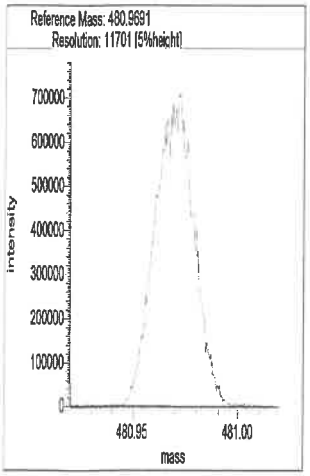
Ref. mass 492.9691 [m/z] Resolution: 11738 [5%height]

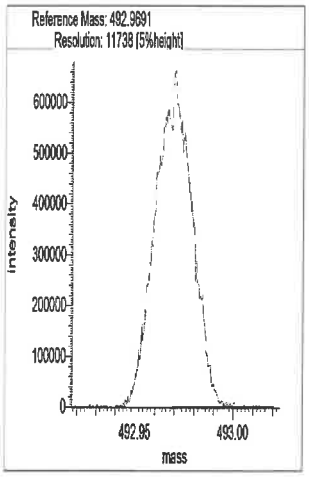

lock mass: 442.9723
Resolution: 11810 [5%height]
intensity
mass
442.95
443.00


cali mass: 504.9691
Resolution: 11446 [5%height]
intensity
mass
504.95
505.00


Reference Mass: 454.9723
Resolution: 11830 [5%height]
intensity
mass
454.95
455.00


Reference Mass: 466.9723
Resolution: 11816 [5%height]
intensity
mass
466.95
467.00


Reference Mass: 480.9691
Resolution: 11701 [5%height]
intensity
mass
480.95
481.00


Reference Mass: 492.9691
Resolution: 11738 [5%height]
intensity
mass
492.95
493.00

Calibration / 1,2,3,4,6,7,8-HpCDD

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

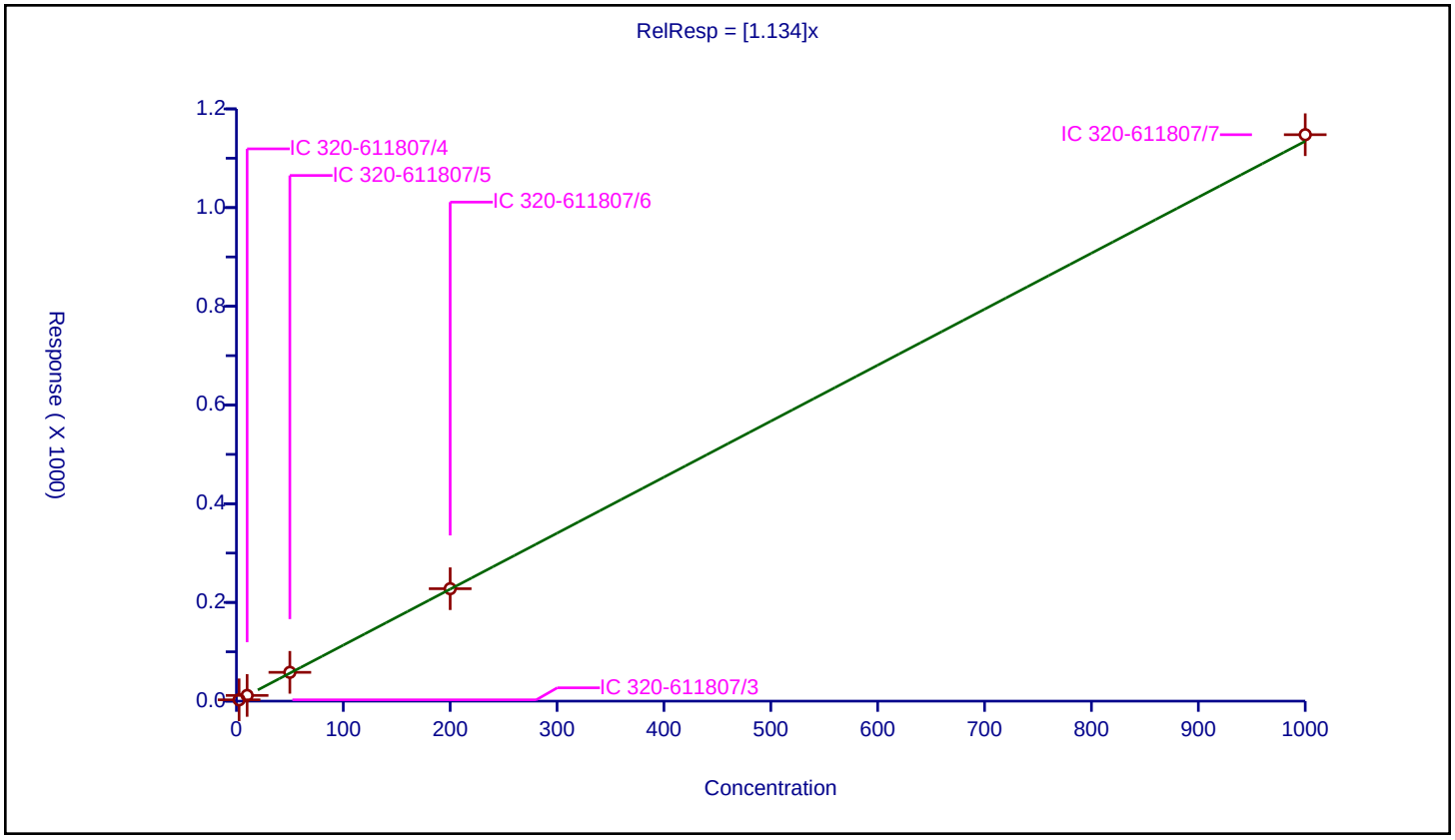
Curve Coefficients

Intercept:	0
Slope:	1.134

Error Coefficients

Standard Error:	91700000
Relative Standard Error:	3.7
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-611807/3	2.5	2.655592	100.0	17946207.0	1.062237	Y
2	IC 320-611807/4	10.0	11.566454	100.0	15130004.0	1.156645	Y
3	IC 320-611807/5	50.0	58.344951	100.0	5960245.0	1.166899	Y
4	IC 320-611807/6	200.0	227.793885	100.0	13491234.0	1.138969	Y
5	IC 320-611807/7	1000.0	1147.7069	100.0	15747831.0	1.147707	Y



Calibration / 1,2,3,4,6,7,8-HpCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

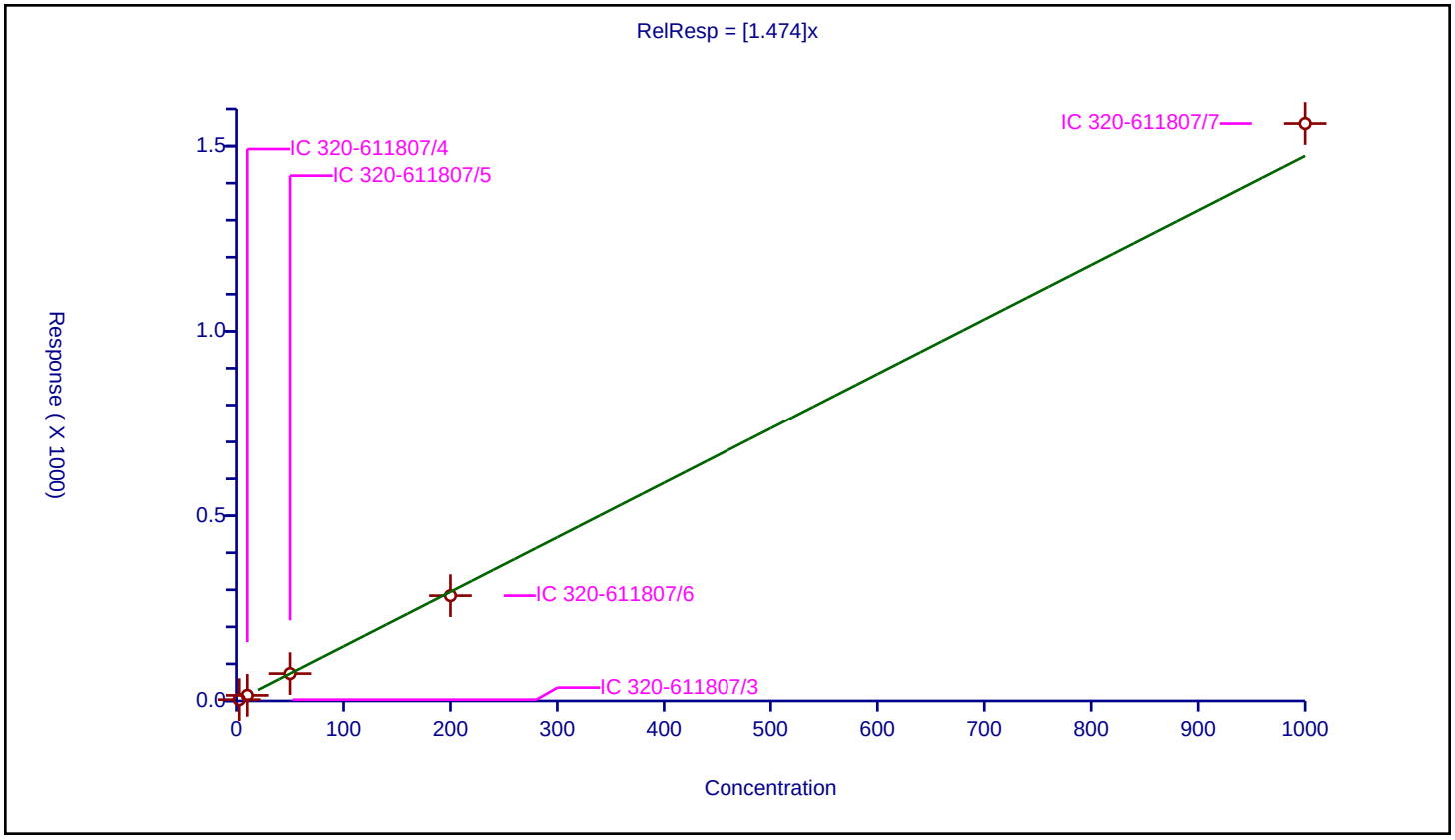
Curve Coefficients

Intercept:	0
Slope:	1.474

Error Coefficients

Standard Error:	170000000
Relative Standard Error:	4.4
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-611807/3	2.5	3.499309	100.0	23031064.0	1.399723	Y
2	IC 320-611807/4	10.0	15.08985	100.0	20360428.0	1.508985	Y
3	IC 320-611807/5	50.0	73.835745	100.0	8092560.0	1.476715	Y
4	IC 320-611807/6	200.0	284.313448	100.0	18756027.0	1.421567	Y
5	IC 320-611807/7	1000.0	1560.799945	100.0	21484763.0	1.5608	Y



Calibration / 1,2,3,4,7,8,9-HpCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

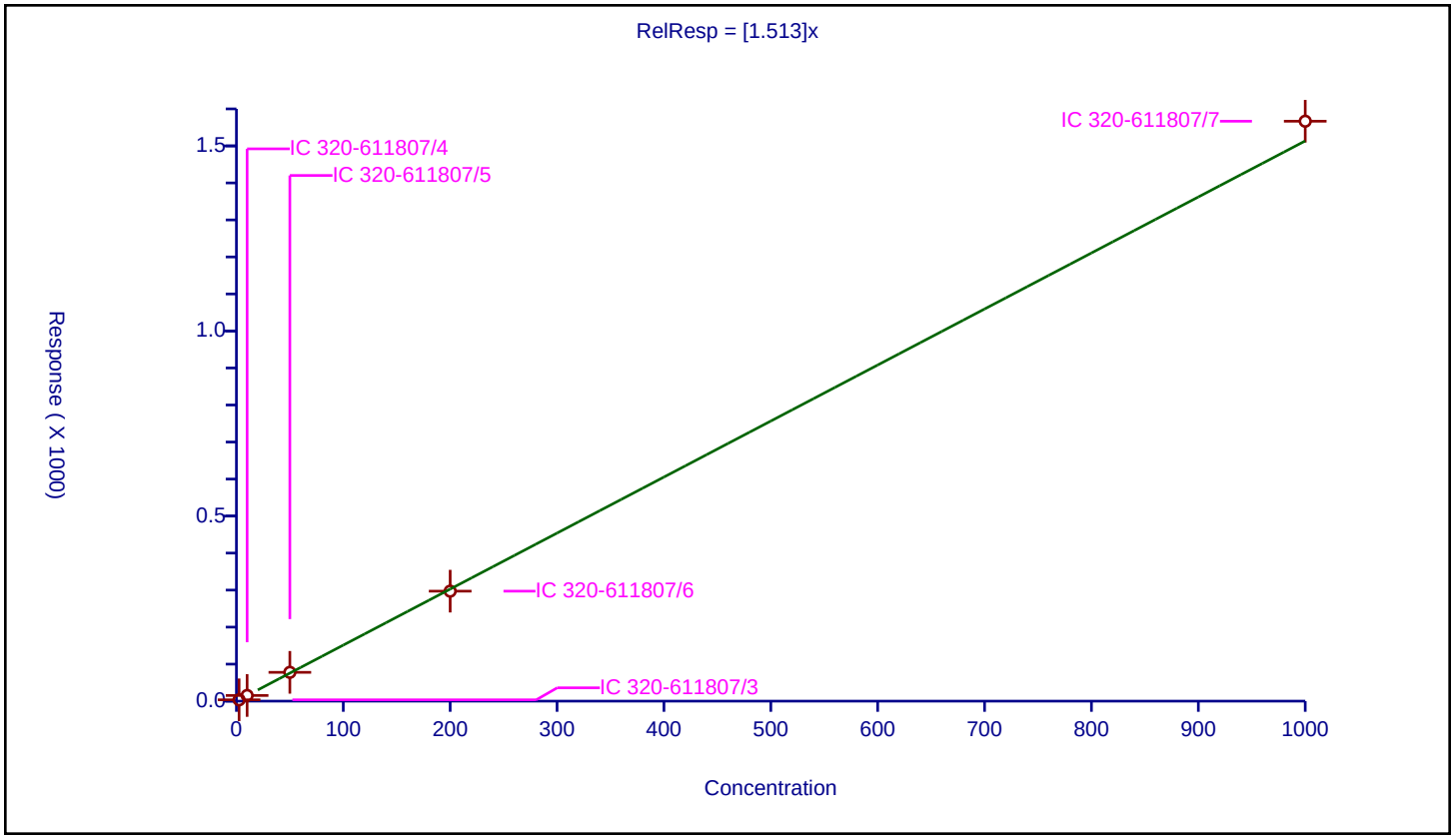
Curve Coefficients

Intercept:	0
Slope:	1.513

Error Coefficients

Standard Error:	141000000
Relative Standard Error:	3.7
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-611807/3	2.5	3.573074	100.0	18930590.0	1.42923	Y
2	IC 320-611807/4	10.0	15.292484	100.0	17145723.0	1.529248	Y
3	IC 320-611807/5	50.0	77.807479	100.0	6602373.0	1.55615	Y
4	IC 320-611807/6	200.0	297.157113	100.0	15336168.0	1.485786	Y
5	IC 320-611807/7	1000.0	1566.699887	100.0	17714859.0	1.5667	Y



Calibration / 1,2,3,4,7,8-HxCDD

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

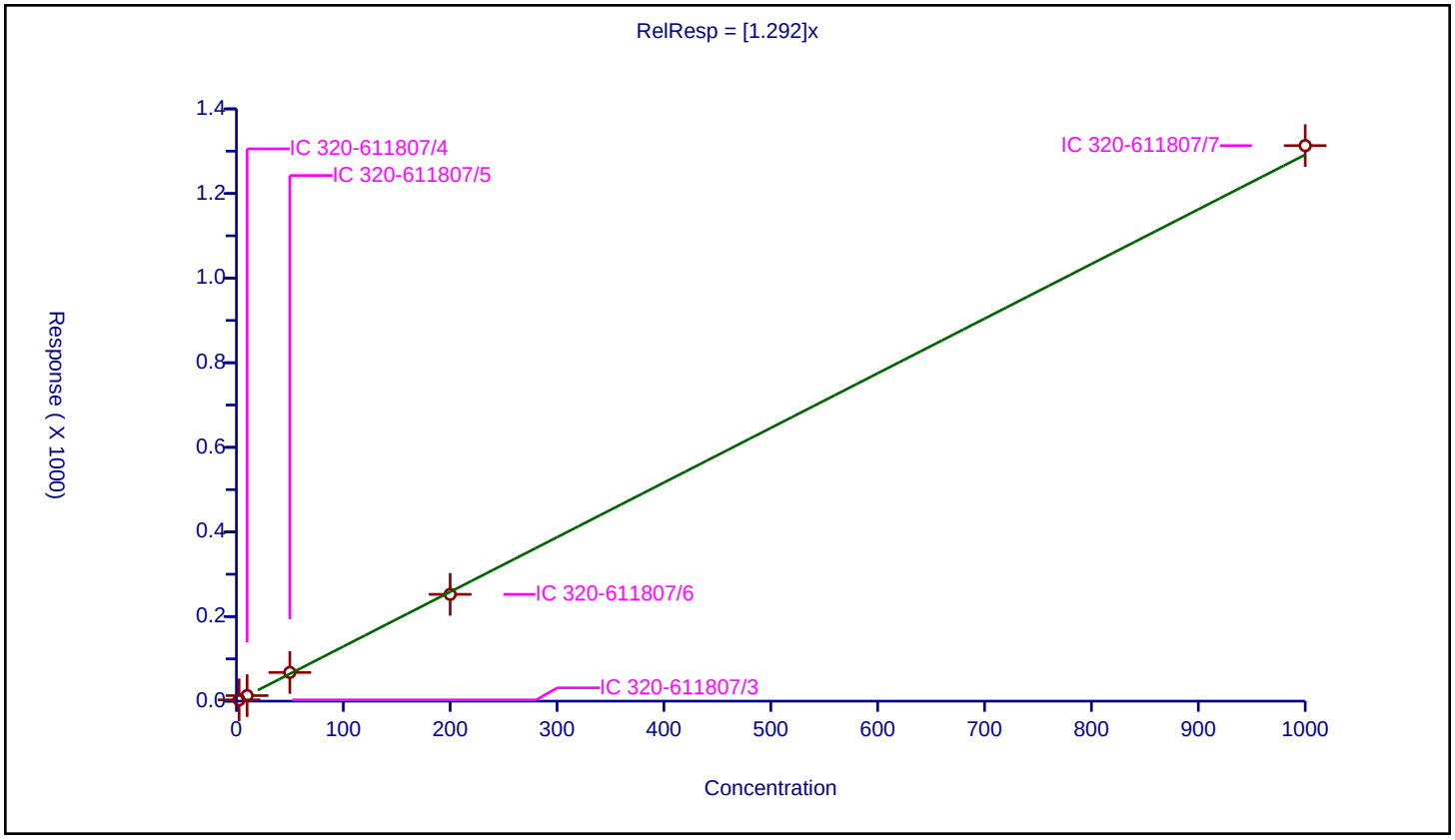
Curve Coefficients

Intercept:	0
Slope:	1.292

Error Coefficients

Standard Error:	106000000
Relative Standard Error:	4.0
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-611807/3	2.5	3.051851	100.0	17137927.0	1.22074	Y
2	IC 320-611807/4	10.0	13.051338	100.0	15245065.0	1.305134	Y
3	IC 320-611807/5	50.0	67.83881	100.0	5852016.0	1.356776	Y
4	IC 320-611807/6	200.0	252.449896	100.0	13673089.0	1.262249	Y
5	IC 320-611807/7	1000.0	1313.174375	100.0	15855568.0	1.313174	Y



Calibration / 1,2,3,4,7,8-HxCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

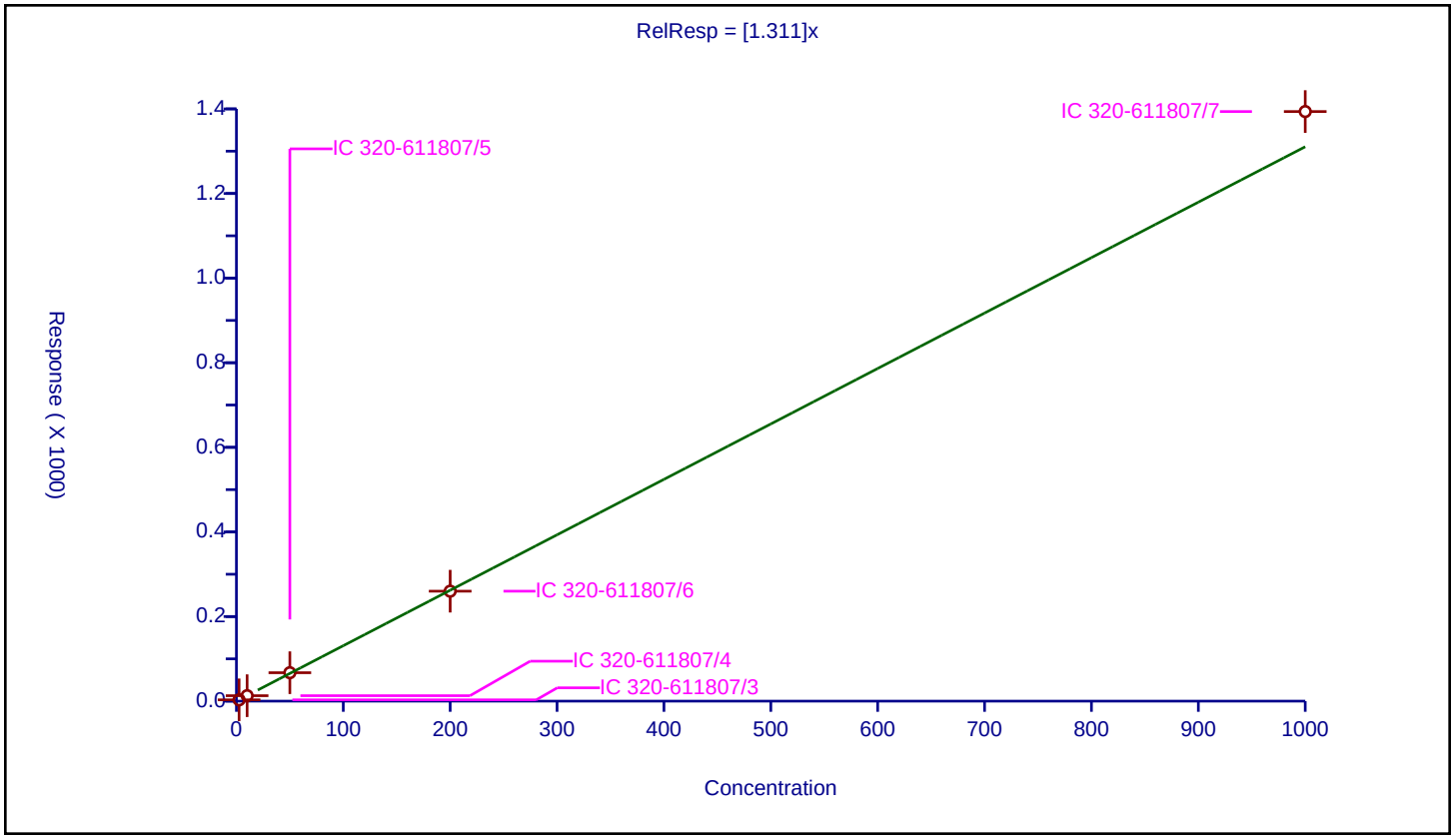
Curve Coefficients

Intercept:	0
Slope:	1.311

Error Coefficients

Standard Error:	186000000
Relative Standard Error:	4.8
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-611807/3	2.5	3.06495	100.0	28872674.0	1.22598	Y
2	IC 320-611807/4	10.0	12.888614	100.0	27355967.0	1.288861	Y
3	IC 320-611807/5	50.0	67.217019	100.0	10410420.0	1.34434	Y
4	IC 320-611807/6	200.0	259.947636	100.0	22993744.0	1.299738	Y
5	IC 320-611807/7	1000.0	1393.681647	100.0	26273178.0	1.393682	Y



