Pace Analytical®
National Center for Testing & Innovation

Please Remit To:

Pace Analytical National
29196 Network Place
Chicago, IL 60673-1196
Tax I.D.
Pace Analytical National: 62-0814289
Pace Analytical Services, LLC: 41-1821617
Pace Analytical Gulf Coast: 45-4027089
1-800-767-5859

Invoice Date:	09/01/2023
Invoice Number:	23801635457
Customer PO#	Contract # 8903
Payment Terms:	Net 30
Payment Due Date:	10/01/2023

Bill To:
Accounts Payable
Oregon Dept. of Env. Quality - ODEQ
700 NE Multnomah St, Ste 600
Portland, OR 97232

Customer Number 80-109586

Reported To:	
Don Hanson	
Project Number	
2060.005	
Site ID#	Amount Due
OREGONDEQ-JHBAXTER	$ 3,900.00

Sample Numbers:
L1643943-01, L1643943-02, L1643943-03, L1643943-04, L1643943-05, L1643943-06

Collected: 08/01/2023

Sample IDs:
LFP_SM-01, LFP_SM-02, REX_SM-01, REX_SM-02, DSG_SM-02, DSG_SM-03

R5

Qty	Matrix	Description	Rush	Unit Price	Amount
		OREGONDEQ-JH Baxter Offsite Investigation			
6	SS	Dioxins and Furans 1613		$ 650.00	$ 3,900.00

Comments:
Contract # 8903.

APPROVED FOR PAYMENT

25-63680-34377-491300

(AY) (INDEX) (PCA) (AOBJ) (PROJECT)

Brad Shultz 10/20/2023

(SIGNATURE) (DATE)

Total Due $ 3,900.00

2.5% Credit Card Surcharge $ 97.50
If Paid By Credit Card, Total Due $ 3,997.50

In the absence of a contract or written agreement to the contrary, Pace Analytical National Standard Terms and Conditions (see http://www.pacenational.com) represent the entire agreement between Pace Analytical National and the addressee. Accounts beyond terms are subject to 1 1/2% monthly service charge.

To help better serve you, please be green and allow us to invoice via email by sending your AP email address to MTJLAR@pacelabs.com
A 2.5% Credit Card Surcharge of $ 97.50 may be added to any Credit Card payment.
Debit and ACH/e-checks incur no additional fees.

09/01/2023 15:50 seedpak
Acct Date 09/03/2023

State of Oregon Chain of Custody

Agency, Authorized Purchaser or Agent: GSI Water Solutions for ODEQ

Send Lab Report To: Don Hanson, RG
Address: 165 E. 7th Avenue, Suite 100, Eugene, OR 97401
Tel. #: 541-687-7349
Email: don.hanson@deq.state.or.us, jbale@gsiws.com, cmartin@gsiws.com, mfargher@gsiws.com, GIS@gsiws.com

Contract Laboratory Name: Pace Analytical National
Lab Batch #:
Invoice: ODEQ/Business Office, 700 NE Multnomah Street, Suite 600, Portland, OR 97232
Email: DEQEXP@deq.state.or.us

Lab Selection Criteria:
- Proximity (if TAT < 48 hrs)
- Prior work on same project
- Cost (for anticipated analyses)
- Other labs disqualified or unable to perform requested services
- Emergency work

Turn Around Time:
- 10 days (std.)
- 5 days
- 72 hours
- 48 hours
- 24 hours
- Other _____

Project Name: **OREGON DEQ-JH BAXTER OFFSITE INVESTIGATION (TO #2060.005)**

Project #: JH Baxter Offsite Investigation

Sampler Name: Genevieve Schutzius

J055

Sample Preservative

Requested Analyses

Sample ID#	Collection Date	Collection Time	Matrix	Number of Containers	Solids: NA	Dioxin/furans by 1613B	Comments
LFP_SM-01	8/1/23	1110	SO	1		✓	LL4F3943-01
LFP_SM-02		1115				✓	-02
REX_SM-01		1200				✓	-03
REX_SM-02		1205				✓	-04
DSG_SM-02		1305				✓	-05
DSG_SM-03		1310				✓	-06

NOTES: **Conduct Incremental Sampling Methodology processing prior to analysis.**
Contact Chris Martin (503-432-5979, cmartin@gsiws.com) or Josh Bale (530-276-4188, jbale@gsiws.com) with questions. Include DEQ EDD with final lab report.

Relinquished By: Genevieve Schutzius	Agency/Agent: GSI	Received By:	Agency/Agent:
Signature:	Time & Date: 8/8/23 0930	Signature:	Time & Date:
Relinquished By:	Agency/Agent:	Received By:	Agency/Agent:
Signature:	Time & Date:	Signature: Jameem 8/9/23	Time & Date: 0900

THIS PURCHASE IS SUBMITTED PURSUANT TO STATE OF OREGON SOLICITATION #102-1098-07 AND PRICE AGREEMENT # 8903. THE PRICE AGREEMENT INCLUDING CONTRACT TERMS AND CONDITIONS AND SPECIAL CONTRACT TERMS AND CONDITIONS (T'S &C'S) CONTAINED IN THE PRICE AGREEMENT ARE [illegible] 'R ALL OTHER CONFLICTING T'S AND C'S, EXPRESS OR IMPLIED.