Calibration / 1,2,3,6,7,8-HxCDD

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

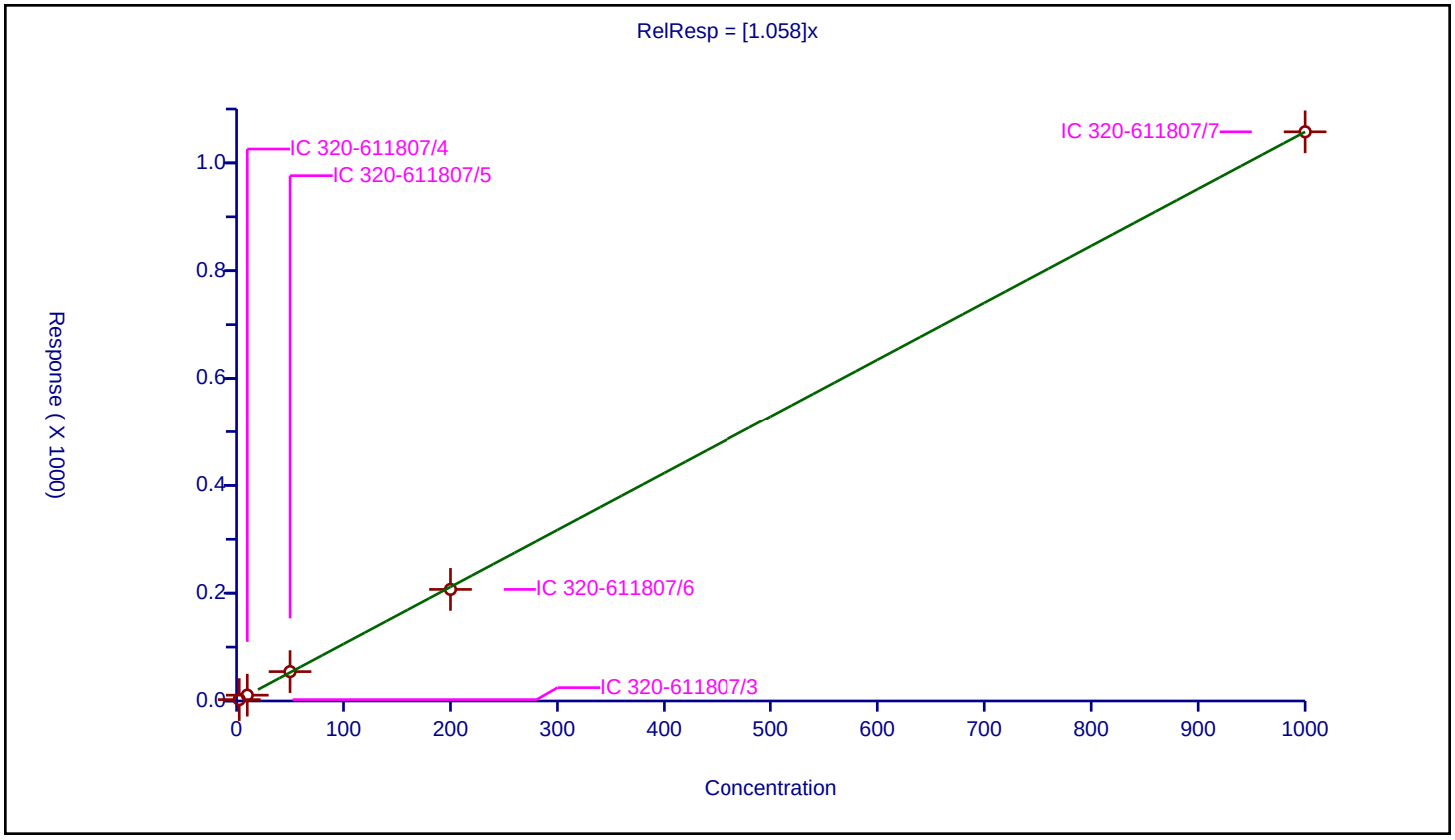
Curve Coefficients

Intercept:	0
Slope:	1.058

Error Coefficients

Standard Error:	108000000
Relative Standard Error:	2.6
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-611807/3	2.5	2.566288	100.0	21036692.0	1.026515	Y
2	IC 320-611807/4	10.0	10.793767	100.0	18524524.0	1.079377	Y
3	IC 320-611807/5	50.0	54.475254	100.0	7321238.0	1.089505	Y
4	IC 320-611807/6	200.0	207.018455	100.0	16843008.0	1.035092	Y
5	IC 320-611807/7	1000.0	1057.681062	100.0	20145645.0	1.057681	Y



Calibration / 1,2,3,6,7,8-HxCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

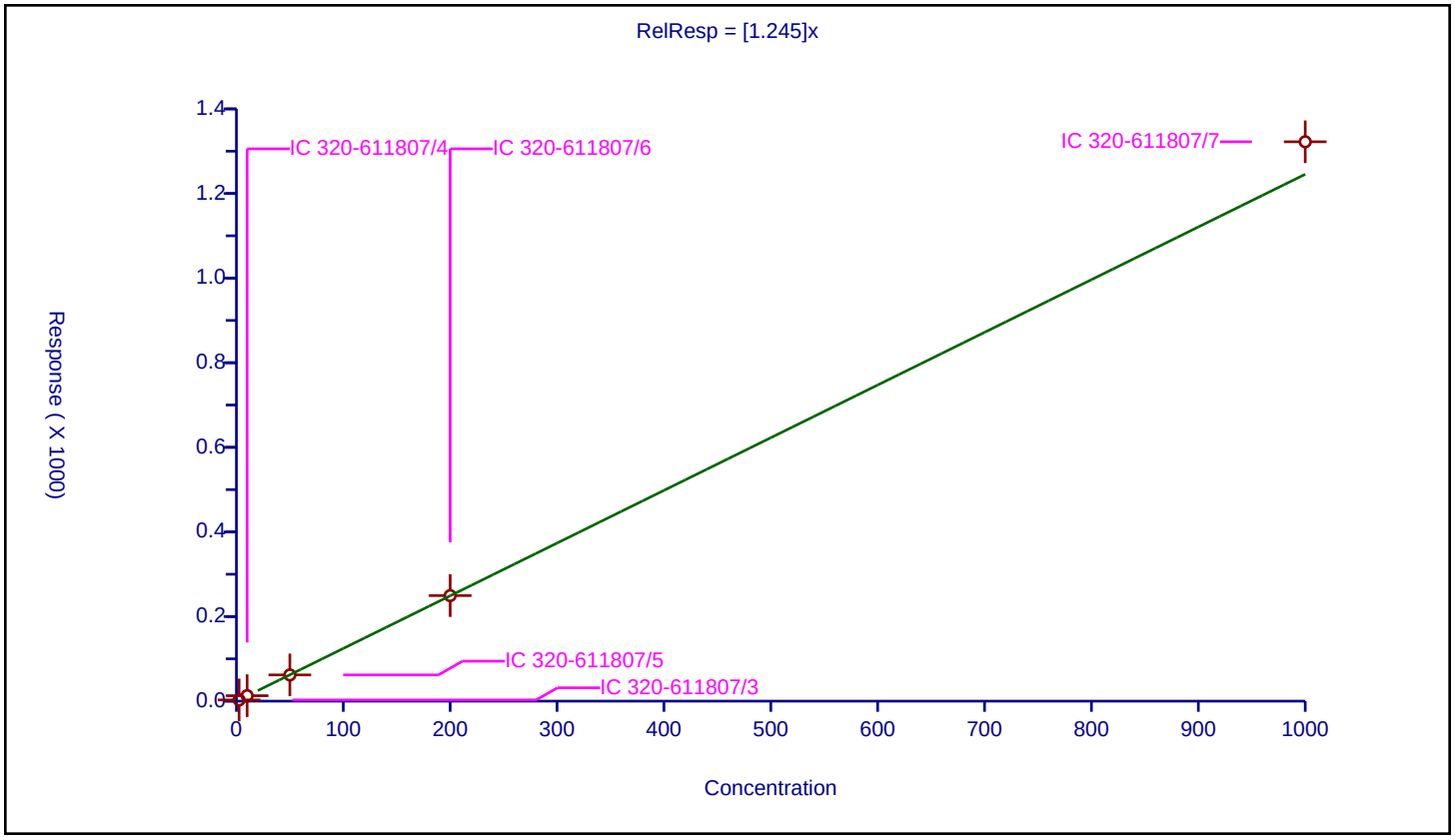
Curve Coefficients

Intercept:	0
Slope:	1.245

Error Coefficients

Standard Error:	197000000
Relative Standard Error:	5.9
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-611807/3	2.5	2.820706	100.0	31491302.0	1.128282	Y
2	IC 320-611807/4	10.0	12.890963	100.0	28482077.0	1.289096	Y
3	IC 320-611807/5	50.0	62.008151	100.0	11552628.0	1.240163	Y
4	IC 320-611807/6	200.0	249.453853	100.0	24810904.0	1.247269	Y
5	IC 320-611807/7	1000.0	1322.250363	100.0	29423048.0	1.32225	Y



Calibration / 1,2,3,7,8,9-HxCDD

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

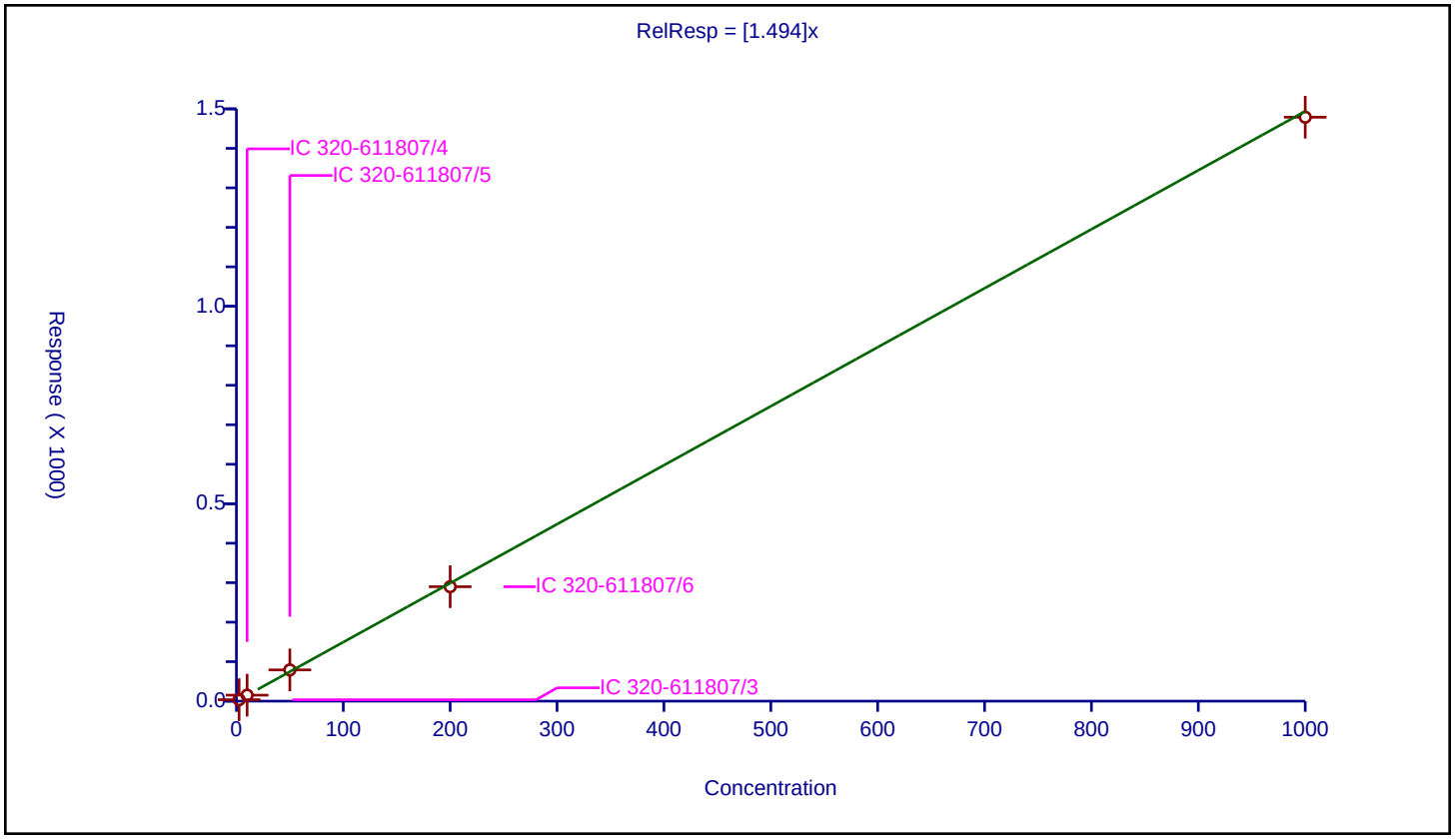
Curve Coefficients

Intercept:	0
Slope:	1.494

Error Coefficients

Standard Error:	119000000
Relative Standard Error:	3.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-611807/3	2.5	3.611755	100.0	17137927.0	1.444702	Y
2	IC 320-611807/4	10.0	15.142008	100.0	15245065.0	1.514201	Y
3	IC 320-611807/5	50.0	79.119264	100.0	5852016.0	1.582385	Y
4	IC 320-611807/6	200.0	289.833709	100.0	13673089.0	1.449169	Y
5	IC 320-611807/7	1000.0	1478.875326	100.0	15855568.0	1.478875	Y



Calibration / 1,2,3,7,8,9-HxCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

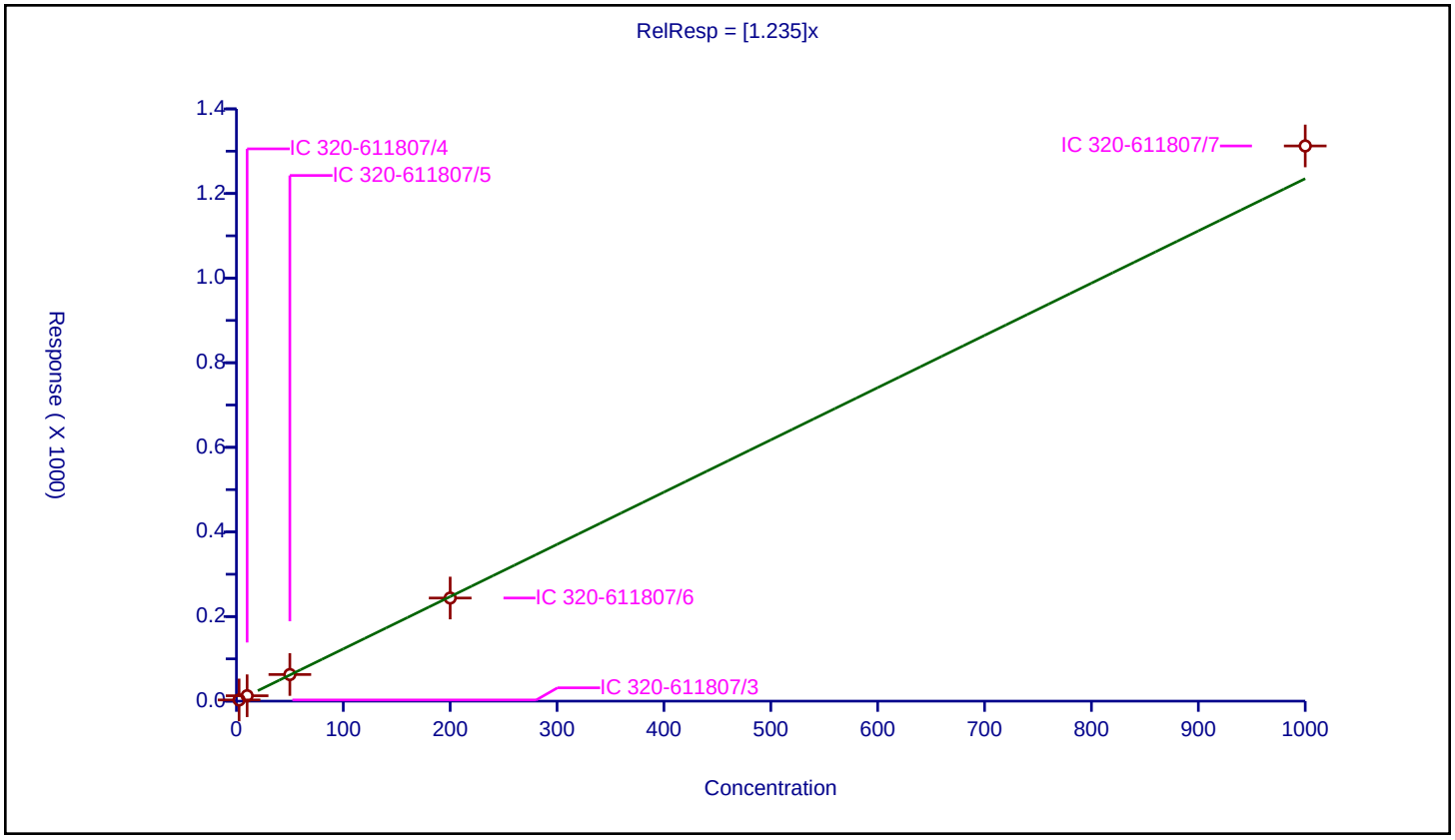
Curve Coefficients

Intercept:	0
Slope:	1.235

Error Coefficients

Standard Error:	172000000
Relative Standard Error:	6.1
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-611807/3	2.5	2.785305	100.0	27792392.0	1.114122	Y
2	IC 320-611807/4	10.0	12.722876	100.0	25001777.0	1.272288	Y
3	IC 320-611807/5	50.0	62.896129	100.0	10243880.0	1.257923	Y
4	IC 320-611807/6	200.0	243.736992	100.0	22568925.0	1.218685	Y
5	IC 320-611807/7	1000.0	1312.418194	100.0	25808914.0	1.312418	Y



Calibration / 1,2,3,7,8-PeCDD

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

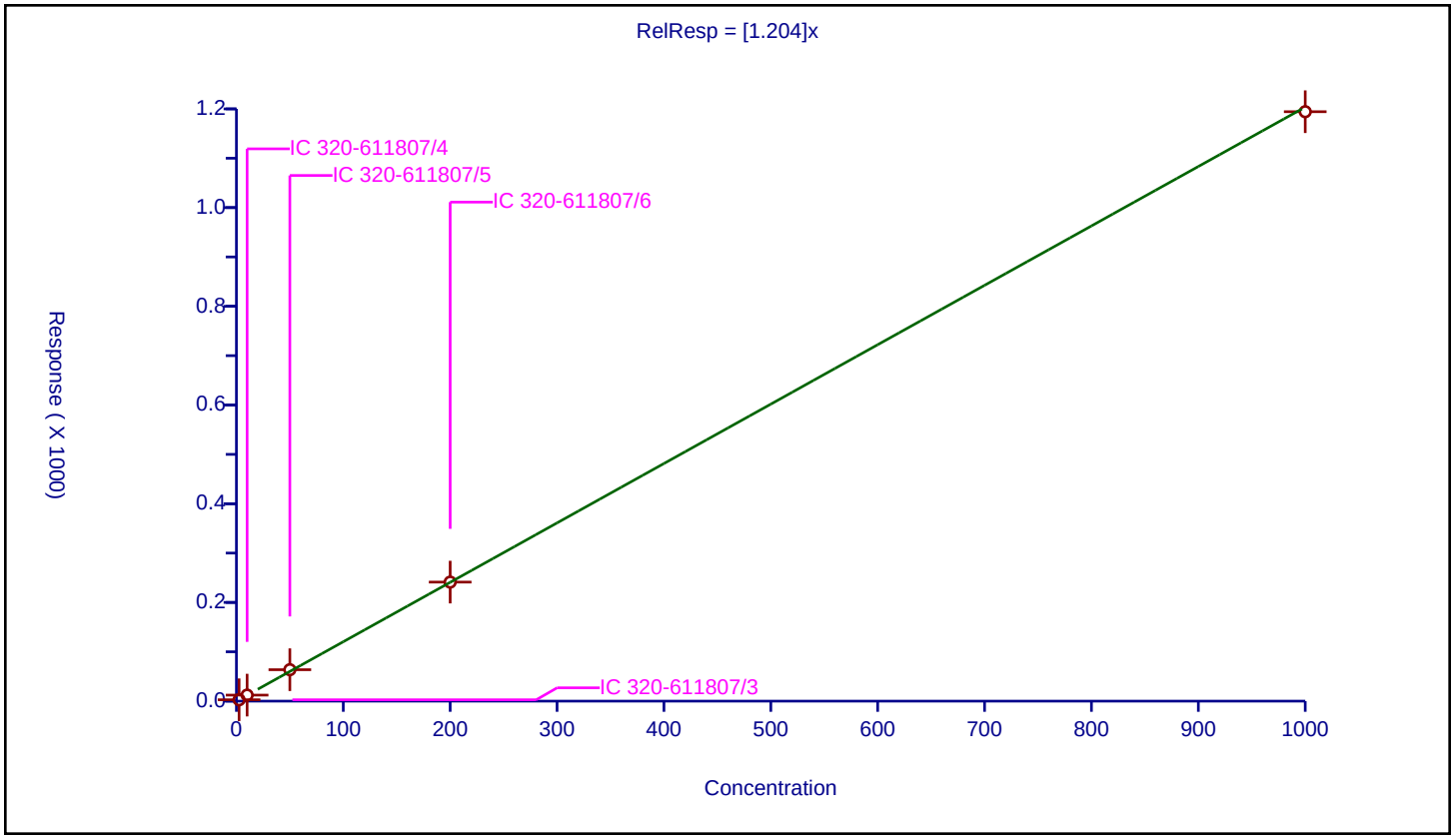
Curve Coefficients

Intercept:	0
Slope:	1.204

Error Coefficients

Standard Error:	79800000
Relative Standard Error:	4.6
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-611807/3	2.5	2.80139	100.0	14933694.0	1.120556	Y
2	IC 320-611807/4	10.0	12.230021	100.0	13051343.0	1.223002	Y
3	IC 320-611807/5	50.0	63.718453	100.0	5243966.0	1.274369	Y
4	IC 320-611807/6	200.0	241.185418	100.0	11377488.0	1.205927	Y
5	IC 320-611807/7	1000.0	1194.280516	100.0	13159910.0	1.194281	Y



Calibration / 1,2,3,7,8-PeCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

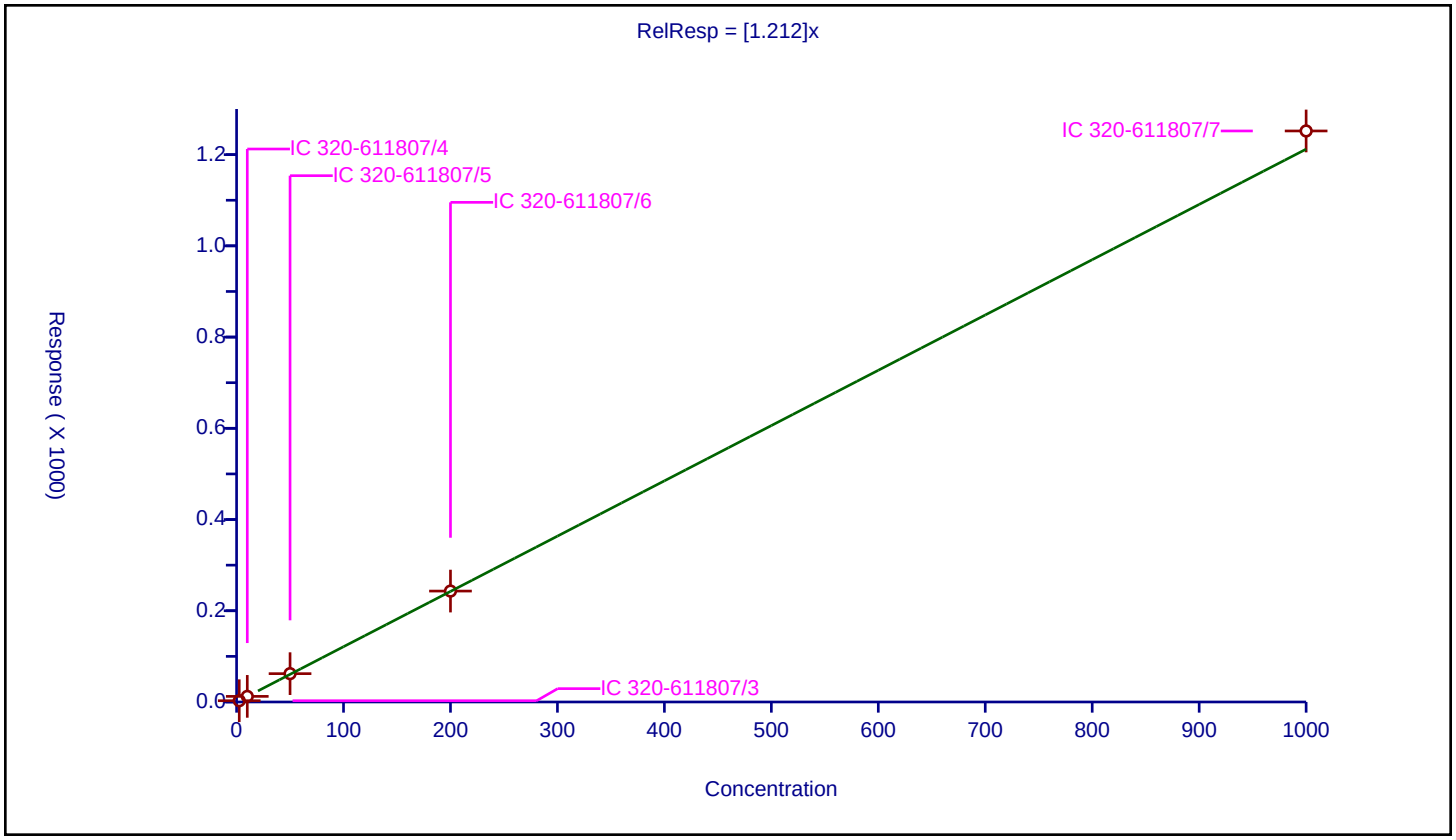
Curve Coefficients

Intercept:	0
Slope:	1.212

Error Coefficients

Standard Error:	166000000
Relative Standard Error:	4.3
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-611807/3	2.5	2.803001	100.0	29941834.0	1.121201	Y
2	IC 320-611807/4	10.0	12.289121	100.0	27687041.0	1.228912	Y
3	IC 320-611807/5	50.0	62.109161	100.0	11062637.0	1.242183	Y
4	IC 320-611807/6	200.0	243.182731	100.0	23083179.0	1.215914	Y
5	IC 320-611807/7	1000.0	1251.886552	100.0	26205686.0	1.251887	Y



Calibration / 2,3,4,6,7,8-HxCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

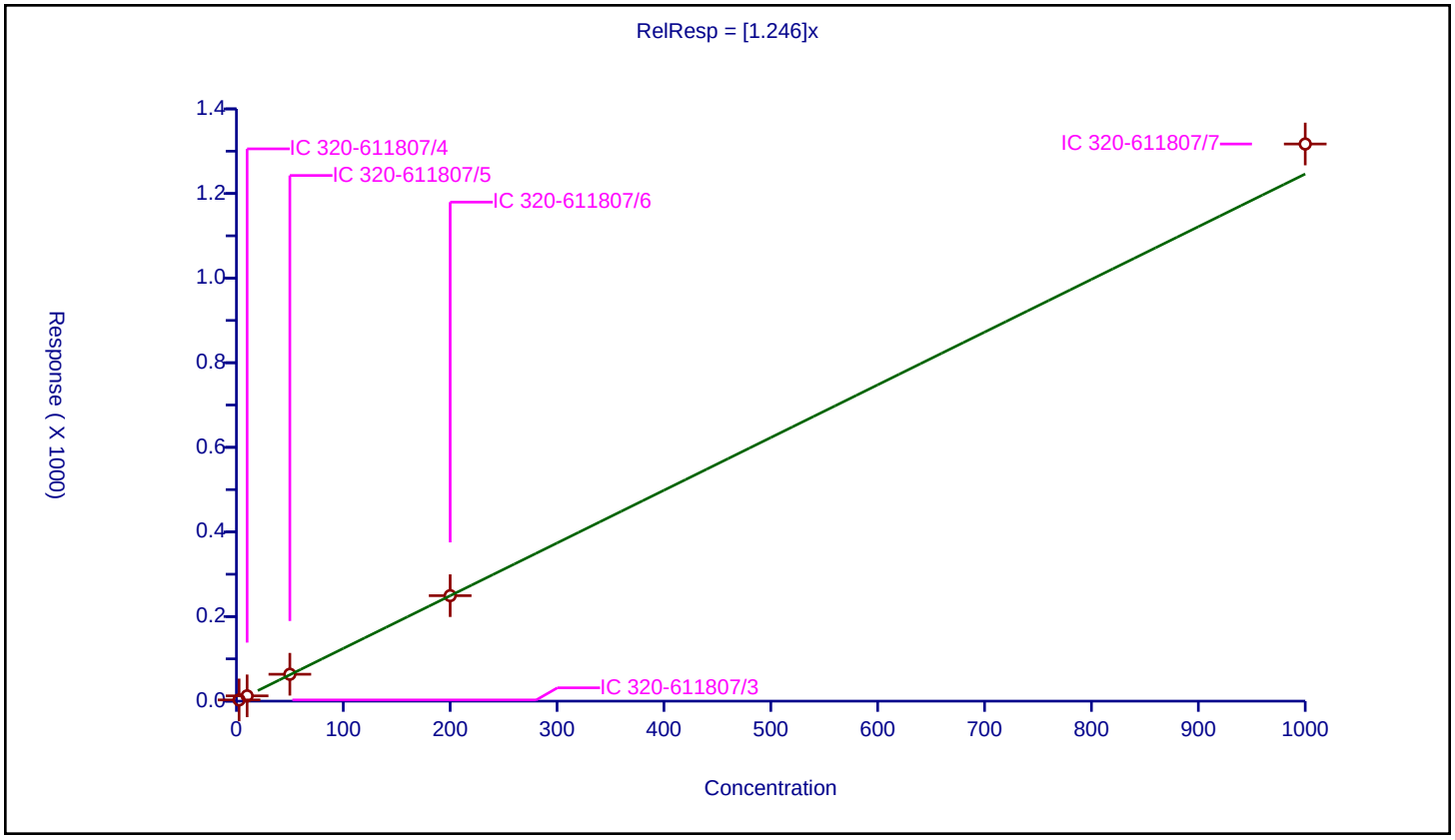
Curve Coefficients

Intercept:	0
Slope:	1.246

Error Coefficients

Standard Error:	186000000
Relative Standard Error:	5.0
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-611807/3	2.5	2.868379	100.0	29587200.0	1.147352	Y
2	IC 320-611807/4	10.0	12.481868	100.0	27444442.0	1.248187	Y
3	IC 320-611807/5	50.0	63.57429	100.0	10540566.0	1.271486	Y
4	IC 320-611807/6	200.0	249.331356	100.0	23363414.0	1.246657	Y
5	IC 320-611807/7	1000.0	1317.033334	100.0	27814237.0	1.317033	Y



Calibration / 2,3,4,7,8-PeCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

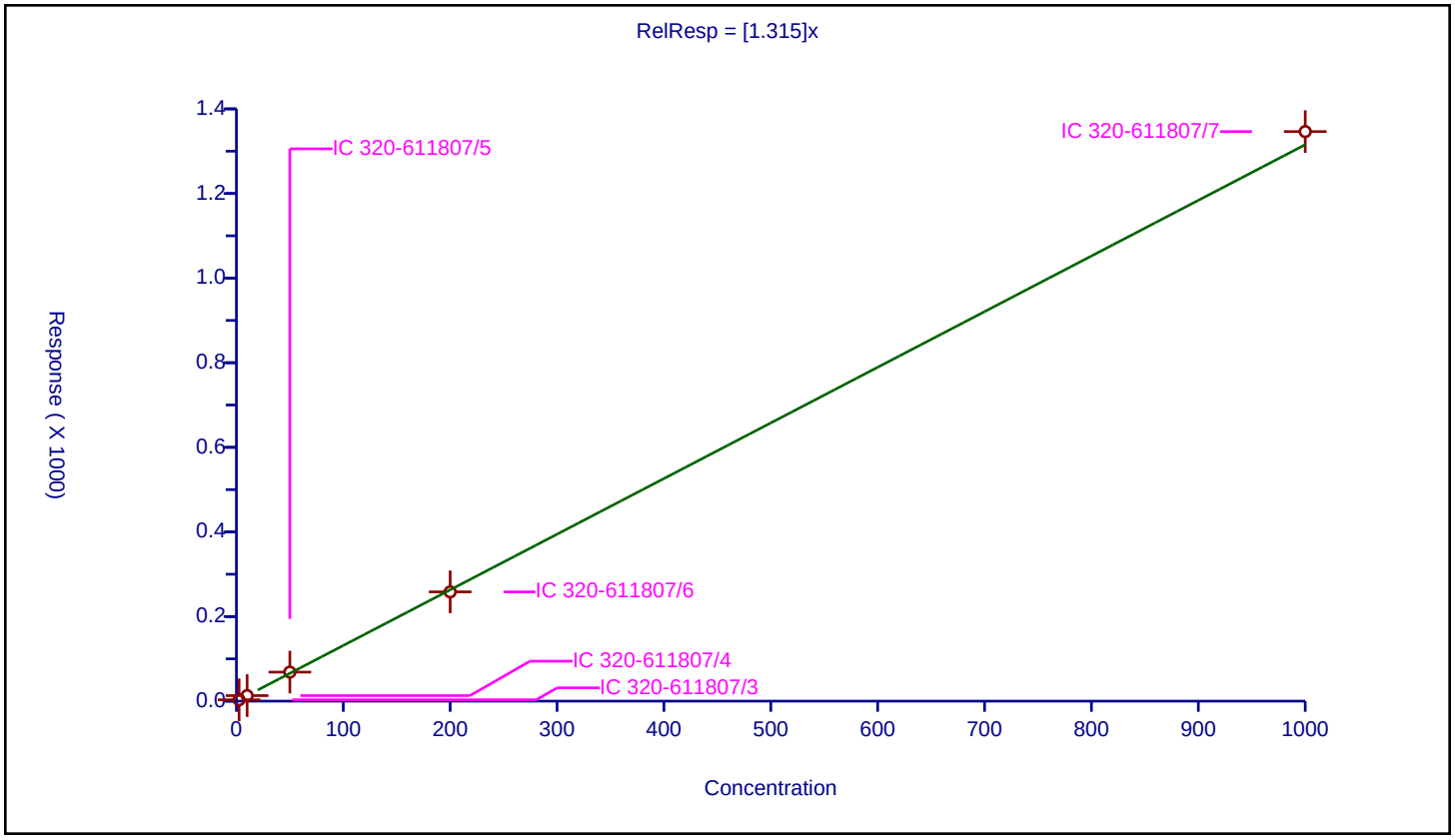
Curve Coefficients

Intercept:	0
Slope:	1.315

Error Coefficients

Standard Error:	163000000
Relative Standard Error:	3.4
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-611807/3	2.5	3.150691	100.0	26828722.0	1.260276	Y
2	IC 320-611807/4	10.0	13.064472	100.0	25629471.0	1.306447	Y
3	IC 320-611807/5	50.0	68.617246	100.0	9738422.0	1.372345	Y
4	IC 320-611807/6	200.0	258.284175	100.0	21476320.0	1.291421	Y
5	IC 320-611807/7	1000.0	1346.345438	100.0	23891234.0	1.346345	Y



Calibration / 2,3,7,8-TCDD

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

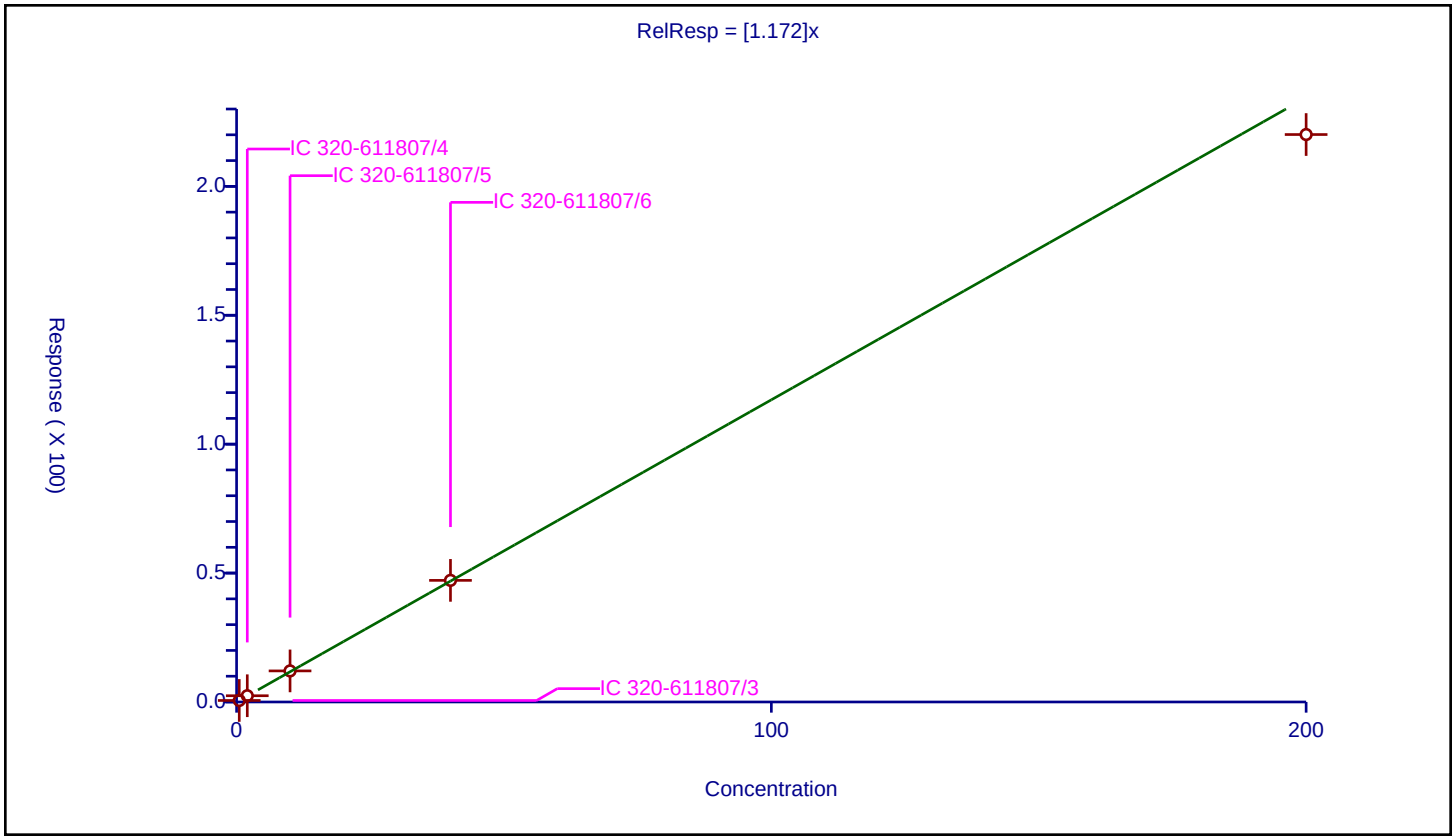
Curve Coefficients

Intercept:	0
Slope:	1.172

Error Coefficients

Standard Error:	23200000
Relative Standard Error:	3.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-611807/3	0.5	0.581866	100.0	23962210.0	1.163732	Y
2	IC 320-611807/4	2.0	2.422798	100.0	22083020.0	1.211399	Y
3	IC 320-611807/5	10.0	12.052972	100.0	9220921.0	1.205297	Y
4	IC 320-611807/6	40.0	47.171459	100.0	18773036.0	1.179286	Y
5	IC 320-611807/7	200.0	220.096347	100.0	20703409.0	1.100482	Y



Calibration / 2,3,7,8-TCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

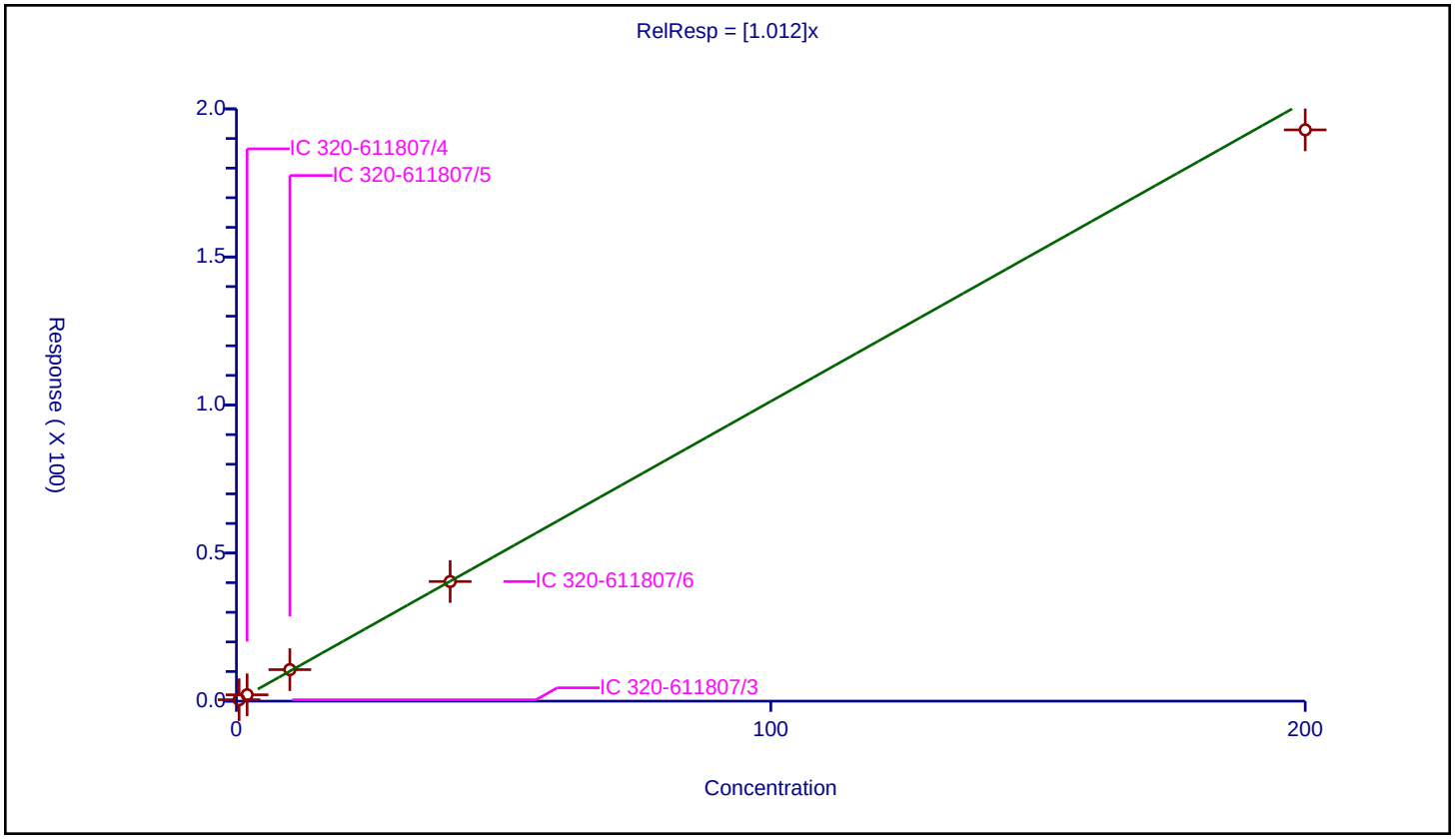
Curve Coefficients

Intercept:	0
Slope:	1.012

Error Coefficients

Standard Error:	35600000
Relative Standard Error:	5.4
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-611807/3	0.5	0.476474	100.0	42810524.0	0.952948	Y
2	IC 320-611807/4	2.0	2.142188	100.0	38734547.0	1.071094	Y
3	IC 320-611807/5	10.0	10.636529	100.0	16883422.0	1.063653	Y
4	IC 320-611807/6	40.0	40.394378	100.0	34316204.0	1.009859	Y
5	IC 320-611807/7	200.0	192.914556	100.0	36187243.0	0.964573	Y



Calibration / 37Cl4-2,3,7,8-TCDD

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

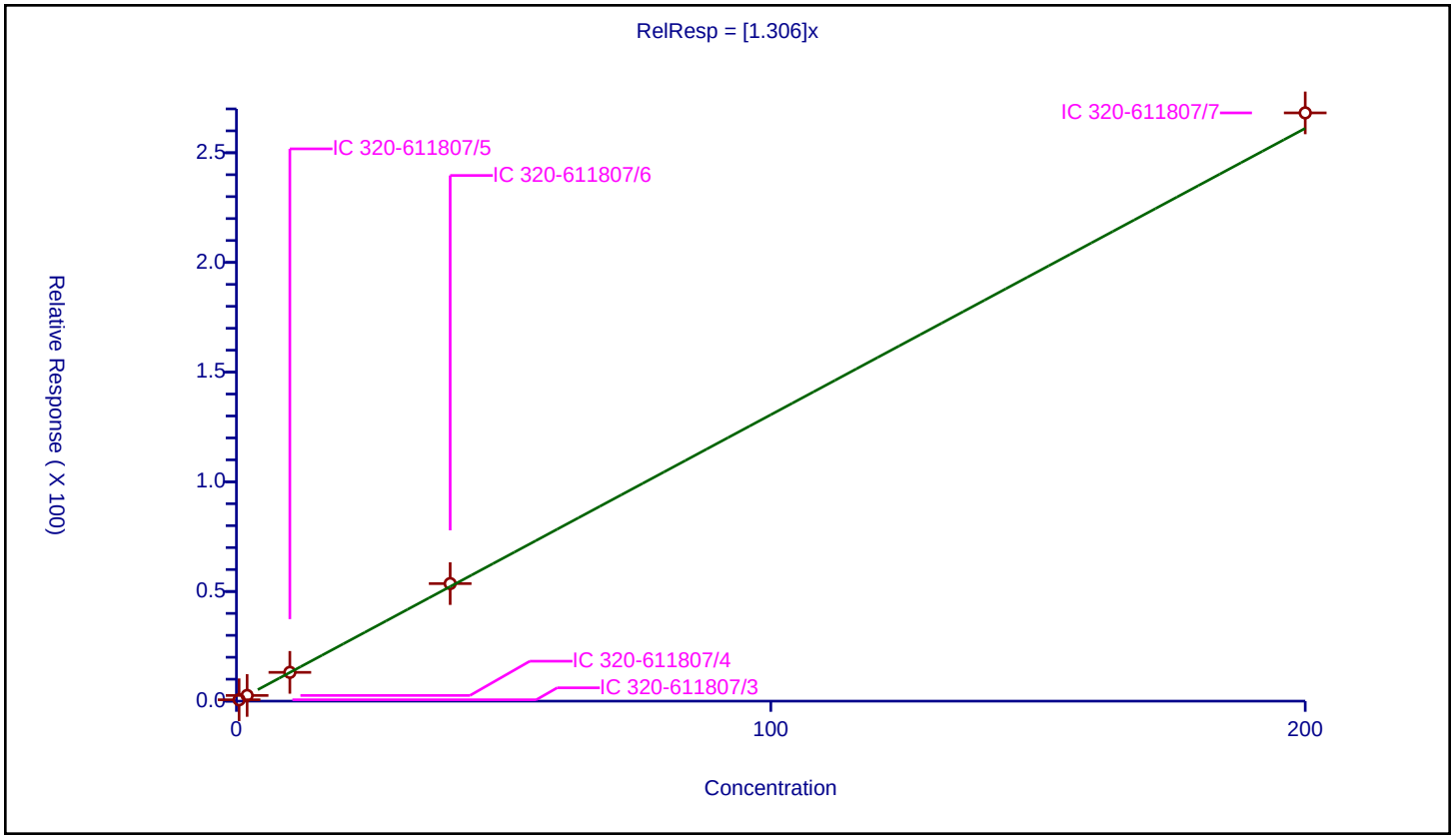
Curve Coefficients

Intercept:	0
Slope:	1.306

Error Coefficients

Standard Error:	22100000
Relative Standard Error:	3.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-611807/3	0.5	0.621101	100.0	20442560.0	1.242203	Y
2	IC 320-611807/4	2.0	2.587669	100.0	18973482.0	1.293835	Y
3	IC 320-611807/5	10.0	13.119069	100.0	7814632.0	1.311907	Y
4	IC 320-611807/6	40.0	53.588794	100.0	15384847.0	1.33972	Y
5	IC 320-611807/7	200.0	268.176084	100.0	16174587.0	1.34088	Y