Sample Receipt Checklist

COC Seal Present/Intact: __Y__N — If Applicable
COC Signed/Accurate: __Y__N — VOA Zero Headspace: __Y__N
Bottles arrive intact: __Y__N — Pres.Correct/Check: __Y__N
Correct bottles used: __Y__N — GBAG 3.1+0=3.1
Sufficient volume sent: __Y__N — 7922 1776 5969

Pace Analytical™
www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Client Services
Pace Analytical National
12065 Lebanon Rd
Mt. Juliet TN 37122

REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Information:

Pace Project #: 10665016
Sample Receipt Date: 08/11/2023
Client Project #: L1643943 WG2111560
Client Sub PO #: L1643943
State Cert #: N/A

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Kongmeng Vang, your Pace Project Manager.

This report has been reviewed by:

September 01, 2023

Kongmeng Vang, Project Manager
(612) 607-6382
(612) 607-6444 (fax)
kongmeng.vang@pacelabs.com

Report Prepared Date:

September 1, 2023

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on six samples submitted by a representative of Pace Analytical National. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using USEPA Method 1613B. The estimated detection limits (EDLs) were based on signal-to-noise measurements. Estimated maximum possible concentration (EMPC) values were treated as positives in the toxic equivalence calculations.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 42-97%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1613B. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.

Values were flagged "I" where incorrect isotope ratios were obtained. Concentrations below the calibration range were flagged "J" and should be regarded as estimates.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain trace levels of selected congeners. These levels were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" on the results tables and may be, at least partially, attributed to the background.

Laboratory and matrix spike samples were also prepared using clean reference matrix or sample matrix that had been fortified with native standard materials. The recoveries of the spiked native compounds ranged from 94-127% with relative percent differences ranging from 0.0-7.9%. These results were within the target ranges for the method.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
		Missouri	10100
A2LA	2926.01	Montana	CERT0092
Alabama	40770	Nebraska	NE-OS-18-06
Alaska-DW	MN00064	Nevada	MN00064
Alaska-UST	17-009	New Hampshire	2081
Arizona	AZ0014	New Jersey	MN002
Arkansas - WW	88-0680	New York	11647
Arkansas-DW	MN00064	North Carolina-	27700
California	2929	North Carolina-	530
Colorado	MN00064	North Dakota	R-036
Connecticut	PH-0256	Ohio-DW	41244
Florida	E87605	Ohio-VAP (170	CL101
Georgia	959	Ohio-VAP (180	CL110
Hawaii	MN00064	Oklahoma	9507
Idaho	MN00064	Oregon-Primary	MN300001
Illinois	200011	Oregon-Second	MN200001
Indiana	C-MN-01	Pennsylvania	68-00563
Iowa	368	Puerto Rico	MN00064
Kansas	E-10167	South Carolina	74003
Kentucky-DW	90062	Tennessee	TN02818
Kentucky-WW	90062	Texas	T104704192
Louisiana-DEQ	AI-84596	Utah	MN00064
Louisiana-DW	MN00064	Vermont	VT-027053137
Maine	MN00064	Virginia	460163
Maryland	322	Washington	C486
Michigan	9909	West Virginia-D	382
Minnesota	027-053-137	West Virginia-D	9952C
Minnesota-Ag	via MN 027-053	Wisconsin	999407970
Minnesota-Petr	1240	Wyoming-UST	via A2LA 2926.
Mississippi	MN00064		

REPORT OF LABORATORY ANALYSIS

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www.pacelabs.com

Appendix A

Sample Management

REPORT OF LABORATORY ANALYSIS

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page : 1 Of 1

Section A
Required Client Information:

Company:	Pace Analytical
Address:	12065 Lebanon Rd.
	Mt. Juliet, TN 37122
Email:	MTJLSuboutTeam@pacelabs.com
Phone:	(615) 773-9756 Fax: (615) 758-5859
Requested Due Date:	25-Aug

Section B
Required Project Information:

Report To:	Pace Analytical Subout Team
Copy To:	
Purchase Order #:	L1643943
Project Name:	OREGONDEQ-JH Baxter Offsite Investigatio
Project #:	2060.005

Section C
Invoice Information:

Attention:	Don Hanson
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	Kongmeng Vang
Pace Profile #:	38076

Regulatory Agency
State / Location
Lane County, Oregon

MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

SAMPLE ID — One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	Dioxins and Furans 1613	Residual Chlorine (Y/N)	
1	LFP_SM-01	SL				01-Aug	11:10		1	1									X		promium EDD 001
2	LFP_SM-02	SL				01-Aug	11:15		1	1									X		promium EDD 002
3	REX_SM-01	SL				01-Aug	12:00		1	1									X		promium EDD 003
4	REX_SM-02	SL				01-Aug	12:05		1	1									X		promium EDD 004
5	DSG_SM-02	SL				01-Aug	13:05		1	1									X		promium EDD 005
6	DSG_SM-03	SL				01-Aug	13:10		1	1									X		promium EDD 006
7																					
8																					
9																					
10																					
11																					
12																					

WO#: 10665016
10665016

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	James C Huckaba	10-Aug	12:44	[illegible] PACE	8/11/23	940	2.2	Y	Y	Y
Pace Analytical Batch: WG2111560										
Pace Analytical SDGs: L1643943										
Location: Minneapolis, MN 55414										
							TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed:

Sample Condition Upon Receipt | **Client Name:** Pace Analytical | **Project #:** WO# : 10665016 | PM: KV | Due Date: 08/31/23 | CLIENT: ESC_TN

Courier: [X] FedEx [ ] UPS [ ] USPS [ ] Client [ ] Pace [ ] SpeeDee [ ] Commercial

Tracking Number: 6643 4297 9721 [ ] See Exceptions ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? [X] Yes [ ] No **Seals Intact?** [X] Yes [ ] No **Biological Tissue Frozen?** [ ] Yes [ ] No [X] N/A