Calibration / OCDD

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

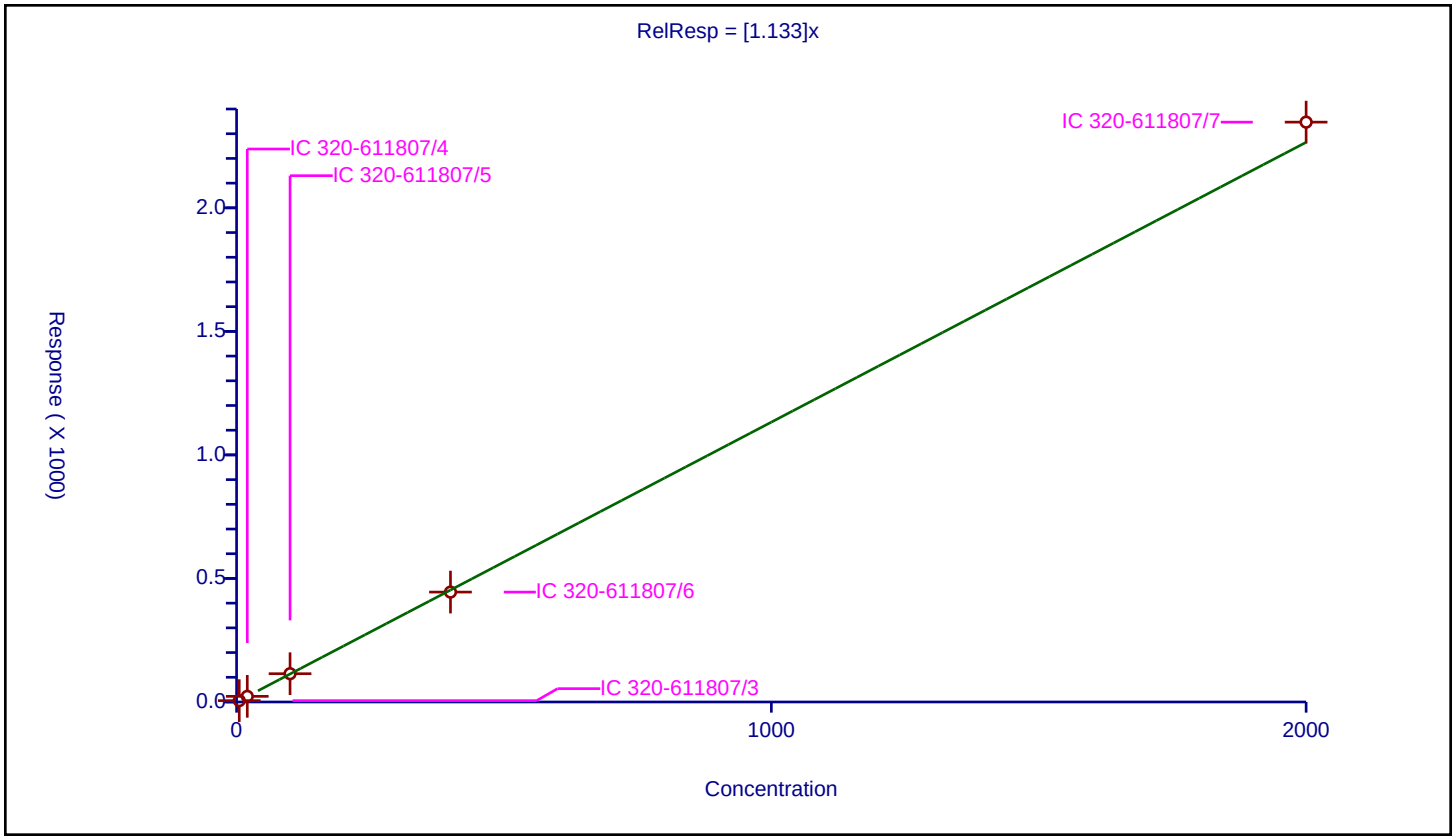
Curve Coefficients

Intercept:	0
Slope:	1.133

Error Coefficients

Standard Error:	160000000
Relative Standard Error:	2.8
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-611807/3	5.0	5.460678	200.0	30268551.0	1.092136	Y
2	IC 320-611807/4	20.0	22.811179	200.0	26444367.0	1.140559	Y
3	IC 320-611807/5	100.0	114.506376	200.0	9845471.0	1.145064	Y
4	IC 320-611807/6	400.0	444.826109	200.0	23550324.0	1.112065	Y
5	IC 320-611807/7	2000.0	2346.910044	200.0	26977713.0	1.173455	Y



Calibration / OCDF

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	AREA
RF Rounding:	0

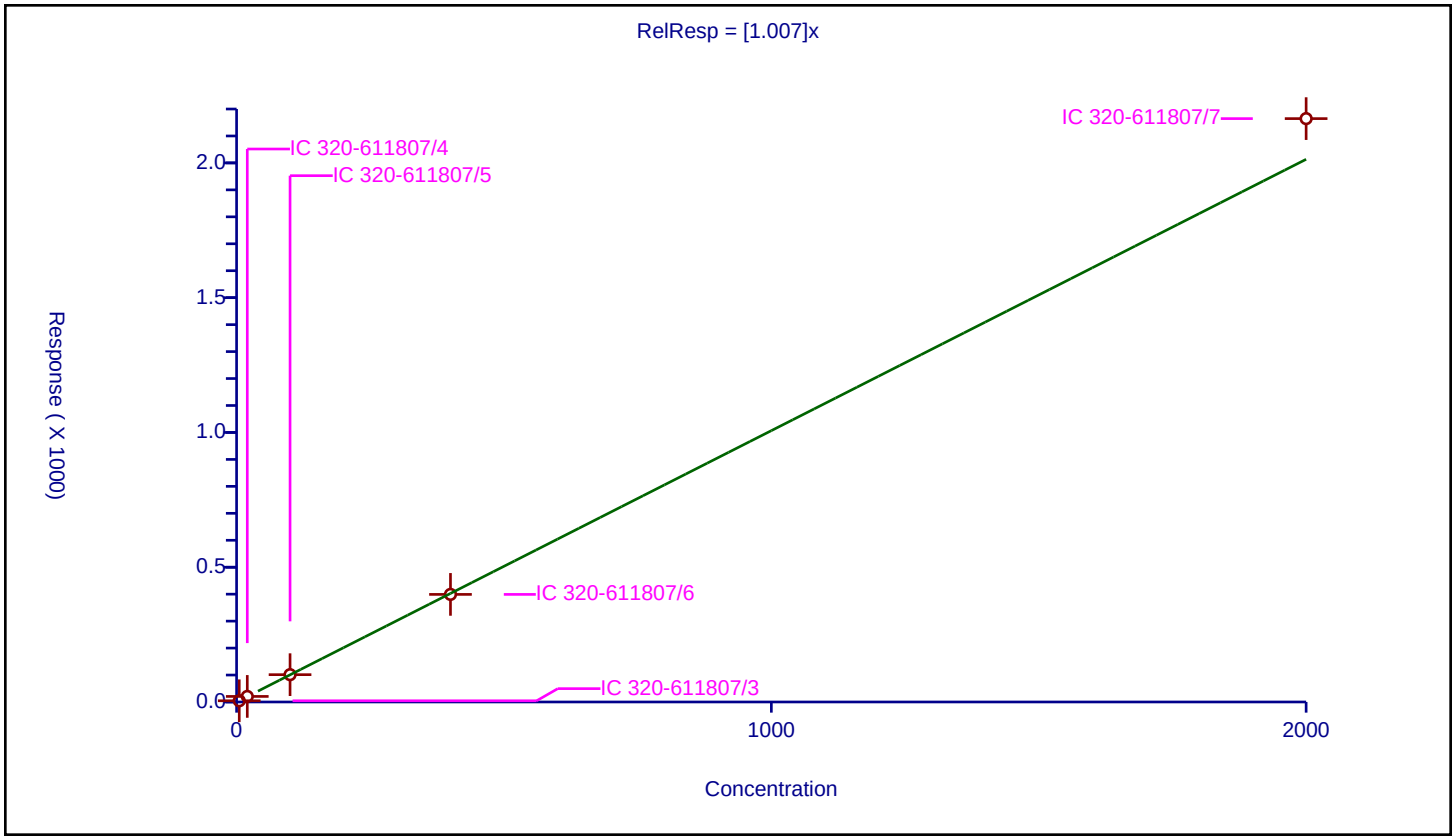
Curve Coefficients

Intercept:	0
Slope:	1.007

Error Coefficients

Standard Error:	254000000
Relative Standard Error:	6.3
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-611807/3	5.0	4.539346	200.0	50400126.0	0.907869	Y
2	IC 320-611807/4	20.0	20.641635	200.0	43237408.0	1.032082	Y
3	IC 320-611807/5	100.0	101.351016	200.0	16103142.0	1.01351	Y
4	IC 320-611807/6	400.0	399.113425	200.0	39406239.0	0.997784	Y
5	IC 320-611807/7	2000.0	2164.33983	200.0	46367435.0	1.08217	Y



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Lab Sample ID (1): WDM 320-611807/1 Instrument ID (1): DFS 1

GC Column (1): DB-5 ID: 0.32(mm) Date Analyzed (1): 08/24/2022 12:50

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDD	23.86	13

FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Lab Sample ID (1): WDM 320-623051/2 Instrument ID (1): DFS 1

GC Column (1): DB-5 ID: 0.32(mm) Date Analyzed (1): 10/07/2022 13:51

ANALYTE	RT	RESOLUTION (%)
2,3,7,8-TCDD	23.59	15

FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins Sacramento | Job No.: 580-118426-1

SDG No.:

Lab Sample ID: ICV 320-611807/9 | Calibration Date: 08/24/2022 19:33

Instrument ID: DFS 1 | Calib Start Date: 08/24/2022 14:25

GC Column: DB-5 ID: 0.32(mm) | Calib End Date: 08/24/2022 17:39

Lab File ID: 24au22adfs1_11.d | Conc. Units: pg/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%REC	%REC LIMITS
2,3,7,8-TCDF	AveID	1.012	1.024		40.5	40.0	101	70-130
2,3,7,8-TCDD	AveID	1.172	1.287		43.9	40.0	110	70-130
1,2,3,7,8-PeCDF	AveID	1.212	1.149		190	200	95	70-130
2,3,4,7,8-PeCDF	AveID	1.315	1.323		201	200	101	70-130
1,2,3,7,8-PeCDD	AveID	1.204	1.151		191	200	96	70-130
1,2,3,4,7,8-HxCDF	AveID	1.311	1.277		195	200	97	70-130
1,2,3,6,7,8-HxCDF	AveID	1.245	1.209		194	200	97	70-130
2,3,4,6,7,8-HxCDF	AveID	1.246	1.260		202	200	101	70-130
1,2,3,4,7,8-HxCDD	AveID	1.292	1.235		191	200	96	70-130
1,2,3,6,7,8-HxCDD	AveID	1.058	1.116		211	200	105	70-130
1,2,3,7,8,9-HxCDD	AveID	1.334	1.361		204	200	102	70-130
1,2,3,7,8,9-HxCDF	AveID	1.235	1.157		187	200	94	70-130
1,2,3,4,6,7,8-HpCDF	AveID	1.474	1.498		203	200	102	70-130
1,2,3,4,6,7,8-HpCDD	AveID	1.134	1.146		202	200	101	70-130
1,2,3,4,7,8,9-HpCDF	AveID	1.513	1.428		189	200	94	70-130
OCDD	AveID	1.133	1.178		416	400	104	70-130
OCDF	AveID	1.007	0.9794		389	400	97	70-130
13C-2,3,7,8-TCDF	Ave	2.153	2.183		101	100	101	71-140
13C-2,3,7,8-TCDD	Ave	1.203	1.260		105	100	105	82-121
13C-1,2,3,7,8-PeCDF	Ave	1.492	1.527		102	100	102	76-130
13C-2,3,4,7,8-PeCDF	Ave	1.356	1.394		103	100	103	77-130
13C-1,2,3,7,8-PeCDD	Ave	0.7285	0.7490		103	100	103	62-160
13C-1,2,3,4,7,8-HxCDF	Ave	1.441	1.358		94.2	100	94	76-131
13C-1,2,3,6,7,8-HxCDF	Ave	1.567	1.473		94.0	100	94	70-143
13C-2,3,4,6,7,8-HxCDF	Ave	1.474	1.342		91.0	100	91	73-137
13C-1,2,3,4,7,8-HxCDD	Ave	0.8389	0.8158		97.3	100	97	85-117
13C-1,2,3,6,7,8-HxCDD	Ave	1.040	0.9527		91.6	100	92	85-118
13C-1,2,3,7,8,9-HxCDF	Ave	1.390	1.374		98.8	100	99	74-135
13C-1,2,3,4,6,7,8-HpCDF	Ave	1.139	0.9843		86.4	100	86	78-129
13C-1,2,3,4,6,7,8-HpCDD	Ave	0.8450	0.7789		92.2	100	92	72-138
13C-1,2,3,4,7,8,9-HpCDF	Ave	0.9389	0.8912		94.9	100	95	77-129
13C-OCDD	Ave	0.7222	0.6403		177	200	89	48-208
13C-OCDF	Ave	1.203	1.054		175	200	88	48-208
37Cl4-2,3,7,8-TCDD	Ave	1.306	1.356		41.5	40.0	104	79-127

FORM VII
DIOXIN CONTINUING CALIBRATION DATA

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Lab Sample ID: CCV 320-623051/1 Calibration Date: 10/07/2022 13:00

Instrument ID: DFS 1 Calib Start Date: 08/24/2022 14:25

GC Column: DB-5 ID: 0.32(mm) Calib End Date: 08/24/2022 17:39

Lab File ID: 07oc22dfs1_2.d Conc. Units: pg/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%REC	%REC LIMITS
2,3,7,8-TCDF	AveID	1.012	1.028		10.1	10.0	101	84-120
2,3,7,8-TCDD	AveID	1.172	1.006		8.59	10.0	86	78-129
1,2,3,7,8-PeCDF	AveID	1.212	1.041		43.0	50.0	86	82-120
2,3,4,7,8-PeCDF	AveID	1.315	1.129		42.9	50.0	86	82-122
1,2,3,7,8-PeCDD	AveID	1.204	1.017		42.2	50.0	84	78-130
1,2,3,4,7,8-HxCDF	AveID	1.311	1.274		48.6	50.0	97	90-112
1,2,3,6,7,8-HxCDF	AveID	1.245	1.198		48.1	50.0	96	88-114
2,3,4,6,7,8-HxCDF	AveID	1.246	1.217		48.8	50.0	98	88-114
1,2,3,4,7,8-HxCDD	AveID	1.292	1.142		44.2	50.0	88	78-128
1,2,3,6,7,8-HxCDD	AveID	1.058	0.9299		44.0	50.0	88	78-128
1,2,3,7,8,9-HxCDD	AveID	1.334	1.102		41.3	50.0	83	82-122
1,2,3,7,8,9-HxCDF	AveID	1.235	1.205		48.8	50.0	98	90-112
1,2,3,4,6,7,8-HpCDF	AveID	1.474	1.378		46.8	50.0	94	90-110
1,2,3,4,6,7,8-HpCDD	AveID	1.134	1.021		45.0	50.0	90	86-116
1,2,3,4,7,8,9-HpCDF	AveID	1.513	1.471		48.6	50.0	97	86-116
OCDD	AveID	1.133	1.012		89.3	100	89	79-126
OCDF	AveID	1.007	0.9412		93.5	100	93	63-159
13C-2,3,7,8-TCDF	Ave	2.153	1.687		78.3	100	78	71-140
13C-2,3,7,8-TCDD	Ave	1.203	1.151		95.7	100	96	82-121
13C-1,2,3,7,8-PeCDF	Ave	1.492	1.356		90.9	100	91	76-130
13C-2,3,4,7,8-PeCDF	Ave	1.356	1.290		95.1	100	95	77-130
13C-1,2,3,7,8-PeCDD	Ave	0.7285	0.8682		119	100	119	62-160
13C-1,2,3,4,7,8-HxCDF	Ave	1.441	1.191		82.7	100	83	76-131
13C-1,2,3,6,7,8-HxCDF	Ave	1.567	1.347		85.9	100	86	70-143
13C-2,3,4,6,7,8-HxCDF	Ave	1.474	1.235		83.8	100	84	73-137
13C-1,2,3,4,7,8-HxCDD	Ave	0.8389	0.8533		102	100	102	85-117
13C-1,2,3,6,7,8-HxCDD	Ave	1.040	1.093		105	100	105	85-118
13C-1,2,3,7,8,9-HxCDF	Ave	1.390	1.113		80.1	100	80	74-135
13C-1,2,3,4,6,7,8-HpCDF	Ave	1.139	1.004		88.2	100	88	78-129
13C-1,2,3,4,6,7,8-HpCDD	Ave	0.8450	0.9021		107	100	107	72-138
13C-1,2,3,4,7,8,9-HpCDF	Ave	0.9389	0.8205		87.4	100	87	77-129
13C-OCDD	Ave	0.7222	0.7468		207	200	103	48-208
13C-OCDF	Ave	1.203	1.044		173	200	87	48-208
37Cl4-2,3,7,8-TCDD	Ave	1.306	1.162		8.90	10.0	89	79-127

	File Name	SampleName	Sample ID	Position	Method/Matrix	Box	User	Sample Vol	Units
1	070C22DFS1_1	Resolution Check	RC 100722	162			GRB	1.000	
2	070C22DFS1_2	CCV CS-4 HRDXNL4_00109	CCV 100722	2	Dioxin		GRB	1.000	
3	070C22DFS1_3	WDM HRDXNCP_00045	WDM 100722	1	Dioxin		GRB	1.000	
4	070C22DFS1_4	SB Solvent Blank C14	SB 100722	3			GRB	1.000	
5	070C22DFS1_5	mb 320-622337/1-a	mb 320-622337/1-a	4	1613B(_T)/Water	D369	GRB	1.000	L
6	070C22DFS1_6	lcs 320-622337/2-a	lcs 320-622337/2-a	5	1613B(_T)/Water		GRB	1.000	L
7	070C22DFS1_7	lcsd 320-622337/3-a	lcsd 320-622337/3-a	6	1613B(_T)/Water		GRB	1.000	L
8	070C22DFS1_8	570-111327-s-1-a	570-111327-s-1-a	7	1613B_T/Water		GRB	1.000	L
9	070C22DFS1_9	580-118426-b-1-a	580-118426-b-1-a	8	1613B/Water		GRB	1.000	L
10	070C22DFS1_10	580-118426-a-2-a	580-118426-a-2-a	9	1613B/Water		GRB	1.000	L
11	070C22DFS1_11	580-118426-b-3-a	580-118426-b-3-a	10	1613B/Water		GRB	1.000	L
12	070C22DFS1_12	320-92653-a-1-a	320-92653-a-1-a	11	1613B/Water		GRB	1.000	L
13	070C22DFS1_13	320-92656-a-1-a	320-92656-a-1-a	12	1613B/Water		GRB	1.000	L
14	070C22DFS1_14	320-92656-a-2-a	320-92656-a-2-a	13	1613B/Water		GRB	1.000	L
15	070C22DFS1_15	SB Solvent Blank C14	SB 100722A	3			GRB	1.000	
16	070C22DFS1_16	Resolution Check	RC 100722A	162			GRB	1.000	
17	070C22DFS1_17	CCV CS-4 HRDXNL4_00109	CCV 100722A	2	Dioxin		GRB	1.000	
18	070C22DFS1_18	WDM HRDXNCP_00045	WDM 100722A	1	Dioxin		GRB	1.000	
19	070C22DFS1_19	SB Solvent Blank C14	SB 100722B	3			GRB	1.000	
20	070C22DFS1_20	mb 320-622521/1-a	mb 320-62252/1-a	14	1613B/Solid	D369	GRB	10.000	g
21	070C22DFS1_21	lcs 320-622521/2-a	lcs 320-622521/2-a	15	1613B/Solid		GRB	10.000	g
22	070C22DFS1_22	lcsd 320-622521/3-a	lcsd 320-622521/3-a	16	1613B/Solid		GRB	10.000	g
23	070C22DFS1_23	280-166727-a-1-a	280-166727-a-1-a	17	1613B/Solid		GRB	10.000	g
24	070C22DFS1_24	280-166448-a-2-a	280-166448-a-2-a	18	1613B/Solid		GRB	10.000	g
25	070C22DFS1_25	SB Solvent Blank C14	SB 100722C	3			GRB	1.000	
26	070C22DFS1_26	Resolution Check	RC 100722B	162			GRB	1.000	
27	070C22DFS1_27	CCV CS-4 HRDXNL4_00109	CCV 100722B	2	Dioxin		GRB	1.000	
28	070C22DFS1_28	WDM HRDXNCP_00045	WDM 100722B	1	Dioxin		GRB	1.000	
29	070C22DFS1_29	SB Solvent Blank C14	SB 100722D	3			GRB	1.000	
30	070C22DFS1_30	mb 320-622993/1-a	mb 320-622993/1-a	19	1613B_T/DW	D369	GRB	1.000	L
31	070C22DFS1_31	lcs 320-622993/2-a	lcs 320-622993/2-a	20	1613B_T/DW		GRB	1.000	L
32	070C22DFS1_32	lcsd 320-622993/3-a	lcsd 320-622993/3-a	21	1613B_T/DW		GRB	1.000	L
33	070C22DFS1_33	llcs 320-622993/4-a	llcs 320-622993/4-a	22	1613B_T/DW		GRB	1.000	L
34	070C22DFS1_34	550-191436-ab-1-a	550-191436-ab-1-a	23	1613B_T/DW		GRB	1.000	L
35	070C22DFS1_35	SB Solvent Blank C14	SB 100722E	3			GRB	1.000	
36	070C22DFS1_36	Resolution Check	RC 100722C	162			GRB	1.000	
37	070C22DFS1_37	CCV CS-4 HRDXNL4_00109	CCV 100722C	2	Dioxin		GRB	1.000	
38	070C22DFS1_38	WDM HRDXNCP_00045	WDM 100722C	1	Dioxin		GRB	1.000	
39	070C22DFS1_39	SB Solvent Blank C14	SB 100722F	3			GRB	1.000	
40	070C22DFS1_40	mb 320-622521/1-a	mb 320-62252/1-a	14	1613B/Solid	D369	GRB	10.000	g
41	070C22DFS1_41	lcs 320-622521/2-a	lcs 320-622521/2-a	15	1613B/Solid		GRB	10.000	g
42	070C22DFS1_42	lcsd 320-622521/3-a	lcsd 320-622521/3-a	16	1613B/Solid		GRB	10.000	g
43	070C22DFS1_43	280-166727-a-1-a	280-166727-a-1-a	17	1613B/Solid		GRB	10.000	g
44	070C22DFS1_44	280-166448-a-2-a	280-166448-a-2-a	18	1613B/Solid		GRB	10.000	g
45	070C22DFS1_45	SB Solvent Blank C14	SB 100722G	3			GRB	1.000	
46	070C22DFS1_46	Resolution Check	RC 100722D	162			GRB	1.000	

Logfile ✓ id
10/10/22
KSS

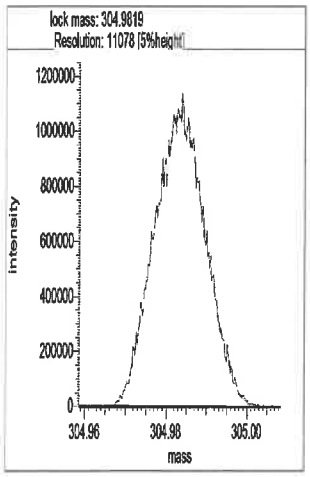
Resolution Check Report (DFS SN: 3487)

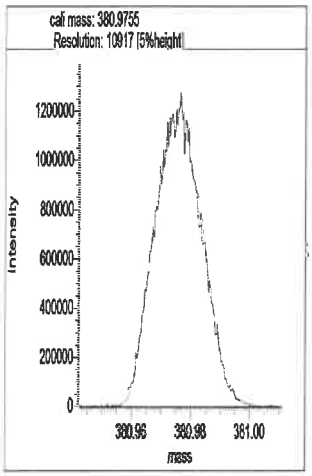
eurofins | Environment Testing TestAmerica

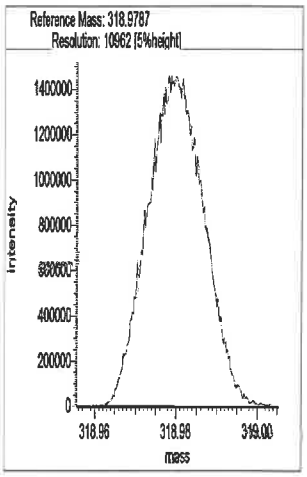
Date:	07 Oct 2022 12:41
MID Experiment:	5w_db5_pfk_singleGC01_RS
Target Resolution:	10000
Resolution Warning :	9950
Resolution Error :	9000
Reference:	pfk
Status:	RESOLUTION PASSED

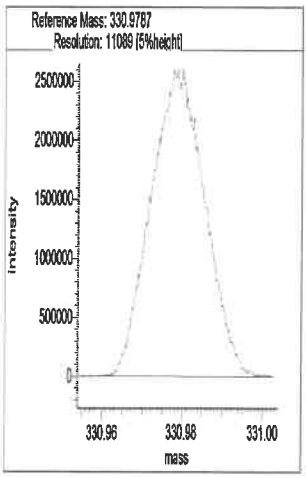
Segment 1

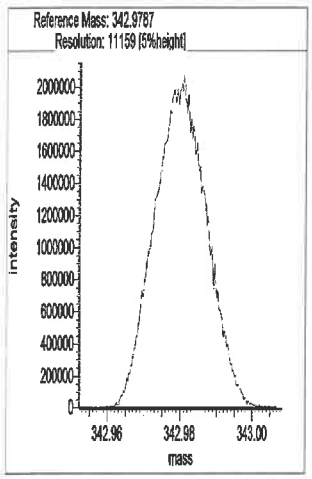
Lock mass 304.9819 [m/z] Resolution: 11078 [5%height]
Cali. mass 380.9755 [m/z] Resolution: 10917 [5%height]
Ref. mass 318.9787 [m/z] Resolution: 10962 [5%height]
Ref. mass 330.9787 [m/z] Resolution: 11089 [5%height]
Ref. mass 342.9787 [m/z] Resolution: 11159 [5%height]
Ref. mass 354.9787 [m/z] Resolution: 11199 [5%height]
Ref. mass 368.9755 [m/z] Resolution: 10915 [5%height]
Ref. mass 392.9755 [m/z] Resolution: 10825 [5%height]
Ref. mass 404.9755 [m/z] Resolution: 11023 [5%height]

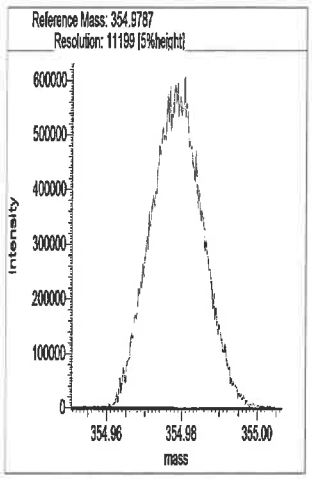


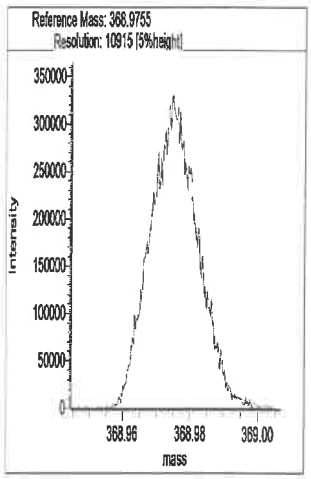


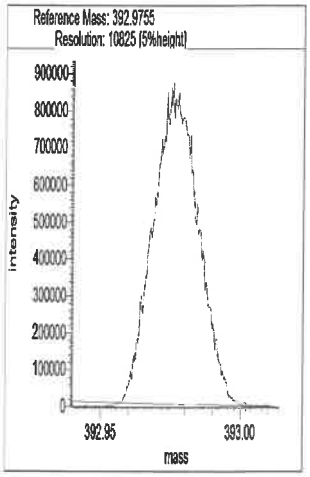


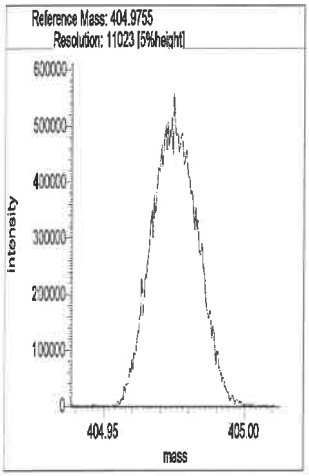












Segment 2

Lock mass 330.9787 [m/z] Resolution: 10927 [5%height]

Cali. mass 380.9755 [m/z] Resolution: 11162 [5%height]

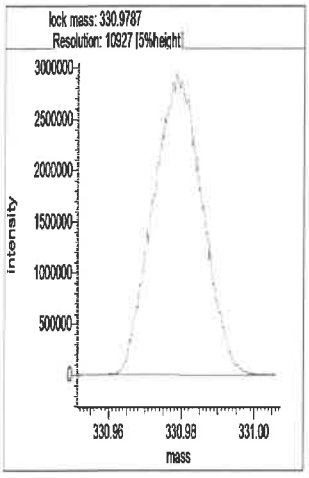
Ref. mass 342.9787 [m/z] Resolution: 10944 [5%height]

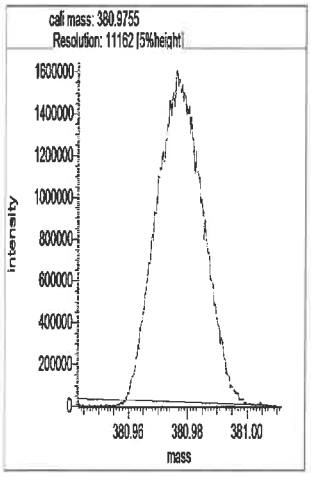
Ref. mass 354.9787 [m/z] Resolution: 11081 [5%height]

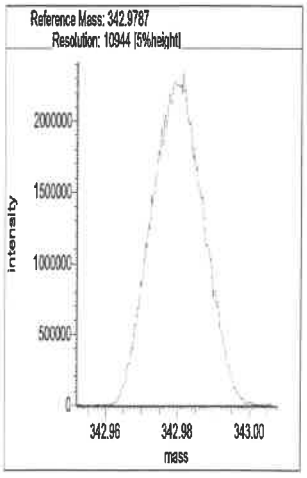
Ref. mass 368.9755 [m/z] Resolution: 10937 [5%height]

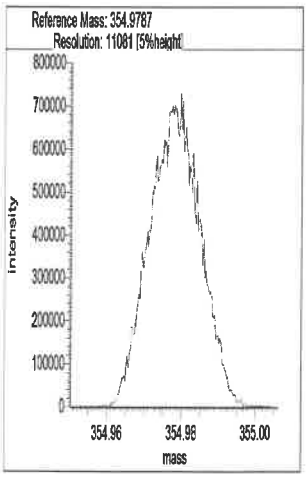
Ref. mass 392.9755 [m/z] Resolution: 11227 [5%height]

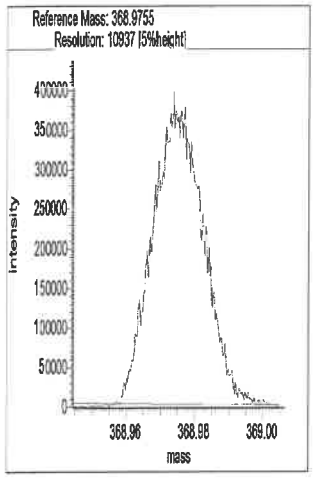
Ref. mass 404.9755 [m/z] Resolution: 11238 [5%height]

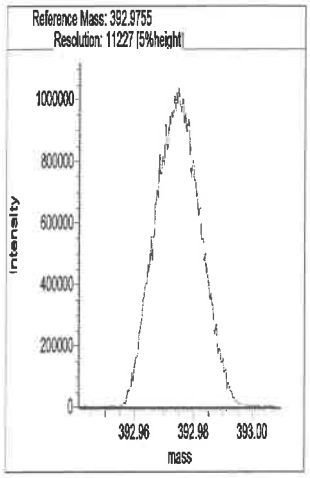


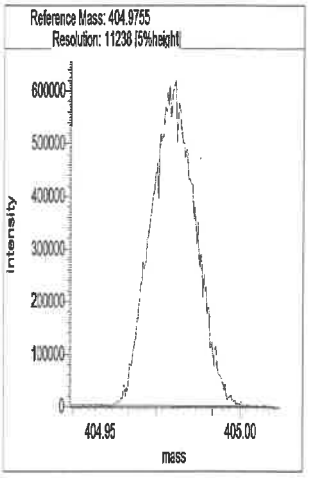












Segment 3

Lock mass 380.9755 [m/z] Resolution: 10964 [5%height]

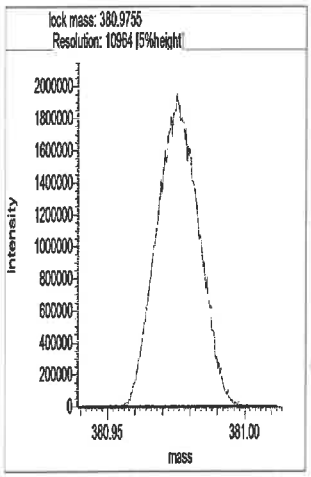
Cali. mass 430.9723 [m/z] Resolution: 11000 [5%height]

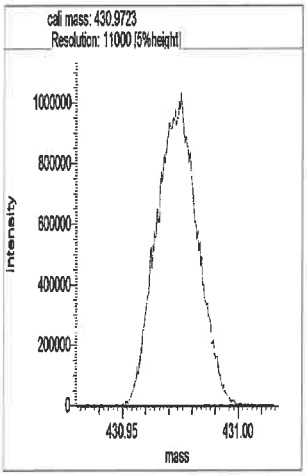
Ref. mass 392.9755 [m/z] Resolution: 11142 [5%height]

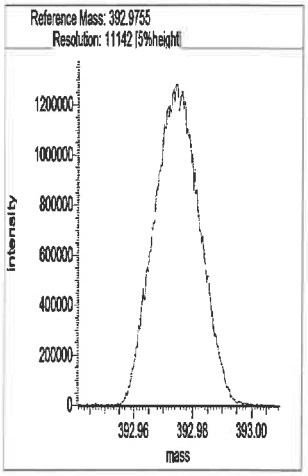
Ref. mass 404.9755 [m/z] Resolution: 11067 [5%height]

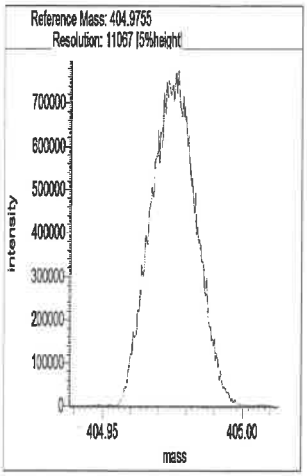
Ref. mass 416.9755 [m/z] Resolution: 11292 [5%height]

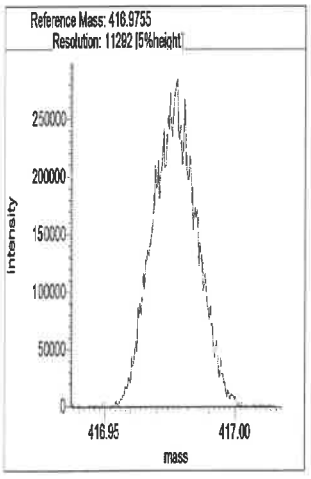
Ref. mass 442.9723 [m/z] Resolution: 11026 [5%height]

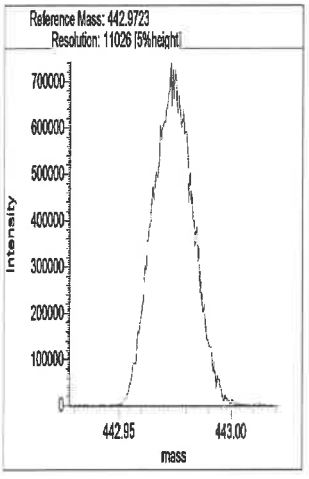












Segment 4

Lock mass 392.9754 [m/z] Resolution: 11259 [5%height]

Cali. mass 480.9691 [m/z] Resolution: 10990 [5%height]

Ref. mass 404.9755 [m/z] Resolution: 11245 [5%height]

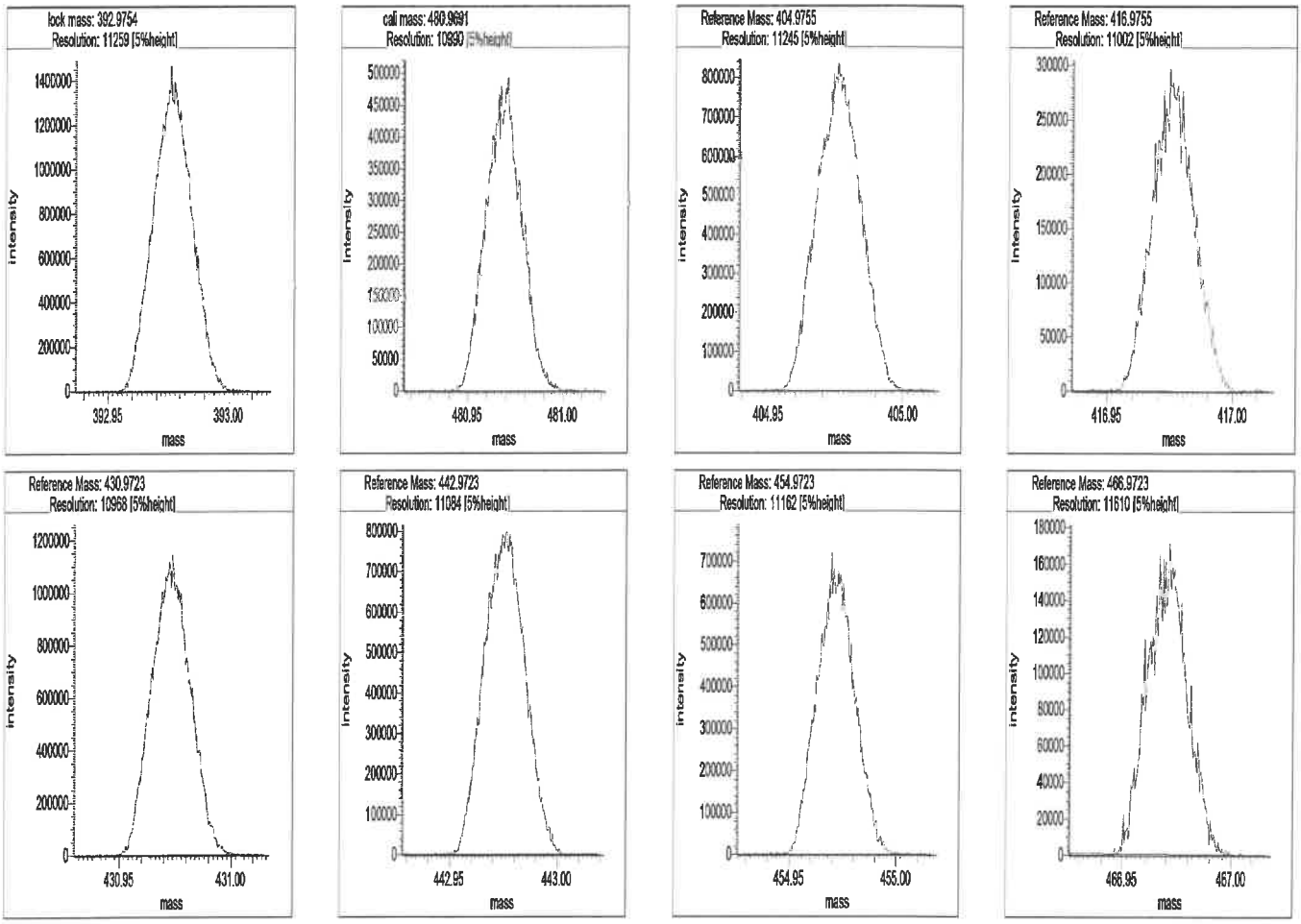
Ref. mass 416.9755 [m/z] Resolution: 11002 [5%height]

Ref. mass 430.9723 [m/z] Resolution: 10968 [5%height]

Ref. mass 442.9723 [m/z] Resolution: 11084 [5%height]

Ref. mass 454.9723 [m/z] Resolution: 11162 [5%height]

Ref. mass 466.9723 [m/z] Resolution: 11610 [5%height]



Segment 5

Lock mass 442.9723 [m/z] Resolution: 11379 [5%height]

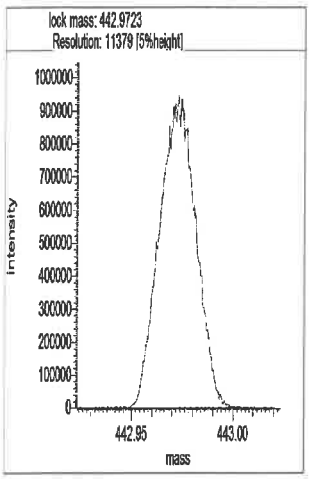
Cali. mass 504.9691 [m/z] Resolution: 11323 [5%height]

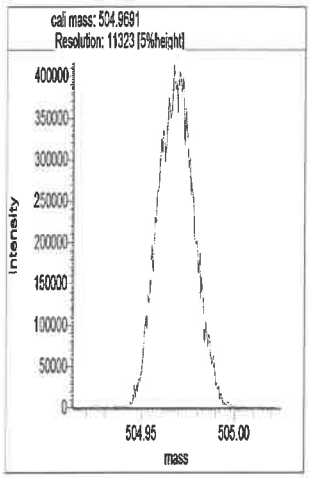
Ref. mass 454.9723 [m/z] Resolution: 11286 [5%height]

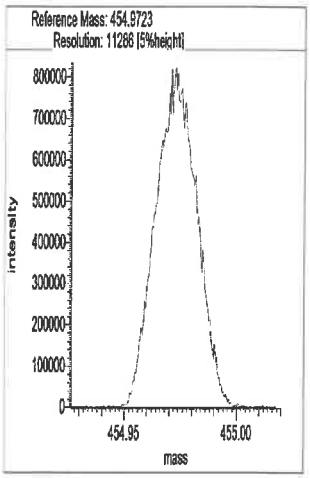
Ref. mass 466.9723 [m/z] Resolution: 11260 [5%height]

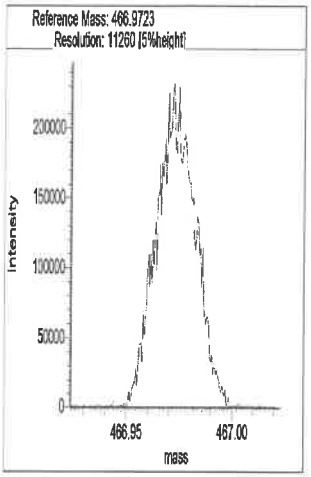
Ref. mass 480.9691 [m/z] Resolution: 10947 [5%height]

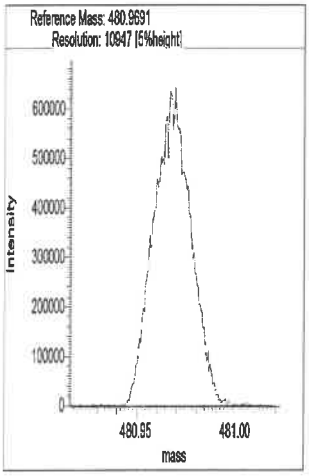
Ref. mass 492.9691 [m/z] Resolution: 11472 [5%height]

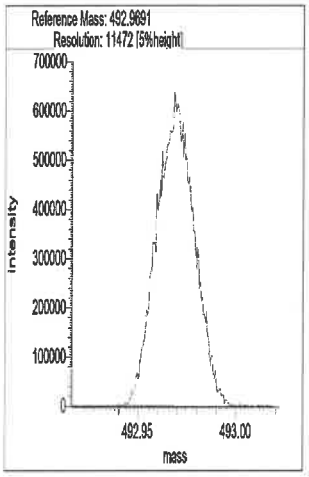

lock mass: 442.9723
Resolution: 11379 [5%height]
Intensity
mass
442.95
443.00


cal mass: 504.9691
Resolution: 11323 [5%height]
Intensity
mass
504.95
505.00


Reference Mass: 454.9723
Resolution: 11286 [5%height]
Intensity
mass
454.95
455.00


Reference Mass: 466.9723
Resolution: 11260 [5%height]
Intensity
mass
466.95
467.00


Reference Mass: 480.9691
Resolution: 10847 [5%height]
Intensity
mass
480.95
481.00


Reference Mass: 492.9691
Resolution: 11472 [5%height]
Intensity
mass
492.95
493.00

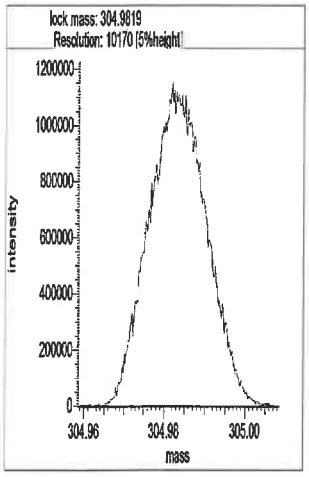
Resolution Check Report (DFS SN: 3487)

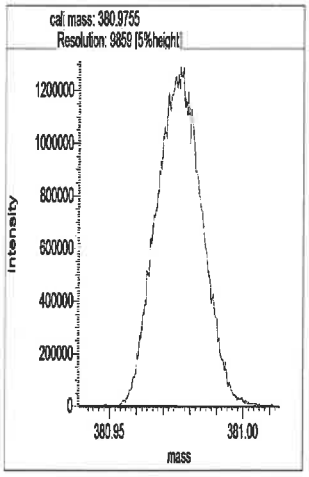
eurofins | Environment Testing TestAmerica

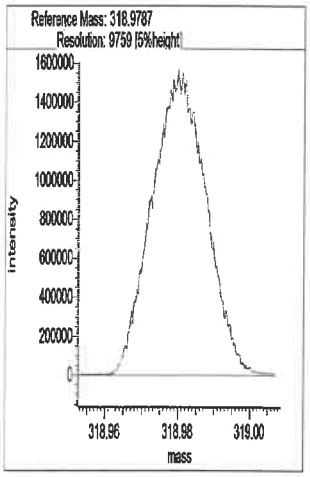
Date:	08 Oct 2022 00:12
MID Experiment:	5w_db5_pfk_singleGC01_RS
Target Resolution:	10000
Resolution Warning :	9950
Resolution Error :	9000
Reference:	pfk
Status:	RESOLUTION WARNING

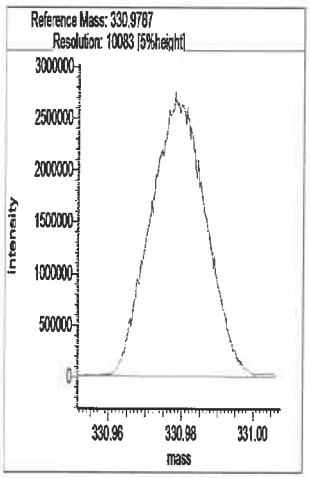
Segment 1

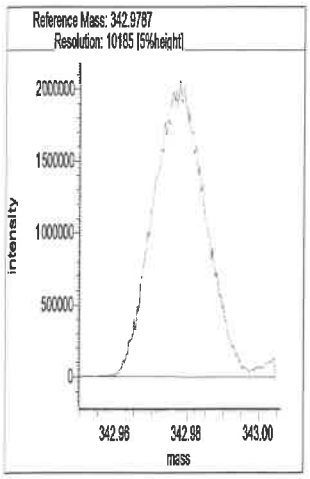
Lock mass 304.9819 [m/z] Resolution: 10170 [5%height]
Cali. mass 380.9755 [m/z] Resolution: 9859 [5%height]
Ref. mass 318.9787 [m/z] Resolution: 9759 [5%height]
Ref. mass 330.9787 [m/z] Resolution: 10083 [5%height]
Ref. mass 342.9787 [m/z] Resolution: 10185 [5%height]
Ref. mass 354.9787 [m/z] Resolution: 9903 [5%height]
Ref. mass 368.9755 [m/z] Resolution: 10030 [5%height]
Ref. mass 392.9755 [m/z] Resolution: 10069 [5%height]
Ref. mass 404.9755 [m/z] Resolution: 9993 [5%height]

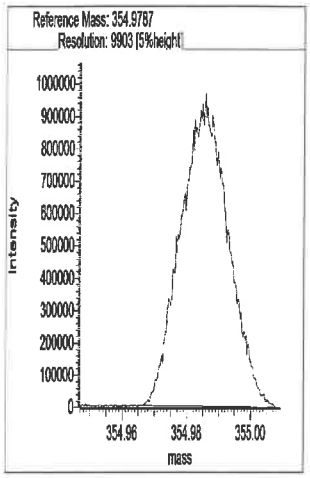


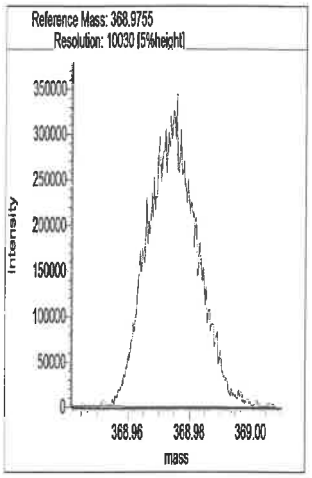


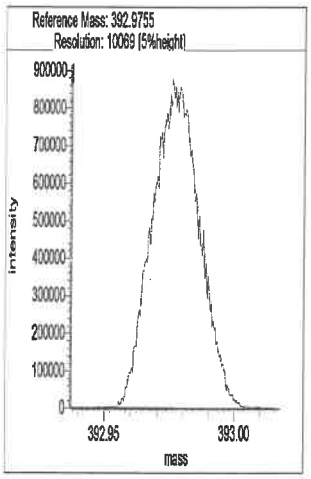


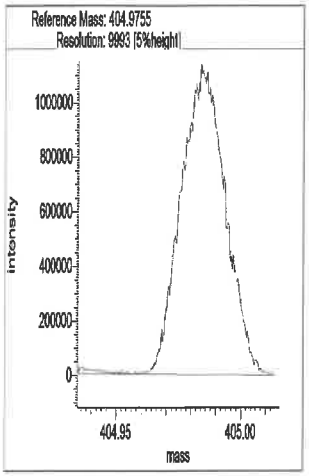












Segment 2

Lock mass 330.9787 [m/z] Resolution: 10087 [5%height]

Cali. mass 380.9755 [m/z] Resolution: 10053 [5%height]

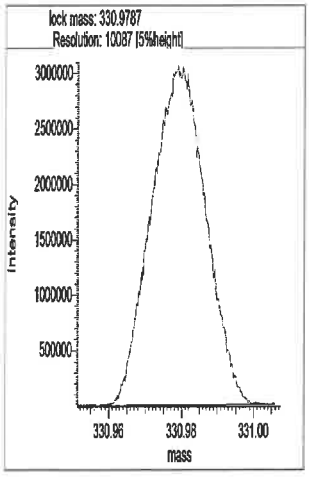
Ref. mass 342.9787 [m/z] Resolution: 10155 [5%height]