Packing Material: [ ] Bubble Wrap [X] Bubble Bags [ ] None [ ] Other **Temp Blank?** [X] Yes [ ] No

Thermometer: [ ] T1 (0461) [ ] T2 (0436) [X] T3 (0459) [ ] T4 (0402) [ ] T5 (0178) [ ] T6 (0235) [ ] T7 (0042) [ ] T8 (0775) [ ] T9(0727) [ ] 01339252/1710 **Type of Ice:** [ ] Wet [ ] Blue [ ] Dry [ ] None [ ] Melted

Did Samples Originate in West Virginia? [ ] Yes [X] No **Were All Container Temps Taken?** [ ] Yes [ ] No [X] N/A

Temp should be above freezing to 6 °C **Cooler temp Read w/Temp Blank:** 2.3 °C **Correction Factor:** -0.1 **Cooler Temp Corrected w/temp blank:** 2.2 °C

Average Corrected Temp (no temp blank only): _____ °C [ ] See Exceptions ENV-FRM-MIN4-0142 [ ] 1 Container

USDA Regulated Soil: ([ ] N/A, water sample/other: _____) **Date/Initials of Person Examining Contents:** AS 8/11/23

Did samples originate in a quarantine zone within the United States: AL, AR, AZ CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX, or VA (check maps)? [X] Yes [ ] No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? [ ] Yes [X] No

If Yes to either question, fill out a Regulated Soil Checklist (ENV-FRM-MIN4-0154) and include with SCUR/COC paperwork.

Location (Check one): [ ] Duluth [X] Minneapolis [ ] Virginia

				COMMENTS
Chain of Custody Present and Filled Out?	[X] Yes	[ ] No		1.
Chain of Custody Relinquished?	[X] Yes	[ ] No		2.
Sampler Name and/or Signature on COC?	[ ] Yes	[X] No	[ ] N/A	3.
Samples Arrived within Hold Time?	[X] Yes	[ ] No		4. If fecal: [ ] <8 hrs [ ] >8 hr, <24 [ ] No
Short Hold Time Analysis (<72 hr)?	[ ] Yes	[X] No		5. [ ] Fecal Coliform [ ] HPC [ ] Total Coliform/E.coli [ ] BOD/cBOD [ ] Hex Chrom [ ] Turbidity [ ] Nitrate [ ] Nitrite [ ] Orthophos [ ] Other
Rush Turn Around Time Requested?	[ ] Yes	[X] No		6.
Sufficient Sample Volume?	[X] Yes	[ ] No		7.
Correct Containers Used?	[X] Yes	[ ] No	[ ] N/A	8.
-Pace Containers Used?	[X] Yes	[ ] No		
Containers Intact?	[X] Yes	[ ] No		9.
Field Filtered Volume Received for Dissolved Tests?	[ ] Yes	[ ] No	[X] N/A	10. Is sediment visible in the dissolved container? [ ] Yes [ ] No
Is sufficient information available to reconcile the samples to the COC?	[X] Yes	[ ] No		11. **If no, write ID/Date/Time of container below:** [ ] See Exceptions ENV-FRM-MIN4-0142
Matrix: [ ] Water [X] Soil [ ] Oil [ ] Other				
~~All containers needing acid/base preservation have been checked?~~	~~[ ] Yes~~	~~[ ] No~~	~~[X] N/A~~	~~12. Sample #~~
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO3, H2SO4, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	[ ] Yes	[ ] No	[X] N/A	[ ] NaOH [ ] HNO3 [ ] H2SO4 [ ] Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxins/PFAS (*If adding preservative to a container, it must be added to associated field and equipment blanks--verify with PM first.)	[ ] Yes	[ ] No	[X] N/A	Positive for Residual Chlorine? [ ] Yes [ ] No [ ] See Exceptions ENV-FRM-MIN4-0142 **pH Paper Lot #** Residual Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Headspace in Methyl Mercury Container?	[ ] Yes	[ ] No	[X] N/A	13.
Extra labels present on soil VOA or WIDRO containers?	[ ] Yes	[ ] No	[X] N/A	14. [ ] See Exceptions ENV-FRM-MIN4-0142
Headspace in VOA Vials (greater than 6mm)?	[ ] Yes	[ ] No	[X] N/A	
3 Trip Blanks Present?	[ ] Yes	[ ] No	[X] N/A	15.
Trip Blank Custody Seals Present?	[ ] Yes	[ ] No	[X] N/A	Pace Trip Blank Lot # (if purchased): _____

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** [ ] Yes [ ] No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: _____ **Date:** 8/11/23

NOTE: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e., out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled By: AS **Line:** 4

Pace ANALYTICAL SERVICES	**DC#_Title: ENV-FRM-MIN4-0154 v02_USDA Regulated Soil Checklist**
	Effective Date: 08/19/2022

USDA Regulated Soil Checklist

To be Completed by Sample Receiving:

WO: 10665016 **Date:** 8/11/23 **Initials:** AS

Sample Origin (check one): ☒ DOMESTIC ☐ QUARANTINED ☐ FOREIGN

NOTE: Soil samples from Hawaii, Guam, Puerto Rico, and the US Virgin Islands are Foreign originated.