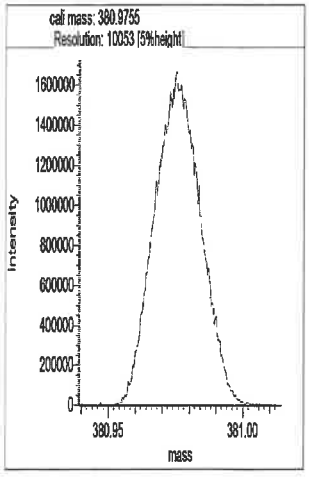
Ref. mass 354.9787 [m/z] Resolution: 10348 [5%height]

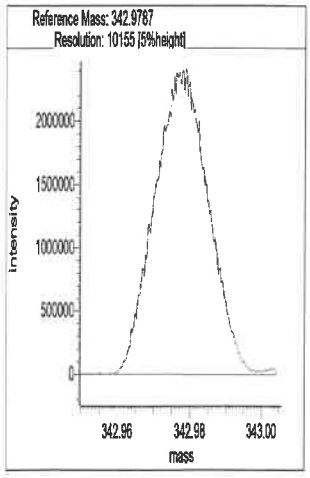
Ref. mass 368.9755 [m/z] Resolution: 9877 [5%height]

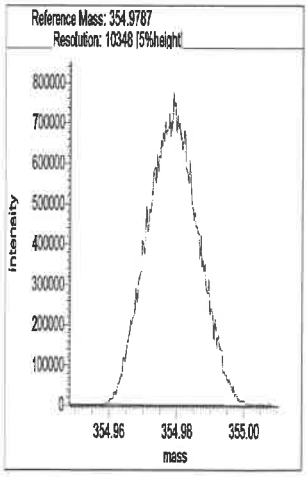
Ref. mass 392.9755 [m/z] Resolution: 10199 [5%height]

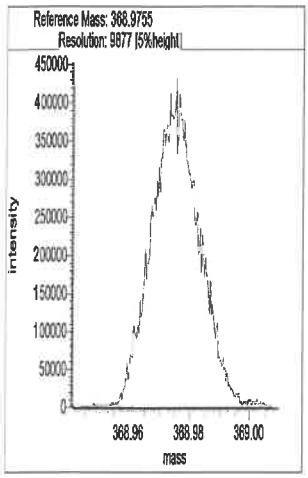
Ref. mass 404.9755 [m/z] Resolution: 10083 [5%height]

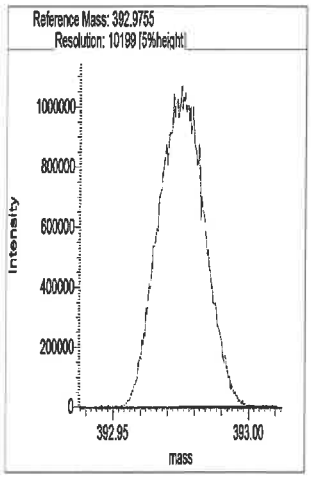


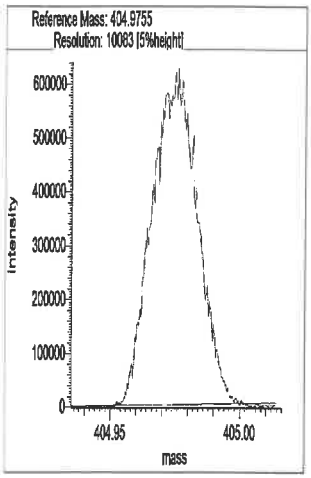












Segment 3

Lock mass 380.9755 [m/z] Resolution: 10243 [5%height]

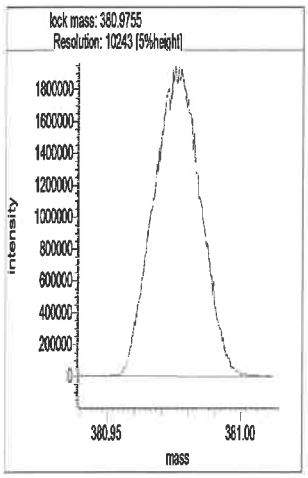
Cali. mass 430.9723 [m/z] Resolution: 9997 [5%height]

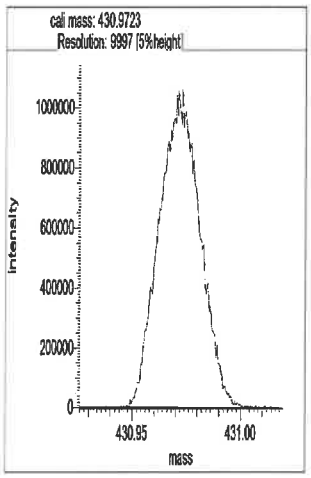
Ref. mass 392.9755 [m/z] Resolution: 10176 [5%height]

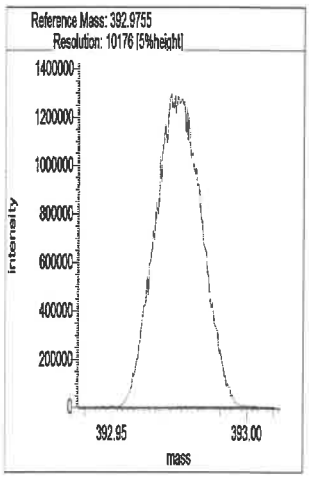
Ref. mass 404.9755 [m/z] Resolution: 10065 [5%height]

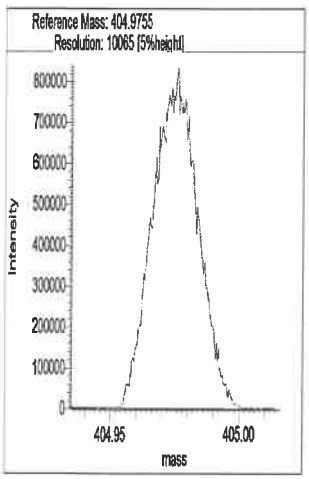
Ref. mass 416.9755 [m/z] Resolution: 10056 [5%height]

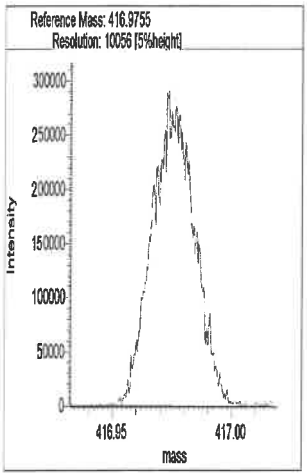
Ref. mass 442.9723 [m/z] Resolution: 10102 [5%height]

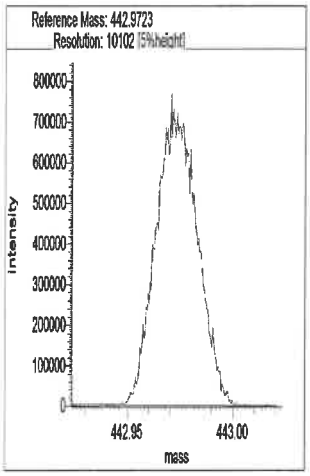












Segment 4

Lock mass 392.9754 [m/z] Resolution: 10256 [5%height]

Cali. mass 480.9691 [m/z] Resolution: 10076 [5%height]

Ref. mass 404.9755 [m/z] Resolution: 10179 [5%height]

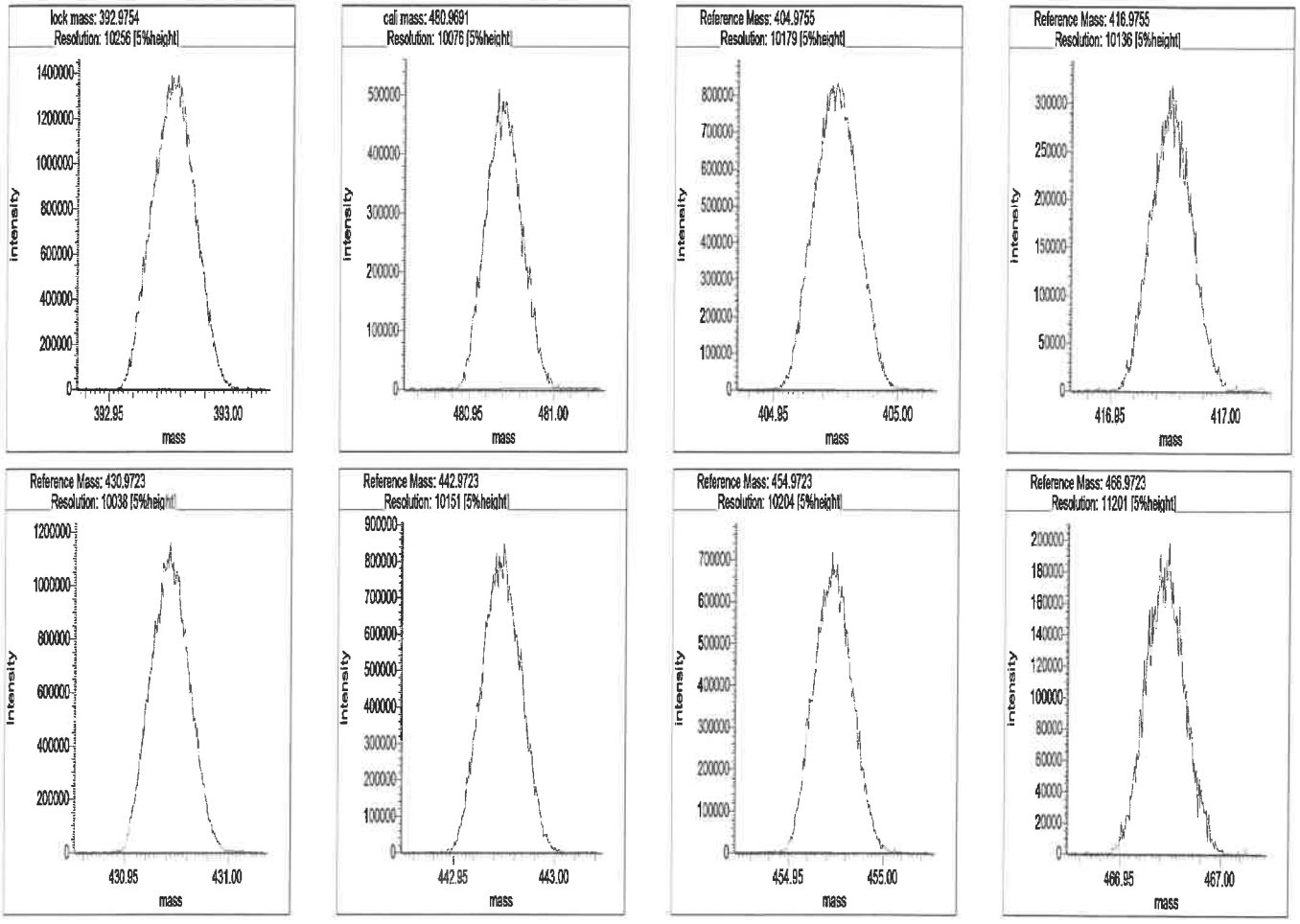
Ref. mass 416.9755 [m/z] Resolution: 10136 [5%height]

Ref. mass 430.9723 [m/z] Resolution: 10038 [5%height]

Ref. mass 442.9723 [m/z] Resolution: 10151 [5%height]

Ref. mass 454.9723 [m/z] Resolution: 10204 [5%height]

Ref. mass 466.9723 [m/z] Resolution: 11201 [5%height]



Segment 5

Lock mass 442.9723 [m/z] Resolution: 10101 [5%height]

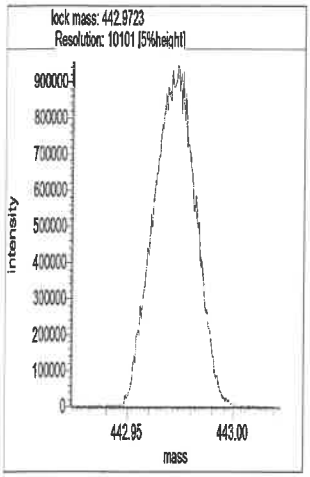
Cali. mass 504.9691 [m/z] Resolution: 10328 [5%height]

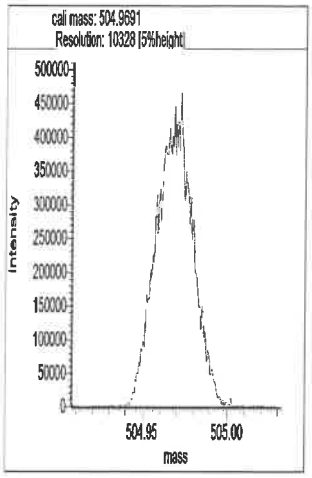
Ref. mass 454.9723 [m/z] Resolution: 10346 [5%height]

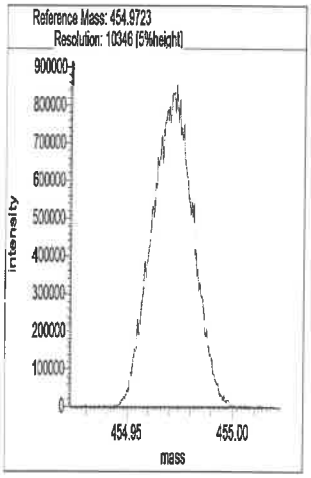
Ref. mass 466.9723 [m/z] Resolution: 9885 [5%height]

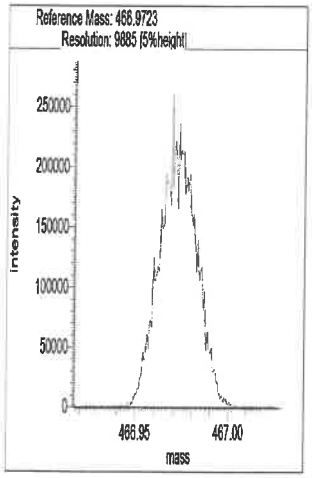
Ref. mass 480.9691 [m/z] Resolution: 10156 [5%height]

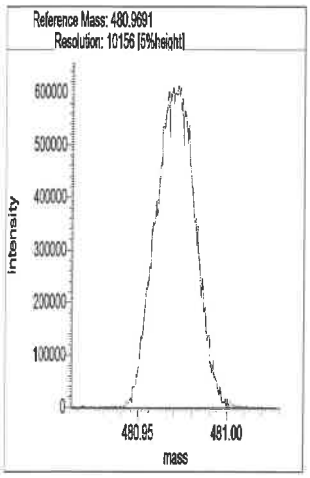
Ref. mass 492.9691 [m/z] Resolution: 10300 [5%height]

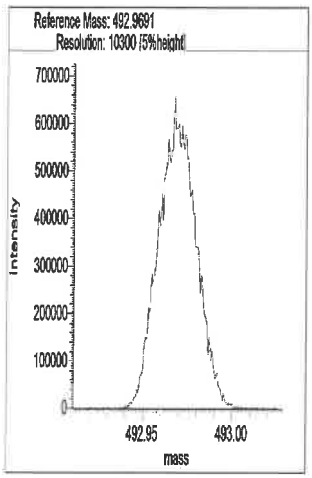

lock mass: 442.9723
Resolution: 10101 [5%height]
intensity
mass
442.95
443.00


cali mass: 504.9691
Resolution: 10328 [5%height]
intensity
mass
504.95
505.00


Reference Mass: 454.9723
Resolution: 10346 [5%height]
intensity
mass
454.95
455.00


Reference Mass: 466.9723
Resolution: 9885 [5%height]
intensity
mass
466.95
467.00


Reference Mass: 480.9691
Resolution: 10156 [5%height]
intensity
mass
480.95
481.00


Reference Mass: 492.9691
Resolution: 10300 [5%height]
intensity
mass
492.95
493.00

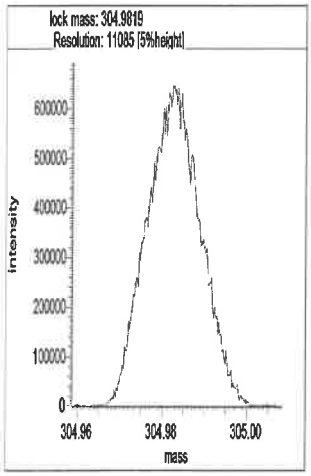
Resolution Check Report (DFS SN: 3487)

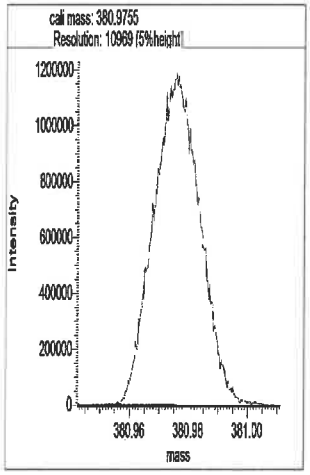
eurofins | Environment Testing TestAmerica

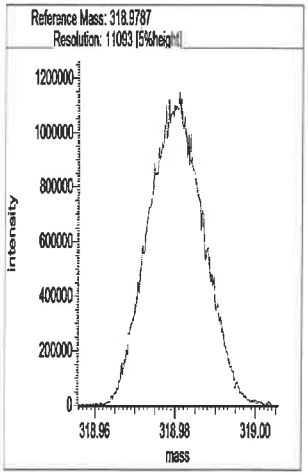
Date:	08 Oct 2022 07:41
MID Experiment:	5w_db5_pfk_singleGC01_RS
Target Resolution:	10000
Resolution Warning :	9950
Resolution Error :	9000
Reference:	pfk
Status:	RESOLUTION PASSED

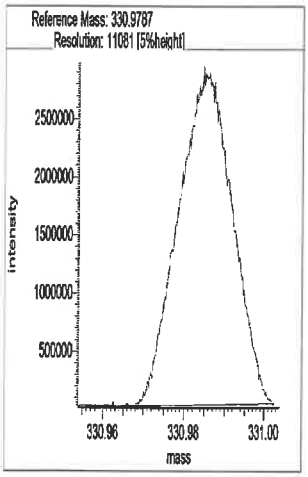
Segment 1

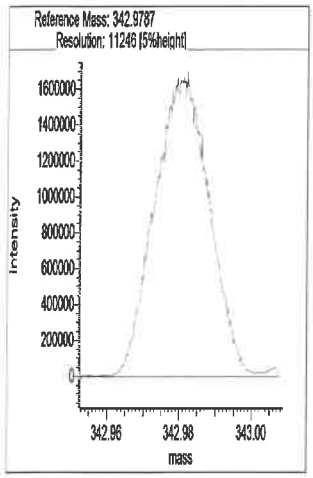
Lock mass 304.9819 [m/z] Resolution: 11085 [5%height]
Cali. mass 380.9755 [m/z] Resolution: 10969 [5%height]
Ref. mass 318.9787 [m/z] Resolution: 11093 [5%height]
Ref. mass 330.9787 [m/z] Resolution: 11081 [5%height]
Ref. mass 342.9787 [m/z] Resolution: 11246 [5%height]
Ref. mass 354.9787 [m/z] Resolution: 11495 [5%height]
Ref. mass 368.9755 [m/z] Resolution: 10379 [5%height]
Ref. mass 392.9755 [m/z] Resolution: 11255 [5%height]
Ref. mass 404.9755 [m/z] Resolution: 10836 [5%height]

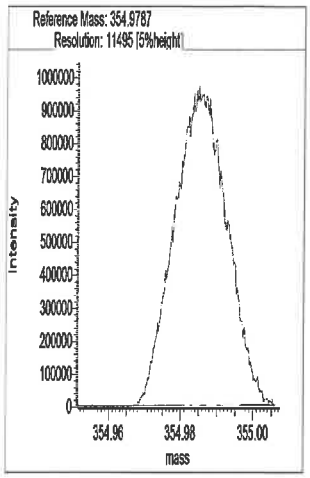


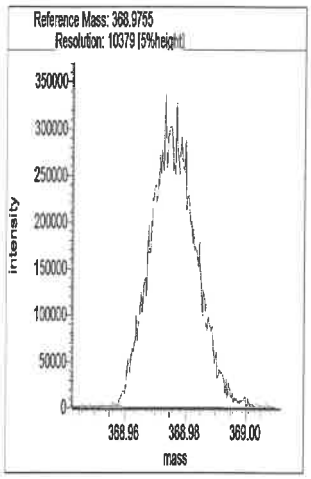


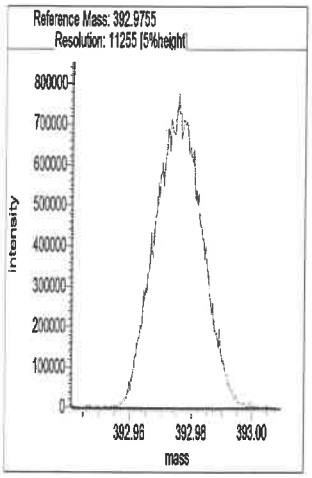


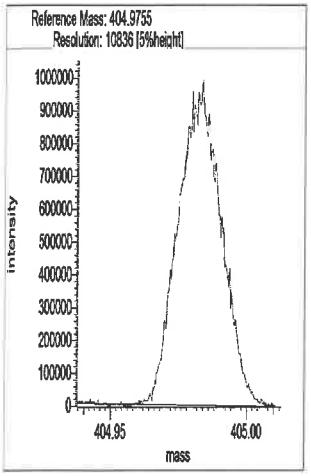












Segment 2

Lock mass 330.9787 [m/z] Resolution: 11146 [5%height]

Cali. mass 380.9755 [m/z] Resolution: 11191 [5%height]

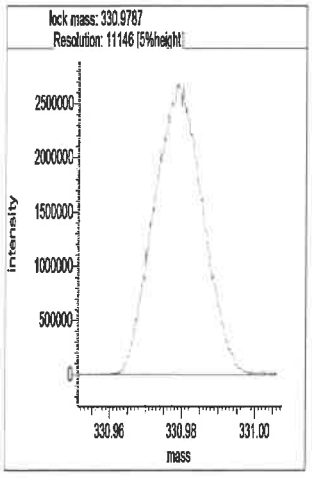
Ref. mass 342.9787 [m/z] Resolution: 11110 [5%height]

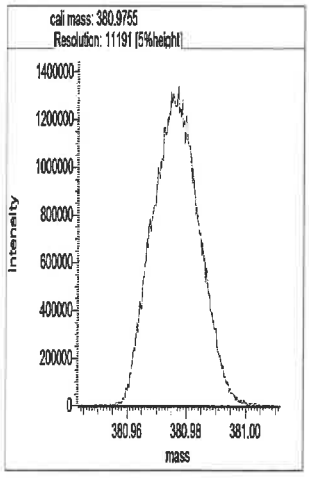
Ref. mass 354.9787 [m/z] Resolution: 11367 [5%height]

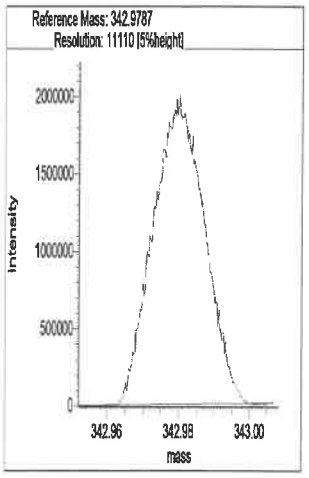
Ref. mass 368.9755 [m/z] Resolution: 11088 [5%height]

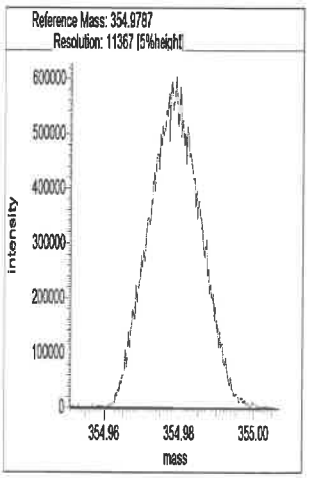
Ref. mass 392.9755 [m/z] Resolution: 11395 [5%height]

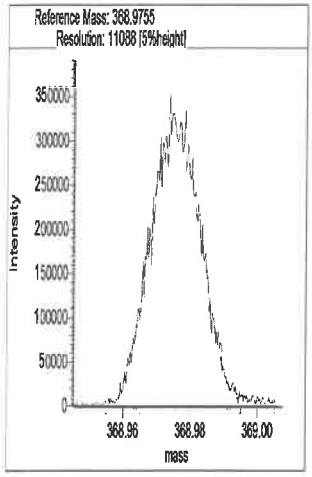
Ref. mass 404.9755 [m/z] Resolution: 11392 [5%height]