If **DOMESTIC**, circle state of origin: AL AR AZ CA FL GA LA MS NC NM NY OK (OR) SC TN TX VA

Includes: IFA, SOD, Golden Nematode, Karnal Bunt, and Witchweed List County: Lane County

(USDA Permit/Compliance Agreement authorizes movement of samples from these domestic regulated zones)

If **QUARANTINED**, circle state of origin: CA ID NY TX

Includes: Fruit Fly and Pale Cyst Nematode List County: _____

(Movement is not authorized for Pale Cyst Nematode (ID)—remaining quarantines require additional paperwork)

If **FOREIGN**, list country of origin: _____

(Movement from some Canadian Provinces is not allowed. Refer to ENV-FRM-MIN4-0137 *Regulated Soil Flow Chart*)

REQUIREMENT	ACTION	COMPLETED		
PPQ-530 Paperwork must be included for any samples from counties with a Fruit Fly Quarantine in CA, NY, and TX. Reference ENV-SOP-MIN4-0095.	Scan PPQ-530 to the corresponding Project folder on the X:drive. If PPQ-530 is not present, contact the laboratory's designated USDA permit holder. **Do NOT continue processing samples.**	YES	NO	(N/A)
Samples from ID may not be moved from the quarantined region. Reference ENV-SOP-MIN4-0095.	If samples originated in a quarantined zone, contact the laboratory's designated USDA permit holder. **Do NOT continue processing samples.**	YES	NO	(N/A)

REQUIREMENT	ACTION	COMPLETED		
"Special Handling" stickers are to be placed on all samples.	Did "special handling" stickers get placed on all sample containers?	YES	NO	(N/A)
Samples must be segregated and stored in designated bins, shelves, and coolers.	Were samples placed in a designated cooler, containers, and shelves?	YES	NO	(N/A)
	Were there any signs of breakage or leakage (check for broken glass and/or loose soil in the cooler)? *NOTE: If NO, ice and melt water can be disposed of by normal process (ex: down the drain).*	YES	NO	(N/A)
Samples must be double contained to prevent accidental release.	If **YES**, were ice and melt water separated from the cooler and disposed of properly?	YES	NO	(N/A)
	Any broken glass and/or loose soil are to be bagged and placed in a USDA Regulated satellite container or active drum (see Waste Coordinator). **Ice and melt water should be baked at a temperature range of 121-154°F for 2 hours and then cooled before going down the drain.**			
Equipment and supplies that have come into contact samples must be decontaminated.	Was the cooler(s) and/or countertop(s) decontaminated using either a fresh 10% bleach solution or 70% ethanol? (Gloves and other lab supplies will be bagged and placed in the USDA Regulated satellite container or active drum).	YES	NO	

COMMENTS:

Pace ANALYTICAL SERVICES	**DC#_Title: ENV-FRM-MIN4-0154 v02_USDA Regulated Soil Checklist**
	Effective Date: 08/19/2022

To be Completed by Project Management (PM and/or PC):

Sample analysis will be conducted (circle all that apply): MN Subcontract Lab

If **subcontract**, list lab(s): _____

REQUIREMENT	ACTION	COMPLETED		
Permission to ship untreated soil must be on file prior to shipping to any subcontract lab, including IR Pace Labs.	Go to: *S:\CLIENTSVR\10_Client Services Department Documents\Regulated Soils Permits\Permission to Ship* If permission to ship letter is not there, contact the laboratory's designated USDA permit holder.	YES	NO	N/A
Shipment must include a valid copy of the receiving lab's permit as well as permission to ship letter.	Is a copy of all needed paperwork included with the COC? **Do NOT ship samples until all necessary paperwork is compiled.**	YES	NO	N/A

COMMENTS:

_____

_____

_____

_____

_____

PM Signature: _____ **Date:** 8/11/23

Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444
www.pacelabs.com

Reporting Flags

A = Reporting Limit based on signal to noise (EDL)

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

H2 = Extracted outside of holding time

I = Isotope ratio out of specification

J = Estimated value

L = Suppressive interference, analyte may be biased low

Nn = Value obtained from additional analysis

P = PCDE Interference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street, Suite 200
Minneapolis, MN 55414
Phone: 612.607.1700
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www.pacelabs.com

Appendix B

Sample Analysis Summary

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1613B Sample Analysis Results

Client - Pace Analytical National

Client's Sample ID	LFP_SM-01		
Lab Sample ID	10665016001		
Filename	L230828A_12		
Injected By	SMT		
Total Amount Extracted	10.6 g	Matrix	SOLID
% Moisture	9.0	Dilution	NA
Dry Weight Extracted	9.69 g	Collected	08/01/2023 11:10
ICAL ID	L230816	Received	08/11/2023 09:40
CCal Filename(s)	L230828A_07	Extracted	08/18/2023 15:05
Method Blank ID	BLANK-107917	Analyzed	08/28/2023 13:24