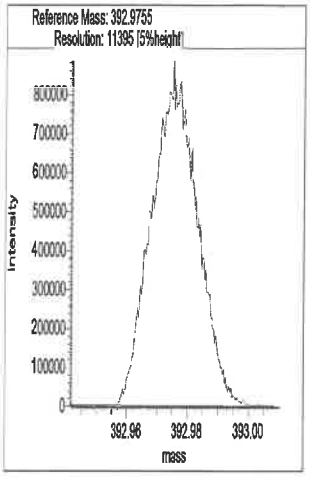


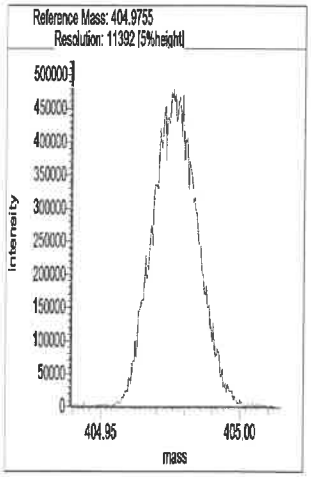












Segment 3

Lock mass 380.9755 [m/z] Resolution: 11285 [5%height]

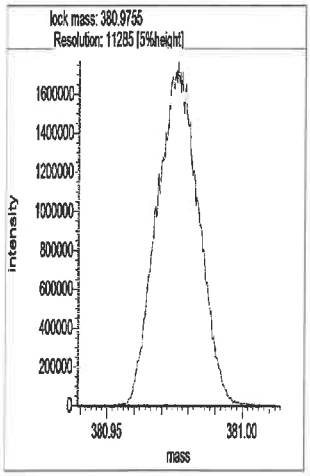
Cali. mass 430.9723 [m/z] Resolution: 11311 [5%height]

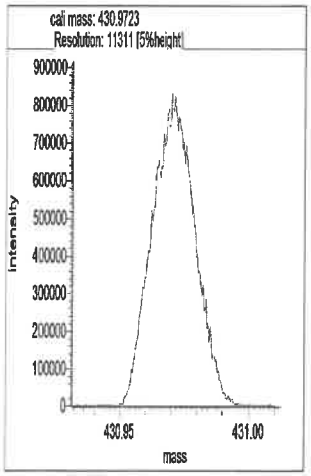
Ref. mass 392.9755 [m/z] Resolution: 11366 [5%height]

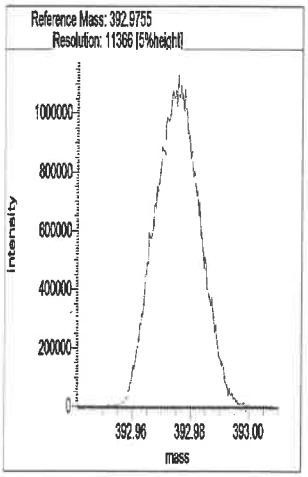
Ref. mass 404.9755 [m/z] Resolution: 11415 [5%height]

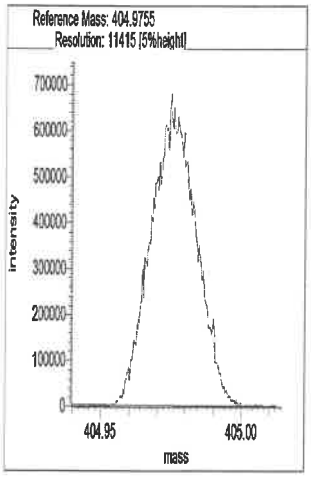
Ref. mass 416.9755 [m/z] Resolution: 11500 [5%height]

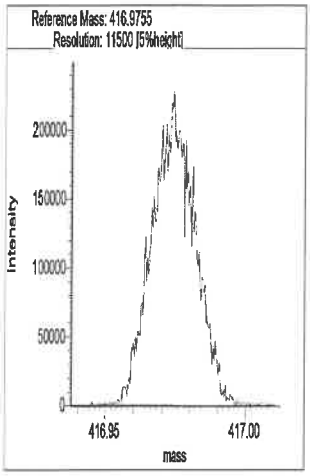
Ref. mass 442.9723 [m/z] Resolution: 11150 [5%height]

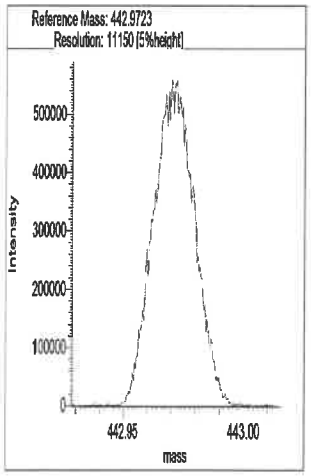












Segment 4

Lock mass 392.9754 [m/z] Resolution: 11400 [5%height]

Cali. mass 480.9691 [m/z] Resolution: 10607 [5%height]

Ref. mass 404.9755 [m/z] Resolution: 11454 [5%height]

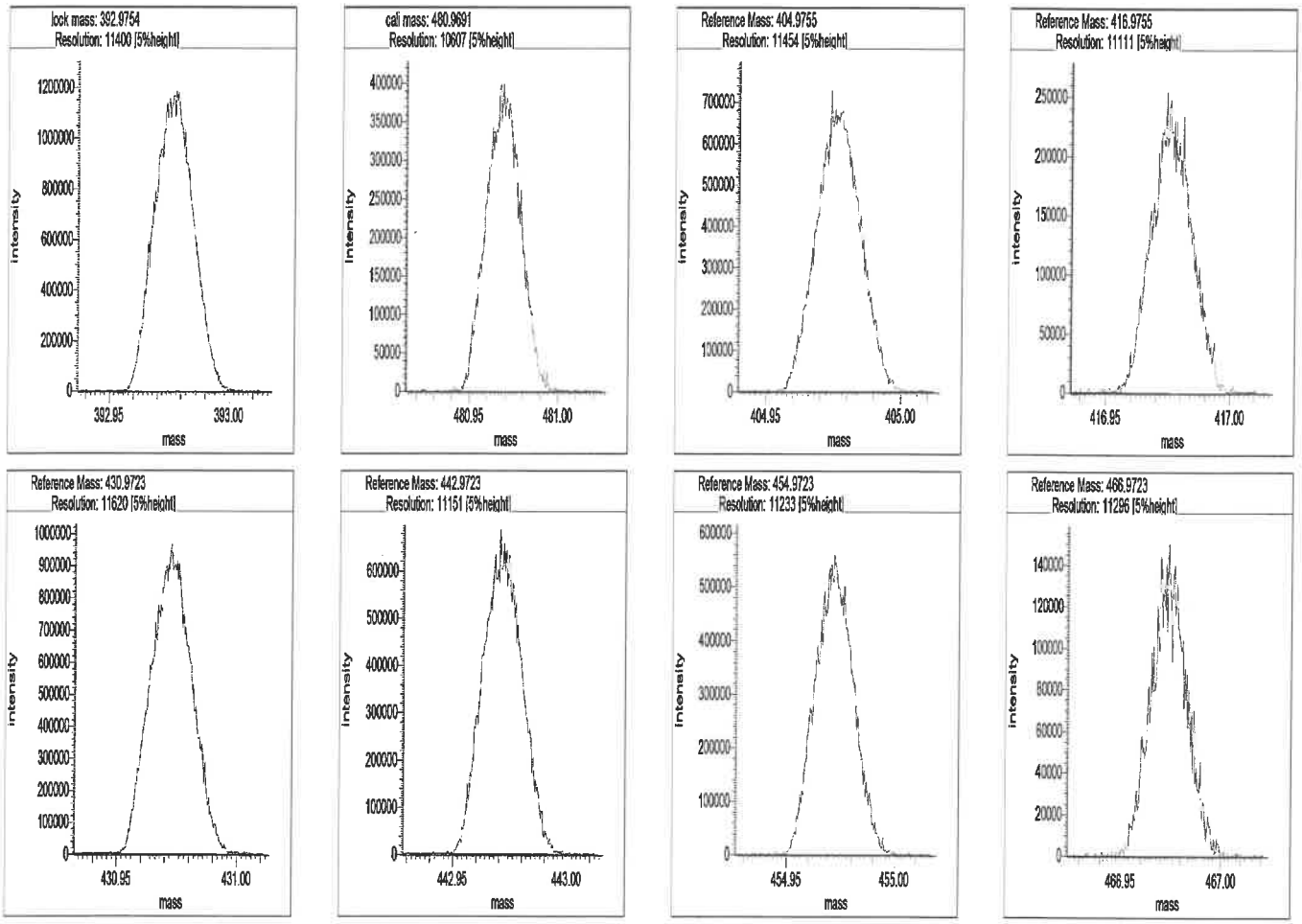
Ref. mass 416.9755 [m/z] Resolution: 11111 [5%height]

Ref. mass 430.9723 [m/z] Resolution: 11620 [5%height]

Ref. mass 442.9723 [m/z] Resolution: 11151 [5%height]

Ref. mass 454.9723 [m/z] Resolution: 11233 [5%height]

Ref. mass 466.9723 [m/z] Resolution: 11296 [5%height]



Segment 5

Lock mass 442.9723 [m/z] Resolution: 10920 [5%height]

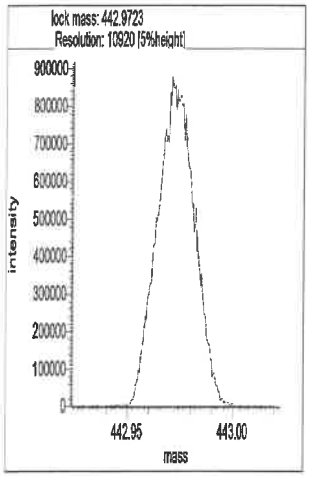
Cali. mass 504.9691 [m/z] Resolution: 11217 [5%height]

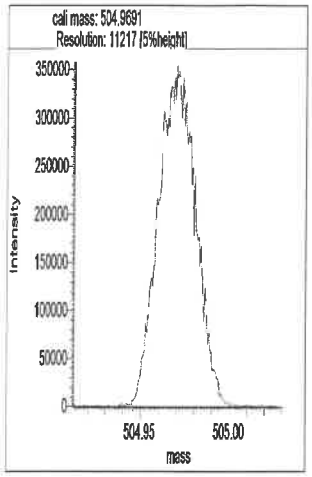
Ref. mass 454.9723 [m/z] Resolution: 11569 [5%height]

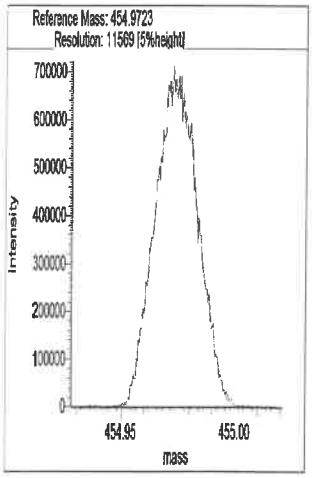
Ref. mass 466.9723 [m/z] Resolution: 11700 [5%height]

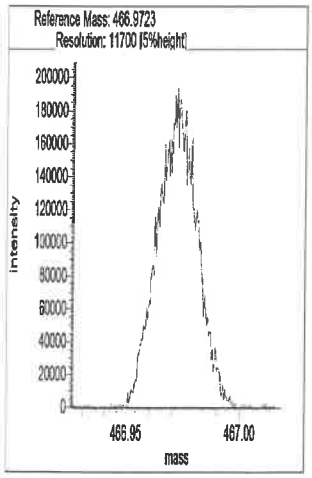
Ref. mass 480.9691 [m/z] Resolution: 10657 [5%height]

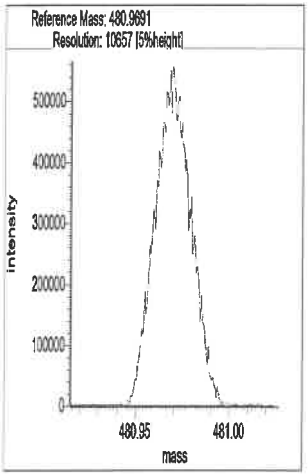
Ref. mass 492.9691 [m/z] Resolution: 11178 [5%height]

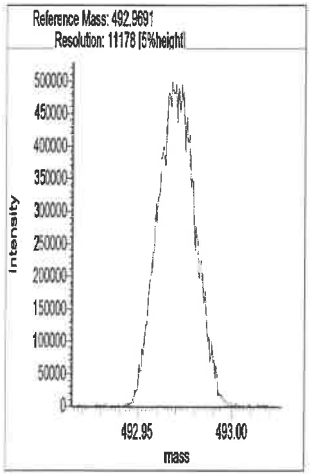

lock mass: 442.9723
Resolution: 10920 [5%height]
intensity
mass
442.95
443.00


cali mass: 504.9691
Resolution: 11217 [5%height]
intensity
mass
504.95
505.00


Reference Mass: 454.9723
Resolution: 11569 [5%height]
intensity
mass
454.95
455.00


Reference Mass: 466.9723
Resolution: 11700 [5%height]
intensity
mass
466.95
467.00


Reference Mass: 480.9691
Resolution: 10657 [5%height]
intensity
mass
480.95
481.00


Reference Mass: 492.9691
Resolution: 11178 [5%height]
intensity
mass
492.95
493.00

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Sacramento | Job No.: 580-118426-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-622337/1-A

Matrix: Water | Lab File ID: 07oc22dfs1_5.d

Analysis Method: 1613B | Date Collected:

Extract. Method: 1613B | Date Extracted: 10/05/2022 04:46

Sample wt/vol: 1000.0(mL) | Date Analyzed: 10/07/2022 15:26

Con. Extract Vol.: 20.0(uL) | Dilution Factor: 1

Injection Volume: 1(uL) | GC Column: DB-5 ID: 0.32(mm)

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

Cleanup Factor: | Level: (low/med) Low

Analysis Batch No.: 623051 | Units: pg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	ND		10	0.27
40321-76-4	1,2,3,7,8-PeCDD	ND		50	0.29
39227-28-6	1,2,3,4,7,8-HxCDD	2.18	J	50	0.19
57653-85-7	1,2,3,6,7,8-HxCDD	0.968	J	50	0.22
19408-74-3	1,2,3,7,8,9-HxCDD	1.33	J	50	0.18
35822-46-9	1,2,3,4,6,7,8-HpCDD	2.22	J	50	0.13
3268-87-9	OCDD	5.72	J	100	0.51
51207-31-9	2,3,7,8-TCDF	ND		10	0.11
57117-41-6	1,2,3,7,8-PeCDF	ND		50	0.13
57117-31-4	2,3,4,7,8-PeCDF	ND		50	0.13
70648-26-9	1,2,3,4,7,8-HxCDF	0.817	J	50	0.17
57117-44-9	1,2,3,6,7,8-HxCDF	0.831	J	50	0.18
60851-34-5	2,3,4,6,7,8-HxCDF	0.844	J	50	0.18
72918-21-9	1,2,3,7,8,9-HxCDF	1.56	J	50	0.19
67562-39-4	1,2,3,4,6,7,8-HpCDF	2.28	J	50	0.32
55673-89-7	1,2,3,4,7,8,9-HpCDF	2.14	J	50	0.35
39001-02-0	OCDF	2.65	J	100	0.48

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Sacramento | Job No.: 580-118426-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-622337/1-A

Matrix: Water | Lab File ID: 07oc22dfs1_5.d

Analysis Method: 1613B | Date Collected:

Extract. Method: 1613B | Date Extracted: 10/05/2022 04:46

Sample wt/vol: 1000.0(mL) | Date Analyzed: 10/07/2022 15:26

Con. Extract Vol.: 20.0(uL) | Dilution Factor: 1

Injection Volume: 1(uL) | GC Column: DB-5 ID: 0.32(mm)

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

Cleanup Factor: | Level: (low/med) Low

Analysis Batch No.: 623051 | Units: pg/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	59		25-164
109719-79-1	13C-1,2,3,7,8-PeCDD	75		25-181
109719-81-5	13C-1,2,3,6,7,8-HxCDD	67		28-130
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	76		23-140
114423-97-1	13C-OCDD	62		17-157
89059-46-1	13C-2,3,7,8-TCDF	48		24-169
109719-77-9	13C-1,2,3,7,8-PeCDF	58		24-185
114423-98-2	13C-1,2,3,4,7,8-HxCDF	64		26-152
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	57		28-143
116843-04-0	13C-1,2,3,7,8,9-HxCDF	57		29-147
109719-78-0	13C-OCDF	57		17-157
109719-80-4	13C-1,2,3,4,7,8-HxCDD	76		32-141
116843-03-9	13C-1,2,3,6,7,8-HxCDF	64		26-123
116843-02-8	13C-2,3,4,7,8-PeCDF	59		21-178
116843-05-1	13C-2,3,4,6,7,8-HxCDF	61		28-136
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	63		26-138

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Sacramento | Job No.: 580-118426-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 320-622337/2-A

Matrix: Water | Lab File ID: 07oc22dfs1_6.d

Analysis Method: 1613B | Date Collected:

Extract. Method: 1613B | Date Extracted: 10/05/2022 04:46

Sample wt/vol: 1000.0(mL) | Date Analyzed: 10/07/2022 16:13

Con. Extract Vol.: 20.0(uL) | Dilution Factor: 1

Injection Volume: 1(uL) | GC Column: DB-5 ID: 0.32(mm)

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

Cleanup Factor: | Level: (low/med) Low

Analysis Batch No.: 623051 | Units: pg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	178		10	0.47
40321-76-4	1,2,3,7,8-PeCDD	840		50	1.1
39227-28-6	1,2,3,4,7,8-HxCDD	833		50	1.3
57653-85-7	1,2,3,6,7,8-HxCDD	969		50	1.6
19408-74-3	1,2,3,7,8,9-HxCDD	872		50	1.3
35822-46-9	1,2,3,4,6,7,8-HpCDD	859		50	2.0
3268-87-9	OCDD	1960		100	2.2
51207-31-9	2,3,7,8-TCDF	215		10	0.47
57117-41-6	1,2,3,7,8-PeCDF	802		50	3.3
57117-31-4	2,3,4,7,8-PeCDF	796		50	3.4
70648-26-9	1,2,3,4,7,8-HxCDF	883		50	2.9
57117-44-9	1,2,3,6,7,8-HxCDF	910		50	2.9
60851-34-5	2,3,4,6,7,8-HxCDF	913		50	2.7
72918-21-9	1,2,3,7,8,9-HxCDF	904		50	3.2
67562-39-4	1,2,3,4,6,7,8-HpCDF	1000		50	3.3
55673-89-7	1,2,3,4,7,8,9-HpCDF	874		50	3.5
39001-02-0	OCDF	1900		100	2.1

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Sacramento | Job No.: 580-118426-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 320-622337/2-A

Matrix: Water | Lab File ID: 07oc22dfs1_6.d

Analysis Method: 1613B | Date Collected:

Extract. Method: 1613B | Date Extracted: 10/05/2022 04:46

Sample wt/vol: 1000.0(mL) | Date Analyzed: 10/07/2022 16:13

Con. Extract Vol.: 20.0(uL) | Dilution Factor: 1

Injection Volume: 1(uL) | GC Column: DB-5 ID: 0.32(mm)

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

Cleanup Factor: | Level: (low/med) Low

Analysis Batch No.: 623051 | Units: pg/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	58		20-175
109719-79-1	13C-1,2,3,7,8-PeCDD	64		21-227
109719-81-5	13C-1,2,3,6,7,8-HxCDD	54		25-163
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	60		26-166
114423-97-1	13C-OCDD	50		13-199
89059-46-1	13C-2,3,7,8-TCDF	46		22-152
109719-77-9	13C-1,2,3,7,8-PeCDF	52		21-192
114423-98-2	13C-1,2,3,4,7,8-HxCDF	50		19-202
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	46		21-158
116843-04-0	13C-1,2,3,7,8,9-HxCDF	47		17-205
109719-78-0	13C-OCDF	45		13-199
109719-80-4	13C-1,2,3,4,7,8-HxCDD	58		21-193
116843-03-9	13C-1,2,3,6,7,8-HxCDF	51		21-159
116843-02-8	13C-2,3,4,7,8-PeCDF	55		13-328
116843-05-1	13C-2,3,4,6,7,8-HxCDF	50		22-176
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	50		20-186

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Sacramento | Job No.: 580-118426-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 320-622337/3-A

Matrix: Water | Lab File ID: 07oc22dfs1_7.d

Analysis Method: 1613B | Date Collected:

Extract. Method: 1613B | Date Extracted: 10/05/2022 04:46

Sample wt/vol: 1000.0(mL) | Date Analyzed: 10/07/2022 17:01

Con. Extract Vol.: 20.0(uL) | Dilution Factor: 1

Injection Volume: 1(uL) | GC Column: DB-5 ID: 0.32(mm)

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

Cleanup Factor: | Level: (low/med) Low

Analysis Batch No.: 623051 | Units: pg/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	EDL
1746-01-6	2,3,7,8-TCDD	182		10	0.44
40321-76-4	1,2,3,7,8-PeCDD	836		50	0.93
39227-28-6	1,2,3,4,7,8-HxCDD	831		50	1.2
57653-85-7	1,2,3,6,7,8-HxCDD	989		50	1.4
19408-74-3	1,2,3,7,8,9-HxCDD	875		50	1.1
35822-46-9	1,2,3,4,6,7,8-HpCDD	873		50	1.5
3268-87-9	OCDD	1960		100	1.7
51207-31-9	2,3,7,8-TCDF	221		10	0.48
57117-41-6	1,2,3,7,8-PeCDF	830		50	3.0
57117-31-4	2,3,4,7,8-PeCDF	804		50	3.2
70648-26-9	1,2,3,4,7,8-HxCDF	901		50	2.6
57117-44-9	1,2,3,6,7,8-HxCDF	914		50	2.7
60851-34-5	2,3,4,6,7,8-HxCDF	939		50	2.5
72918-21-9	1,2,3,7,8,9-HxCDF	935		50	2.8
67562-39-4	1,2,3,4,6,7,8-HpCDF	1000		50	2.6
55673-89-7	1,2,3,4,7,8,9-HpCDF	889		50	2.7
39001-02-0	OCDF	1880		100	1.6

FORM I
DIOXIN ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Sacramento | Job No.: 580-118426-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCSD 320-622337/3-A

Matrix: Water | Lab File ID: 07oc22dfs1_7.d

Analysis Method: 1613B | Date Collected:

Extract. Method: 1613B | Date Extracted: 10/05/2022 04:46

Sample wt/vol: 1000.0(mL) | Date Analyzed: 10/07/2022 17:01

Con. Extract Vol.: 20.0(uL) | Dilution Factor: 1

Injection Volume: 1(uL) | GC Column: DB-5 ID: 0.32(mm)

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

Cleanup Factor: | Level: (low/med) Low

Analysis Batch No.: 623051 | Units: pg/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
76523-40-5	13C-2,3,7,8-TCDD	68		20-175
109719-79-1	13C-1,2,3,7,8-PeCDD	84		21-227
109719-81-5	13C-1,2,3,6,7,8-HxCDD	69		25-163
109719-83-7	13C-1,2,3,4,6,7,8-HpCDD	80		26-166
114423-97-1	13C-OCDD	70		13-199
89059-46-1	13C-2,3,7,8-TCDF	54		22-152
109719-77-9	13C-1,2,3,7,8-PeCDF	67		21-192
114423-98-2	13C-1,2,3,4,7,8-HxCDF	67		19-202
109719-84-8	13C-1,2,3,4,6,7,8-HpCDF	62		21-158
116843-04-0	13C-1,2,3,7,8,9-HxCDF	60		17-205
109719-78-0	13C-OCDF	65		13-199
109719-80-4	13C-1,2,3,4,7,8-HxCDD	78		21-193
116843-03-9	13C-1,2,3,6,7,8-HxCDF	66		21-159
116843-02-8	13C-2,3,4,7,8-PeCDF	69		13-328
116843-05-1	13C-2,3,4,6,7,8-HxCDF	65		22-176
109719-94-0	13C-1,2,3,4,7,8,9-HpCDF	69		20-186

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Instrument ID: DFS 1 Start Date: 08/24/2022 12:50

Analysis Batch Number: 611807 End Date: 08/24/2022 19:33

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
WDM 320-611807/1		08/24/2022 12:50	1	24au22adfs1_2.d	DB-5 0.32(mm)
IC 320-611807/3		08/24/2022 14:25	1	24au22adfs1_4.d	DB-5 0.32(mm)
IC 320-611807/4		08/24/2022 15:16	1	24au22adfs1_5.d	DB-5 0.32(mm)
IC 320-611807/5		08/24/2022 16:03	1	24au22adfs1_6.d	DB-5 0.32(mm)
IC 320-611807/6		08/24/2022 16:51	1	24au22adfs1_7.d	DB-5 0.32(mm)
IC 320-611807/7		08/24/2022 17:39	1	24au22adfs1_8.d	DB-5 0.32(mm)
ICV 320-611807/9		08/24/2022 19:33	1	24au22adfs1_11.d	DB-5 0.32(mm)

DIOXIN ANALYSIS RUN LOG

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Instrument ID: DFS 1 Start Date: 10/07/2022 13:00