Native Isomers	Conc ng/Kg	EMPC ng/Kg	EDL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.13		2,3,7,8-TCDF-13C	2.00	59
Total TCDF	ND	-----	0.13		2,3,7,8-TCDD-13C	2.00	52
					1,2,3,7,8-PeCDF-13C	2.00	66
2,3,7,8-TCDD	ND	-----	0.091		2,3,4,7,8-PeCDF-13C	2.00	68
Total TCDD	0.18	-----	0.091	J	1,2,3,7,8-PeCDD-13C	2.00	72
					1,2,3,4,7,8-HxCDF-13C	2.00	56
1,2,3,7,8-PeCDF	ND	-----	0.082		1,2,3,6,7,8-HxCDF-13C	2.00	58
2,3,4,7,8-PeCDF	ND	-----	0.055		2,3,4,6,7,8-HxCDF-13C	2.00	61
Total PeCDF	0.53	-----	0.055	J	1,2,3,7,8,9-HxCDF-13C	2.00	55
					1,2,3,4,7,8-HxCDD-13C	2.00	61
1,2,3,7,8-PeCDD	ND	-----	0.072		1,2,3,6,7,8-HxCDD-13C	2.00	62
Total PeCDD	ND	-----	0.072		1,2,3,4,6,7,8-HpCDF-13C	2.00	51
					1,2,3,4,7,8,9-HpCDF-13C	2.00	49
1,2,3,4,7,8-HxCDF	ND	-----	0.30		1,2,3,4,6,7,8-HpCDD-13C	2.00	58
1,2,3,6,7,8-HxCDF	ND	-----	0.29		OCDD-13C	4.00	42
2,3,4,6,7,8-HxCDF	ND	-----	0.25				
1,2,3,7,8,9-HxCDF	ND	-----	0.35		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.25		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.31	0.28	IJ	2,3,7,8-TCDD-37Cl4	0.20	49
1,2,3,6,7,8-HxCDD	ND	-----	0.25				
1,2,3,7,8,9-HxCDD	ND	-----	0.26				
Total HxCDD	0.47	-----	0.25	BJ			
1,2,3,4,6,7,8-HpCDF	-----	1.0	0.19	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.30		Equivalence: 0.080 ng/Kg		
Total HpCDF	ND	-----	0.19		(Lower-bound - Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	-----	2.8	0.33	IJ			
Total HpCDD	2.8	-----	0.33	J			
OCDF	-----	2.9	0.64	IJ			
OCDD	31	-----	1.0				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Isotope ratio out of specification

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1613B Sample Analysis Results

Client - Pace Analytical National

Client's Sample ID	LFP_SM-02		
Lab Sample ID	10665016002		
Filename	L230828A_13		
Injected By	SMT		
Total Amount Extracted	10.5 g	Matrix	SOLID
% Moisture	19.0	Dilution	NA
Dry Weight Extracted	8.48 g	Collected	08/01/2023 11:15
ICAL ID	L230816	Received	08/11/2023 09:40
CCal Filename(s)	L230828A_07	Extracted	08/18/2023 15:05
Method Blank ID	BLANK-107917	Analyzed	08/28/2023 14:08

Native Isomers	Conc ng/Kg	EMPC ng/Kg	EDL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	-----	0.22	0.11	IJ	2,3,7,8-TCDF-13C	2.00	63
Total TCDF	1.8	-----	0.11		2,3,7,8-TCDD-13C	2.00	55
					1,2,3,7,8-PeCDF-13C	2.00	72
2,3,7,8-TCDD	-----	0.14	0.13	IJ	2,3,4,7,8-PeCDF-13C	2.00	71
Total TCDD	1.4	-----	0.13		1,2,3,7,8-PeCDD-13C	2.00	77
					1,2,3,4,7,8-HxCDF-13C	2.00	67
1,2,3,7,8-PeCDF	-----	0.34	0.090	IJ	1,2,3,6,7,8-HxCDF-13C	2.00	62
2,3,4,7,8-PeCDF	1.0	-----	0.063	J	2,3,4,6,7,8-HxCDF-13C	2.00	64
Total PeCDF	8.6	-----	0.063		1,2,3,7,8,9-HxCDF-13C	2.00	60
					1,2,3,4,7,8-HxCDD-13C	2.00	60
1,2,3,7,8-PeCDD	0.71	-----	0.095	J	1,2,3,6,7,8-HxCDD-13C	2.00	65
Total PeCDD	2.9	-----	0.095	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	56
					1,2,3,4,7,8,9-HpCDF-13C	2.00	55
1,2,3,4,7,8-HxCDF	2.5	-----	0.34	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	63
1,2,3,6,7,8-HxCDF	2.1	-----	0.35	J	OCDD-13C	4.00	52
2,3,4,6,7,8-HxCDF	3.0	-----	0.31	J			
1,2,3,7,8,9-HxCDF	0.97	-----	0.41	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	37	-----	0.31		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.9	-----	0.20	J	2,3,7,8-TCDD-37Cl4	0.20	49
1,2,3,6,7,8-HxCDD	7.0	-----	0.17				
1,2,3,7,8,9-HxCDD	3.5	-----	0.18	J			
Total HxCDD	47	-----	0.17				
1,2,3,4,6,7,8-HpCDF	63	-----	0.41		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	3.8	-----	0.66	J	Equivalence: 7.0 ng/Kg		
Total HpCDF	67	-----	0.41		(Lower-bound - Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	220	-----	0.56				
Total HpCDD	450	-----	0.56				
OCDF	220	-----	1.1				
OCDD	2600	-----	1.1				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit

ND = Not Detected
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NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Isotope ratio out of specification

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Method 1613B Sample Analysis Results

Client - Pace Analytical National

Client's Sample ID	REX_SM-01		
Lab Sample ID	10665016003		
Filename	L230828A_14		
Injected By	SMT		
Total Amount Extracted	10.9 g	Matrix	SOLID
% Moisture	13.8	Dilution	NA
Dry Weight Extracted	9.40 g	Collected	08/01/2023 12:00
ICAL ID	L230816	Received	08/11/2023 09:40
CCal Filename(s)	L230828A_07	Extracted	08/18/2023 15:05
Method Blank ID	BLANK-107917	Analyzed	08/28/2023 14:51

Native Isomers	Conc ng/Kg	EMPC ng/Kg	EDL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.10		2,3,7,8-TCDF-13C	2.00	64
Total TCDF	ND	-----	0.10		2,3,7,8-TCDD-13C	2.00	57
					1,2,3,7,8-PeCDF-13C	2.00	75
2,3,7,8-TCDD	ND	-----	0.100		2,3,4,7,8-PeCDF-13C	2.00	76
Total TCDD	ND	-----	0.100		1,2,3,7,8-PeCDD-13C	2.00	83
					1,2,3,4,7,8-HxCDF-13C	2.00	71
1,2,3,7,8-PeCDF	ND	-----	0.11		1,2,3,6,7,8-HxCDF-13C	2.00	63
2,3,4,7,8-PeCDF	ND	-----	0.077		2,3,4,6,7,8-HxCDF-13C	2.00	67
Total PeCDF	ND	-----	0.077		1,2,3,7,8,9-HxCDF-13C	2.00	66
					1,2,3,4,7,8-HxCDD-13C	2.00	65
1,2,3,7,8-PeCDD	ND	-----	0.100		1,2,3,6,7,8-HxCDD-13C	2.00	66
Total PeCDD	ND	-----	0.100		1,2,3,4,6,7,8-HpCDF-13C	2.00	63
					1,2,3,4,7,8,9-HpCDF-13C	2.00	61
1,2,3,4,7,8-HxCDF	ND	-----	0.094		1,2,3,4,6,7,8-HpCDD-13C	2.00	66
1,2,3,6,7,8-HxCDF	ND	-----	0.098		OCDD-13C	4.00	55
2,3,4,6,7,8-HxCDF	ND	-----	0.099				
1,2,3,7,8,9-HxCDF	ND	-----	0.14		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.094		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.18	0.16	IJ	2,3,7,8-TCDD-37Cl4	0.20	53
1,2,3,6,7,8-HxCDD	ND	-----	0.13				
1,2,3,7,8,9-HxCDD	ND	-----	0.14				
Total HxCDD	ND	-----	0.13				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.17		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.24		Equivalence: 0.024 ng/Kg		
Total HpCDF	ND	-----	0.17		(Lower-bound - Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	-----	0.44	0.27	IJ			
Total HpCDD	0.51	-----	0.27	J			
OCDF	ND	-----	0.43				
OCDD	2.5	-----	0.44	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
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J = Estimated value
I = Isotope ratio out of specification

REPORT OF LABORATORY ANALYSIS

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Method 1613B Sample Analysis Results

Client - Pace Analytical National

Client's Sample ID	REX_SM-02		
Lab Sample ID	10665016004		
Filename	L230828A_15		
Injected By	SMT		
Total Amount Extracted	10.5 g	Matrix	SOLID
% Moisture	7.0	Dilution	NA
Dry Weight Extracted	9.75 g	Collected	08/01/2023 12:05
ICAL ID	L230816	Received	08/11/2023 09:40
CCal Filename(s)	L230828A_07	Extracted	08/18/2023 15:05
Method Blank ID	BLANK-107917	Analyzed	08/28/2023 15:35

Native Isomers	Conc ng/Kg	EMPC ng/Kg	EDL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.079		2,3,7,8-TCDF-13C	2.00	70
Total TCDF	0.16	-----	0.079	J	2,3,7,8-TCDD-13C	2.00	62
					1,2,3,7,8-PeCDF-13C	2.00	82
2,3,7,8-TCDD	ND	-----	0.11		2,3,4,7,8-PeCDF-13C	2.00	80
Total TCDD	ND	-----	0.11		1,2,3,7,8-PeCDD-13C	2.00	89
					1,2,3,4,7,8-HxCDF-13C	2.00	75
1,2,3,7,8-PeCDF	ND	-----	0.065		1,2,3,6,7,8-HxCDF-13C	2.00	73
2,3,4,7,8-PeCDF	ND	-----	0.046		2,3,4,6,7,8-HxCDF-13C	2.00	74
Total PeCDF	ND	-----	0.046		1,2,3,7,8,9-HxCDF-13C	2.00	70
					1,2,3,4,7,8-HxCDD-13C	2.00	71
1,2,3,7,8-PeCDD	ND	-----	0.063		1,2,3,6,7,8-HxCDD-13C	2.00	73
Total PeCDD	ND	-----	0.063		1,2,3,4,6,7,8-HpCDF-13C	2.00	70
					1,2,3,4,7,8,9-HpCDF-13C	2.00	67
1,2,3,4,7,8-HxCDF	ND	-----	0.090		1,2,3,4,6,7,8-HpCDD-13C	2.00	74
1,2,3,6,7,8-HxCDF	ND	-----	0.088		OCDD-13C	4.00	60
2,3,4,6,7,8-HxCDF	ND	-----	0.086				
1,2,3,7,8,9-HxCDF	0.17	-----	0.11	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.17	-----	0.086	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.16	0.13	IJ	2,3,7,8-TCDD-37Cl4	0.20	59
1,2,3,6,7,8-HxCDD	ND	-----	0.12				
1,2,3,7,8,9-HxCDD	ND	-----	0.12				
Total HxCDD	ND	-----	0.12				
1,2,3,4,6,7,8-HpCDF	-----	0.35	0.24	IJ	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.37		Equivalence: 0.078 ng/Kg		
Total HpCDF	1.3	-----	0.24	J	(Lower-bound - Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	3.2	-----	0.21	J			
Total HpCDD	12	-----	0.21				
OCDF	2.2	-----	0.43	J			
OCDD	30	-----	0.48				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit

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NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Isotope ratio out of specification

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Method 1613B Sample Analysis Results