Analysis Batch Number: 623051 End Date: 10/07/2022 23:24

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-623051/1		10/07/2022 13:00	1	07oc22dfs1_2.d	DB-5 0.32(mm)
WDM 320-623051/2		10/07/2022 13:51	1	07oc22dfs1_3.d	DB-5 0.32(mm)
ZZZZZ		10/07/2022 14:38	1		DB-5 0.32(mm)
MB 320-622337/1-A		10/07/2022 15:26	1	07oc22dfs1_5.d	DB-5 0.32(mm)
LCS 320-622337/2-A		10/07/2022 16:13	1	07oc22dfs1_6.d	DB-5 0.32(mm)
LCSD 320-622337/3-A		10/07/2022 17:01	1	07oc22dfs1_7.d	DB-5 0.32(mm)
580-118426-1	SYSTEM01-09299022	10/07/2022 18:37	1	07oc22dfs1_9.d	DB-5 0.32(mm)
580-118426-2	SYSTEM02-09292022	10/07/2022 19:25	1	07oc22dfs1_10.d	DB-5 0.32(mm)
580-118426-3	SP-FD	10/07/2022 20:12	1	07oc22dfs1_11.d	DB-5 0.32(mm)
ZZZZZ		10/07/2022 21:00	1		DB-5 0.32(mm)
ZZZZZ		10/07/2022 21:48	1		DB-5 0.32(mm)
ZZZZZ		10/07/2022 22:36	1		DB-5 0.32(mm)
ZZZZZ		10/07/2022 23:24	1		DB-5 0.32(mm)

DIOXIN BATCH WORKSHEET

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Batch Number: 611807 Batch Start Date: 08/24/22 12:50 Batch Analyst: Bilotta, Giana R

Batch Method: 1613B Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	HRDXNCP 00045	HRDXNIC 00051	HRDXNL2 00036	HRDXNL3 00033	HRDXNL4 00109	HRDXNL5 00036
WDM 320-611807/1		1613B		1 uL					
IC 320-611807/3		1613B				1 uL			
IC 320-611807/4		1613B					1 uL		
IC 320-611807/5		1613B						1 uL	
IC 320-611807/6		1613B							1 uL
IC 320-611807/7		1613B							
ICV 320-611807/9		1613B			1 uL				

Lab Sample ID	Client Sample ID	Method Chain	Basis	HRDXNL6 00033					
WDM 320-611807/1		1613B							
IC 320-611807/3		1613B							
IC 320-611807/4		1613B							
IC 320-611807/5		1613B							
IC 320-611807/6		1613B							
IC 320-611807/7		1613B		1 uL					
ICV 320-611807/9		1613B							

Batch Notes	

Basis	Basis Description

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

DIOXIN BATCH WORKSHEET

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Batch Number: 622337 Batch Start Date: 10/05/22 04:44 Batch Analyst: Chang, Fue

Batch Method: 1613B Batch End Date: 10/06/22 12:30

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ExtractionID	RoundBottomID
MB 320-622337/1		1613B, 1613B				1000.0 mL	20.0 uL	Sep4/Filter10	8
LCS 320-622337/2		1613B, 1613B				1000.0 mL	20.0 uL	8/11	18
LCSD 320-622337/3		1613B, 1613B				1000.0 mL	20.0 uL	7/9	28
580-118426-B-1	SYSTEM01-092990222	1613B, 1613B	T	1361.0 g	458.35 g	902.7 mL	20.0 uL	10/14	2
580-118426-A-2	SYSTEM02-092920222	1613B, 1613B	T	1395.0 g	456.39 g	938.6 mL	20.0 uL	13/21	6
580-118426-B-3	SP-FD	1613B, 1613B	T	1377.2 g	459.62 g	917.6 mL	20.0 uL	90-9/20	20

Lab Sample ID	Client Sample ID	Method Chain	Basis	RotoVapID	HRDXNIDA 00534	HRDXNIS 00146	HRDXNSU 00271	HRDXNTA 00160	AnalysisComment
MB 320-622337/1		1613B, 1613B		4	1 mL	20 uL	1 mL		K1-7
LCS 320-622337/2		1613B, 1613B		6	1 mL	20 uL	1 mL	50 uL	K2-4
LCSD 320-622337/3		1613B, 1613B		4	1 mL	20 uL	1 mL	50 uL	K3-24
580-118426-B-1	SYSTEM01-092990222	1613B, 1613B	T	4	1 mL	20 uL	1 mL		L1-13
580-118426-A-2	SYSTEM02-092920222	1613B, 1613B	T	6	1 mL	20 uL	1 mL		L2-14
580-118426-B-3	SP-FD	1613B, 1613B	T	4	1 mL	20 uL	1 mL		L3-21

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

DIOXIN BATCH WORKSHEET

Lab Name: Eurofins Sacramento Job No.: 580-118426-1

SDG No.:

Batch Number: 622337 Batch Start Date: 10/05/22 04:44 Batch Analyst: Chang, Fue

Batch Method: 1613B Batch End Date: 10/06/22 12:30

Batch Notes	
Balance ID	QA - 070
MeCL2 ID	DCM_00461 mL
Toluene ID	Toluene_00156 mL
Hexane ID	Hexane_00351 mL
20% DCM:Hexane ID	DH28_00222 mL
65% DCM:Hexane ID	DH6535_00624 mL
Silica Gel ID	SilicaGel_00420
Acid Silica Gel ID	SAS5644_00834
Acid Alumina ID	Acid_Alumina_00029
Na2SO4 ID	Na2SO4_00152
Soxhlet/Soxtherm Start	10/5/22 5:50
Soxhlet/Soxtherm End	10/5/22 8:50
Analyst ID - IDA Reagent Drop	FC 10/5/22 I0818801E HRDXNIDA_00534 B-4/4 1.0 mL
Analyst ID - IDA Reagent Drop Witness	GLB 10/5/22
Analyst ID - TA Reagent Drop	FC 10/5/22 D0842779E HRDXNTA_00160 B-1/2 50.0 uL
Analyst ID - TA Reagent Drop Witness	GLB 10/5/22
Analyst ID - SU Reagent Drop	TGL 10/06/22 HD05018 HRDXNSU_00271 B 3/4 1.0 mL
Analyst ID - SU Reagent Drop Witness	FC 10/06/22
Analyst ID - IS Reagent Drop	TGL 10/06/22 CN15436 HRDXNIS_00146 B 1/2 20.0 uL
Analyst ID - IS Reagent Drop Witness	CB 10/06/22
IFB Clean Up	TGL 10/06/22
C14 ID	Tetradecane_00023
Storage Box ID	DXN -369

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Subcontract Data

Shipping and Receiving Documents

Eurofins Seattle
5755 8th Street East

Tacoma, WA 98424-1317
phone 253.922.2310 fax 253.922.5047

Chain of Custody Record

eurofins | Environment Testing America

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

Eurofins Environment Testing Americ

Client Contact	Project Manager: Kris Ivarson	Site Contact:	Date:	COC No:
Jacobs Engineering Group, Inc.	Email: Kris.Ivarson@jacobs.com	Lab Contact: Matlock, Pauline M	Carrier:	1 of 1 COCs
Address: 2020 SW Fourth Ave, 3rd Floor	Tel/Fax:			TALS Project #:
City/State/Zip: Portland, OR, 97201	Analysis Turnaround Time			Sampler:
530-229-3202 Phone	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
(xxx) xxx-xxxx FAX	TAT if different from Below			Walk-in Client:
Project Name: Northwest Pipe Company stormwater 2022	☐ 2 weeks			Lab Sampling:
Site:	☐ 1 week			Job / SDG No.:
P O #	☐ 2 days ☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	1613B- 17 Isomers List	Sample Specific Notes:
SYSTEM01-09299022	#######	1033	G	WATER	2	N	N	Y	
SYSTEM02-09292022	9/29/22	1057	G	WATER	2	N	N	Y	
SP-FD	9/29/22	1200	G	WATER	2	N	N	Y	

580-118426 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

1.9/1.8 A3/LgBlu/Wet/Bub/Fedex P.O

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.: _____
Relinquished by:	Company: Jacobs	Date/Time: 9/29 @ 1300	Received by:	Company: EETN	Date/Time: 9/30/22 10:09
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Matlock, Pauline M	Carrier Tracking No(s):	COC No: 580-109915.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Pauline.Matlock@et.eurofinsus.com	State of Origin: Oregon	Page: Page 1 of 1
Company: Eurofins Environment Testing Northern Ca		Accreditations Required (See note): NELAP - Oregon		Job #: 580-118426-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 10/20/2022			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Northwest Pipe Company stormwater 2022	Project #: 58017841			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1613B/1613B_Sox_Sep_P 17 Isomers List	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
SYSTEM01-09299022 (580-118426-1)	9/29/22	10:33 Pacific		Water			X	2	
SYSTEM02-09292022 (580-118426-2)	9/29/22	10:57 Pacific		Water			X	2	
SP-FD (580-118426-3)	9/29/22	12:00 Pacific		Water			X	2	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Environment Testing Northwest, LLC.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	10/3/22	[illegible]	[signature]	10-4-22 945	[illegible]
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.: 78195	Cooler Temperature(s) °C and Other Remarks: 0.7c

Ver: 06/08/2021

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc. Job Number: 580-118426-1

Login Number: 118426 **List Source: Eurofins Seattle**
List Number: 1
Creator: Holdener, Heather D

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

Login Sample Receipt Checklist

Client: Jacobs Engineering Group, Inc.

Job Number: 580-118426-1

Login Number: 118426
List Number: 2
Creator: Simmons, Jason C

List Source: Eurofins Sacramento
List Creation: 10/04/22 11:57 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	1781959
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.7c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix D

Data Quality Evaluation (DQE)

Stormwater Data Quality Evaluation for Northwest Pipe Company, Portland, Oregon

PREPARED FOR:	Stephanie Heldt-Sheller/Northwest Pipe Company
PREPARED BY:	Bernice Kidd/Jacobs
REVIEWED BY:	Mark Fesler/Jacobs
REFERENCE:	Northwest Pipe Company Stormwater Event – September 29, 2022
DATE:	November 8, 2022

Introduction

The objective of this data quality evaluation (DQE) is to assess the representativeness and usability of data quality for stormwater samples collected at the Northwest Pipe Company. The rationale for monitoring, the data quality objectives (DQOs), and the method for performing this DQE are provided in the *Dioxin/Furan Stormwater Sampling Work Plan*, Northwest Pipe Company, Portland Plant, ECSI No. 138, June 2022 (hereafter referred to as the *NWP WP*).

This DQE report is intended as a general data quality assessment designed to summarize data issues and written using guidance from the U.S. Environmental Protection Agency (USEPA) *National Functional Guidelines for High Resolution Superfund Methods Data Review* (USEPA 2020a). Laboratory analytical data acquired during this investigation has been evaluated following the EPA Stage 2b data validation criteria, conducted on 100% of the laboratory data, using laboratory-derived quality assurance (QA)/quality control (QC) limits.

Findings

The overall summaries of the data validation findings are contained in Tables 1 through 5 and summarized in the method sections that follow:

- **Table 1**: Sample Chronology – Data Summary. Presents the sample identifiers, methods, sampling dates, received dates, extraction dates, and analysis dates sorted by sample delivery group (SDG) number.
- **Table 2**: Sample Summary by Chain of Custody – Data Summary. Presents the sample identifiers, sampling dates, and SDG sorted by chain-of-custody (COC) number.
- **Table 3**: Overall Flagging Summary. Presents the number of occurrences for each data validation reason by method.

- **Table 4**: Blank and Miscellaneous – Qualified Data. Presents the data qualified because of associated blank contamination or other miscellaneous quality control criteria.
- **Table 5**: Site Completeness by Analyte – Qualified Data. Presents the percent completeness by method, analyte, and matrix.

This DQE report includes two normal stormwater discharge samples and one field duplicate (FD) collected September 29,2022. These samples were reported under one sample delivery group: 580-118426-1. A list of samples included in this DQE is presented in Table 1. One analytical test method (E1613B) was used to analyze the surface water samples and is provided in Table 1. The analyses were performed by Eurofins TestAmerica Laboratory, Sacramento, California (TAMC). Samples were collected and delivered by overnight carrier to TAMC.

The data were assessed according to the requirements of the *NWP WP* and included a review of:

1. chain of custody documentation;
2. holding-time compliance;
3. required quality control (QC) samples at the specified frequencies;
4. flagging for method blanks and field blanks;
5. laboratory control sample/laboratory control sample duplicates (LCS/LCSD);
6. matrix spike/matrix spike duplicate (MS/MSD) recoveries;

and other method-specific criteria as defined by the *NWP WP*.

Field samples were also reviewed to ascertain field compliance and data quality issues. This included the review of a FD.

Data flags were assigned using the National Functional Guidelines (*NFGs)* as guidance. These flags, as well as the reason for each flag, are entered into the electronic database and can be found in Table 3. Multiple flags are routinely applied to specific sample method/matrix/analyte combinations, but there will be only one final flag. A final flag is applied to the data and is the most conservative of the applied validation flags. The final flag also includes matrix and blank sample impacts.

The data flags are defined below:

- J = the analyte was detected at a concentration greater than the method detection limit but less than the reporting limit or was qualified as estimated due to a QA/QC exceedance.
- U = the analyte was not detected at or greater than the method detection limit.
- UB = the analyte was qualified as not detected at the detected concentration due to associated method blank contamination.

Overall Flagging Summary

The overall summaries of the data validation findings are summarized in the following sections. Table 3 provides a flagging summary of overall occurrences for each data validation reason by method.

Temperature

Temperature requirements were met.

Blanks

Method blanks were analyzed at the required frequency and were free of contamination that affected the sample results with the following exceptions listed in Table 4:

Eleven of seventeen dioxin/furan compounds were detected less than the reporting limit in the method blank. Thirty-one associated sample results detected less than five times the blank concentrations were qualified as not detected and flagged "UB".

Holding Times

All holding-time criteria were met.

Initial and Continuing Calibration

All acceptance criteria were met.

Field Duplicates

In accordance with the *NWP WP* one field duplicate (FD) was collected from location SYSTEM01, all precision criteria were met.

Laboratory Control Samples

LCS and LCSDs were analyzed at the required frequency and the accuracy and precision criteria were met.

Surrogates and Isotope Dilution Analytes

All acceptance criteria were met.

Matrix Spikes

A project-specific matrix spike/matrix spike duplicate (MS/MSD) was not collected for this event.

Sample Quantitation

Ten results out of 51 were reported as estimated maximum possible concentrations (EMPC) per method guidance. The associated results were qualified as estimated and flagged "J". Seven of the EMPC qualified results were ultimately flagged "UB" due to associated method blank contamination.

Chain of Custody

There were no discrepancies.

Overall Assessment

The final activity in the DQE is an assessment of whether the data meets the data quality objectives. The goal of this assessment is to demonstrate that a sufficient number of representative samples were collected, and the resulting analytical data can be used to support the decision-making process.

The following summary highlights the data evaluation findings for the above defined events:

1. No data were rejected, and completeness was 100 percent for all method/matrix/analyte combinations as shown in Table 5.
2. Thirty-one out of a total of 51 results were qualified as not detected due to associated blank contamination.
3. Ten out of a total of 51 results were reported as EMPCs.

4. The precision and accuracy of the data, as measured by field and laboratory QC indicators, demonstrates that the NWP WP goals for project use were met.
5. The field crew followed the NWP WP and project documents.

Works Cited

Jacobs. 2022. Dioxin/Furan Stormwater Sampling Work Plan, Northwest Pipe Company, Portland Plant, ECSI No. 138. June.

U.S. Environmental Protection Agency (USEPA). 2020a. National Functional Guidelines for High Resolution Superfund Methods Data Review. November.

TABLE 1

Sample Chronology - Data Summary

Laboratory	SDG	Sample Identification	Method	Sample Date	Receive Date	Extract Date	Analysis Date
TAMC	580-118426-1	SP-FD_Sept22	E1613	9/29/2022	9/30/2022	10/5/2022	10/7/2022
		SYSTEM01-09299022	E1613	9/29/2022	9/30/2022	10/5/2022	10/7/2022
		SYSTEM02-09292022	E1613	9/29/2022	9/30/2022	10/5/2022	10/7/2022

SDG = sample delivery group

TAMC = Eurofins TestAmerica Sacramento

TABLE 2

Sample Summary by CoC - Data Summary

CoC Number	Sample Date	Matrix	QAQC Type	Sample Identification	SDG	Laboratory
580-118426-1	29-Sep-22	WATER	FD	SP-FD_Sept22	580-118426-1	TAMC
			N	SYSTEM01-09299022	580-118426-1	TAMC
			N	SYSTEM02-09292022	580-118426-1	TAMC

SDG = Sample delivery group

TAMC = Eurofins TestAmerica Sacramento

QAQC Type

FD = Field Duplicate

N = Normal

TABLE 3

Overall Flagging Summary

Method	Matrix	Validation Reason	Qualifier*	Qualifier Type	Number of Affected Results
E1613	WATER				
Category = Blank		Estimated Maximum Possible Concentration	J	Other	10 of 51
Category = Blank		Laboratory blank contamination greater than the method detection limit	UB	Protocol	31 of 51

* The most severe flag for each analyte becomes the final validation flag.

Qualifier Description:

J = the analyte was detected at a concentration greater than the method detection limit but less than the reporting limit, or was qualified as estimated due to a QA/QC exceedance.

UB = the analyte was qualified as not detected at the reported concentration due to associated method blank contamination.

Qualifier Type:

Protocol = Flagging due to contractor/laboratory protocol violations.
Other = Flagging due to sample, matrix, or field issues not related to Quality Assurance Project Plan (QAPP) or Sampling and Analysis Plan (SAP) protocol.

TABLE 4

Blank and Miscellaneous - Qualified Data

Analyte	Sample Identification	Result	Blank Contamination Qualifier*	Criteria	Comments
Method (Matrix): E1613 (WATER)					
1,2,3,4,6,7,8-HpCDD					
	SP-FD_Sept22	7.4 pg/L	UB	LB<RL	blank concentration = 2.22 pg/L
	SYSTEM01-09299022	7.3 pg/L	UB	LB<RL	blank concentration = 2.22 pg/L
1,2,3,4,6,7,8-HpCDF					
	SP-FD_Sept22	3.5 pg/L	J	EMPC	
	SP-FD_Sept22	3.5 pg/L	UB	LB<RL	blank concentration = 2.28 pg/L
	SYSTEM01-09299022	2.6 pg/L	UB	LB<RL	blank concentration = 2.28 pg/L
	SYSTEM02-09292022	5.3 pg/L	J	EMPC	
	SYSTEM02-09292022	5.3 pg/L	UB	LB<RL	blank concentration = 2.28 pg/L
1,2,3,4,7,8,9-HpCDF					
	SP-FD_Sept22	2.7 pg/L	UB	LB<RL	blank concentration = 2.14 pg/L
	SYSTEM02-09292022	3.3 pg/L	UB	LB<RL	blank concentration = 2.14 pg/L
1,2,3,4,7,8-HxCDD					
	SP-FD_Sept22	3 pg/L	UB	LB<RL	blank concentration = 2.18 pg/L
	SYSTEM01-09299022	2.3 pg/L	UB	LB<RL	blank concentration = 2.18 pg/L
	SYSTEM02-09292022	3.9 pg/L	UB	LB<RL	blank concentration = 2.18 pg/L
1,2,3,4,7,8-HxCDF					
	SP-FD_Sept22	1.6 pg/L	UB	LB<RL	blank concentration = 0.817 pg/L
	SYSTEM01-09299022	0.79 pg/L	J	EMPC	
	SYSTEM01-09299022	0.79 pg/L	UB	LB<RL	blank concentration = 0.817 pg/L
	SYSTEM02-09292022	2.7 pg/L	UB	LB<RL	blank concentration = 0.817 pg/L
1,2,3,6,7,8-HxCDD					
	SP-FD_Sept22	2.7 pg/L	UB	LB<RL	blank concentration = 0.968 pg/L
	SYSTEM01-09299022	1.5 pg/L	UB	LB<RL	blank concentration = 0.968 pg/L
	SYSTEM02-09292022	3.3 pg/L	UB	LB<RL	blank concentration = 0.968 pg/L
1,2,3,6,7,8-HxCDF					
	SP-FD_Sept22	1.7 pg/L	UB	LB<RL	blank concentration = 0.831 pg/L
	SYSTEM01-09299022	0.75 pg/L	UB	LB<RL	blank concentration = 0.831 pg/L
	SYSTEM02-09292022	2.3 pg/L	UB	LB<RL	blank concentration = 0.831 pg/L
1,2,3,7,8,9-HxCDD					
	SP-FD_Sept22	2.2 pg/L	UB	LB<RL	blank concentration = 1.33 pg/L
	SYSTEM01-09299022	1.2 pg/L	J	EMPC	
	SYSTEM01-09299022	1.2 pg/L	UB	LB<RL	blank concentration = 1.33 pg/L

TABLE 4

Blank and Miscellaneous - Qualified Data

Analyte	Sample Identification	Result	Blank Contamination Qualifier*	Criteria	Comments
Method (Matrix): E1613 (WATER)					
	SYSTEM02-09292022	3.4 pg/L	UB	LB<RL	blank concentration = 1.33 pg/L
1,2,3,7,8,9-HxCDF					
	SP-FD_Sept22	2.6 pg/L	J	EMPC	
	SP-FD_Sept22	2.6 pg/L	UB	LB<RL	blank concentration = 1.56 pg/L
	SYSTEM01-09299022	1.8 pg/L	UB	LB<RL	blank concentration = 1.56 pg/L
	SYSTEM02-09292022	3.4 pg/L	UB	LB<RL	blank concentration = 1.56 pg/L
1,2,3,7,8-PeCDF					
	SYSTEM01-09299022	0.96 pg/L	J	EMPC	
	SYSTEM02-09292022	1.2 pg/L	J	EMPC	
2,3,4,6,7,8-HxCDF					
	SP-FD_Sept22	1.5 pg/L	J	EMPC	
	SP-FD_Sept22	1.5 pg/L	UB	LB<RL	blank concentration = 0.844 pg/L
	SYSTEM01-09299022	0.57 pg/L	J	EMPC	
	SYSTEM01-09299022	0.57 pg/L	UB	LB<RL	blank concentration = 0.844 pg/L
	SYSTEM02-09292022	2.7 pg/L	UB	LB<RL	blank concentration = 0.844 pg/L
2,3,4,7,8-PeCDF					
	SP-FD_Sept22	0.92 pg/L	J	EMPC	
OCDF					
	SP-FD_Sept22	8.5 pg/L	UB	LB<RL	blank concentration = 2.65 pg/L
	SYSTEM01-09299022	4.8 pg/L	UB	LB<RL	blank concentration = 2.65 pg/L
	SYSTEM02-09292022	13 pg/L	UB	LB<RL	blank concentration = 2.65 pg/L

pg/L = picograms per liter

Blank target = concentration of field or laboratory blank.

* The most severe flag for each analyte becomes the final validation flag.

Qualifier Description:

J = the analyte was detected at a concentration greater than the method detection limit but less than the reporting limit, or was qualified as estimated due to a QA/QC exceedance.

UB = the analyte was qualified as not detected at the reported concentration due to associated method blank contamination.

Criteria:

EMPC = Estimated Maximum Possible Concentration

LB<RL = Laboratory blank contamination less than the reporting limit

TABLE 5

Site Completeness by Analyte - Qualified Data

Method	Analyte	Matrix	Units	Number of Occurrences							Contractor Completeness (%)	Overall Completeness (%)
				Analyses	Detects	Non-detects	Blank Flags	J-Flags	Contractor R-Flags	Total R-Flags		
E1613	1,2,3,4,6,7,8-HpCDD	WATER	PG/L	3	1	2	2	1			100	100
	1,2,3,4,6,7,8-HpCDF	WATER	PG/L	3		3	3				100	100
	1,2,3,4,7,8,9-HpCDF	WATER	PG/L	3		3	2				100	100
	1,2,3,4,7,8-HxCDD	WATER	PG/L	3		3	3				100	100
	1,2,3,4,7,8-HxCDF	WATER	PG/L	3		3	3				100	100
	1,2,3,6,7,8-HxCDD	WATER	PG/L	3		3	3				100	100
	1,2,3,6,7,8-HxCDF	WATER	PG/L	3		3	3				100	100
	1,2,3,7,8,9-HxCDD	WATER	PG/L	3		3	3				100	100
	1,2,3,7,8,9-HxCDF	WATER	PG/L	3		3	3				100	100
	1,2,3,7,8-PeCDD	WATER	PG/L	3	1	2		1			100	100
	1,2,3,7,8-PeCDF	WATER	PG/L	3	3			3			100	100
	2,3,4,6,7,8-HxCDF	WATER	PG/L	3		3	3				100	100
	2,3,4,7,8-PeCDF	WATER	PG/L	3	3			3			100	100
	2,3,7,8-TCDD	WATER	PG/L	3		3					100	100
	2,3,7,8-TCDF	WATER	PG/L	3		3					100	100
	OCDD	WATER	PG/L	3	3			2			100	100
	OCDF	WATER	PG/L	3		3	3				100	100

% = Percent
J-Flags = Estimated results
R-Flags = Rejected results
pg/L = picograms per liter