Client - Pace Analytical National

Client's Sample ID	DSG_SM-02		
Lab Sample ID	10665016005		
Filename	L230828A_16		
Injected By	SMT		
Total Amount Extracted	10.2 g	Matrix	SOLID
% Moisture	24.6	Dilution	NA
Dry Weight Extracted	7.71 g	Collected	08/01/2023 13:05
ICAL ID	L230816	Received	08/11/2023 09:40
CCal Filename(s)	L230828A_07	Extracted	08/18/2023 15:05
Method Blank ID	BLANK-107917	Analyzed	08/28/2023 16:18

Native Isomers	Conc ng/Kg	EMPC ng/Kg	EDL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.17		2,3,7,8-TCDF-13C	2.00	82
Total TCDF	1.0	-----	0.17	J	2,3,7,8-TCDD-13C	2.00	75
					1,2,3,7,8-PeCDF-13C	2.00	93
2,3,7,8-TCDD	-----	0.24	0.12	IJ	2,3,4,7,8-PeCDF-13C	2.00	91
Total TCDD	2.0	-----	0.12		1,2,3,7,8-PeCDD-13C	2.00	97
					1,2,3,4,7,8-HxCDF-13C	2.00	79
1,2,3,7,8-PeCDF	0.37	-----	0.075	J	1,2,3,6,7,8-HxCDF-13C	2.00	74
2,3,4,7,8-PeCDF	1.0	-----	0.055	J	2,3,4,6,7,8-HxCDF-13C	2.00	73
Total PeCDF	8.4	-----	0.055		1,2,3,7,8,9-HxCDF-13C	2.00	71
					1,2,3,4,7,8-HxCDD-13C	2.00	72
1,2,3,7,8-PeCDD	0.44	-----	0.079	J	1,2,3,6,7,8-HxCDD-13C	2.00	75
Total PeCDD	4.8	-----	0.079	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	67
					1,2,3,4,7,8,9-HpCDF-13C	2.00	66
1,2,3,4,7,8-HxCDF	1.1	-----	0.14	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	72
1,2,3,6,7,8-HxCDF	1.2	-----	0.15	J	OCDD-13C	4.00	63
2,3,4,6,7,8-HxCDF	2.4	-----	0.14	J			
1,2,3,7,8,9-HxCDF	0.89	-----	0.18	J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	21	-----	0.14		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.2	-----	0.099	J	2,3,7,8-TCDD-37Cl4	0.20	69
1,2,3,6,7,8-HxCDD	7.4	-----	0.087				
1,2,3,7,8,9-HxCDD	2.6	-----	0.090	J			
Total HxCDD	58	-----	0.087				
1,2,3,4,6,7,8-HpCDF	21	-----	0.28		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	1.7	-----	0.41	J	Equivalence: 6.4 ng/Kg		
Total HpCDF	22	-----	0.28		(Lower-bound - Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	260	-----	0.26				
Total HpCDD	600	-----	0.26				
OCDF	52	-----	0.56				
OCDD	2900	-----	0.66				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
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J = Estimated value
I = Isotope ratio out of specification

REPORT OF LABORATORY ANALYSIS

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Method 1613B Sample Analysis Results

Client - Pace Analytical National

Client's Sample ID	DSG_SM-03		
Lab Sample ID	10665016006		
Filename	L230828A_17		
Injected By	SMT		
Total Amount Extracted	10.8 g	Matrix	SOLID
% Moisture	13.6	Dilution	NA
Dry Weight Extracted	9.30 g	Collected	08/01/2023 13:10
ICAL ID	L230816	Received	08/11/2023 09:40
CCal Filename(s)	L230828A_07	Extracted	08/18/2023 15:05
Method Blank ID	BLANK-107917	Analyzed	08/28/2023 17:02

Native Isomers	Conc ng/Kg	EMPC ng/Kg	EDL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.11		2,3,7,8-TCDF-13C	2.00	62
Total TCDF	ND	-----	0.11		2,3,7,8-TCDD-13C	2.00	56
					1,2,3,7,8-PeCDF-13C	2.00	72
2,3,7,8-TCDD	ND	-----	0.14		2,3,4,7,8-PeCDF-13C	2.00	71
Total TCDD	ND	-----	0.14		1,2,3,7,8-PeCDD-13C	2.00	81
					1,2,3,4,7,8-HxCDF-13C	2.00	68
1,2,3,7,8-PeCDF	ND	-----	0.091		1,2,3,6,7,8-HxCDF-13C	2.00	62
2,3,4,7,8-PeCDF	ND	-----	0.068		2,3,4,6,7,8-HxCDF-13C	2.00	63
Total PeCDF	0.55	-----	0.068	J	1,2,3,7,8,9-HxCDF-13C	2.00	62
					1,2,3,4,7,8-HxCDD-13C	2.00	63
1,2,3,7,8-PeCDD	ND	-----	0.080		1,2,3,6,7,8-HxCDD-13C	2.00	62
Total PeCDD	ND	-----	0.080		1,2,3,4,6,7,8-HpCDF-13C	2.00	59
					1,2,3,4,7,8,9-HpCDF-13C	2.00	57
1,2,3,4,7,8-HxCDF	ND	-----	0.29		1,2,3,4,6,7,8-HpCDD-13C	2.00	64
1,2,3,6,7,8-HxCDF	ND	-----	0.28		OCDD-13C	4.00	48
2,3,4,6,7,8-HxCDF	ND	-----	0.26				
1,2,3,7,8,9-HxCDF	ND	-----	0.38		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.96	-----	0.26	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.39		2,3,7,8-TCDD-37Cl4	0.20	53
1,2,3,6,7,8-HxCDD	0.34	-----	0.34	J			
1,2,3,7,8,9-HxCDD	ND	-----	0.36				
Total HxCDD	2.2	-----	0.34	J			
1,2,3,4,6,7,8-HpCDF	1.7	-----	0.36	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.50		Equivalence: 0.12 ng/Kg		
Total HpCDF	6.2	-----	0.36		(Lower-bound - Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	5.4	-----	0.43				
Total HpCDD	10	-----	0.43				
OCDF	5.1	-----	0.68	J			
OCDD	57	-----	0.88				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit

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NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Method 1613B Blank Analysis Results

Lab Sample Name	DFBLKIV		
Lab Sample ID	BLANK-107917	Matrix	Solid
Filename	L230828A_10	Dilution	NA
Total Amount Extracted	10.6 g	Extracted	08/18/2023 15:05
ICAL ID	L230816	Analyzed	08/28/2023 11:57
CCal Filename(s)	L230828A_07	Injected By	SMT

Native Isomers	Conc ng/Kg	EMPC ng/Kg	EDL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.089		2,3,7,8-TCDF-13C	2.00	73
Total TCDF	ND	-----	0.089		2,3,7,8-TCDD-13C	2.00	64
					1,2,3,7,8-PeCDF-13C	2.00	84
2,3,7,8-TCDD	ND	-----	0.14		2,3,4,7,8-PeCDF-13C	2.00	80
Total TCDD	ND	-----	0.14		1,2,3,7,8-PeCDD-13C	2.00	86
					1,2,3,4,7,8-HxCDF-13C	2.00	83
1,2,3,7,8-PeCDF	ND	-----	0.094		1,2,3,6,7,8-HxCDF-13C	2.00	78
2,3,4,7,8-PeCDF	ND	-----	0.072		2,3,4,6,7,8-HxCDF-13C	2.00	79
Total PeCDF	ND	-----	0.072		1,2,3,7,8,9-HxCDF-13C	2.00	74
					1,2,3,4,7,8-HxCDD-13C	2.00	76
1,2,3,7,8-PeCDD	ND	-----	0.11		1,2,3,6,7,8-HxCDD-13C	2.00	77
Total PeCDD	ND	-----	0.11		1,2,3,4,6,7,8-HpCDF-13C	2.00	80
					1,2,3,4,7,8,9-HpCDF-13C	2.00	71
1,2,3,4,7,8-HxCDF	ND	-----	0.063		1,2,3,4,6,7,8-HpCDD-13C	2.00	78
1,2,3,6,7,8-HxCDF	ND	-----	0.068		OCDD-13C	4.00	63
2,3,4,6,7,8-HxCDF	ND	-----	0.073				
1,2,3,7,8,9-HxCDF	-----	0.100	0.095	IJ	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.10	-----	0.063	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	-----	0.15	0.11	IJ	2,3,7,8-TCDD-37Cl4	0.20	61
1,2,3,6,7,8-HxCDD	ND	-----	0.098				
1,2,3,7,8,9-HxCDD	ND	-----	0.11				
Total HxCDD	0.15	-----	0.098	J			
1,2,3,4,6,7,8-HpCDF	ND	-----	0.14		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.14		Equivalence: 0.026 ng/Kg		
Total HpCDF	ND	-----	0.14		(Lower-bound - Using 2005 WHO Factors)		
1,2,3,4,6,7,8-HpCDD	ND	-----	0.23				
Total HpCDD	ND	-----	0.23				
OCDF	ND	-----	0.43				
OCDD	-----	1.1	0.39	IJ			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Isotope ratio out of specification

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Method 1613B Laboratory Control Spike Results

Lab Sample ID	LCS-107918		
Filename	L230828A_20	Matrix	Solid
Total Amount Extracted	10.2 g	Dilution	NA
ICAL ID	L230816	Extracted	08/18/2023 15:05
CCal Filename	L230828A_07	Analyzed	08/28/2023 19:12
Method Blank ID	BLANK-107917	Injected By	SMT

Compound	Cs	Cr	Lower Limit	Upper Limit	% Rec.
2,3,7,8-TCDF	10	9.8	7.5	15.8	98
2,3,7,8-TCDD	10	11	6.7	15.8	106
1,2,3,7,8-PeCDF	50	47	40.0	67.0	94
2,3,4,7,8-PeCDF	50	48	34.0	80.0	97
1,2,3,7,8-PeCDD	50	47	35.0	71.0	95
1,2,3,4,7,8-HxCDF	50	48	36.0	67.0	96
1,2,3,6,7,8-HxCDF	50	50	42.0	65.0	100
2,3,4,6,7,8-HxCDF	50	51	35.0	78.0	102
1,2,3,7,8,9-HxCDF	50	50	39.0	65.0	100
1,2,3,4,7,8-HxCDD	50	53	35.0	82.0	106
1,2,3,6,7,8-HxCDD	50	48	38.0	67.0	96
1,2,3,7,8,9-HxCDD	50	51	32.0	81.0	103
1,2,3,4,6,7,8-HpCDF	50	50	41.0	61.0	100
1,2,3,4,7,8,9-HpCDF	50	50	39.0	69.0	101
1,2,3,4,6,7,8-HpCDD	50	47	35.0	70.0	95
OCDF	100	110	63.0	170.0	107
OCDD	100	110	78.0	144.0	112
2,3,7,8-TCDD-37Cl4	10	5.0	3.1	19.1	50
2,3,7,8-TCDF-13C	100	61	22.0	152.0	61
2,3,7,8-TCDD-13C	100	56	20.0	175.0	56
1,2,3,7,8-PeCDF-13C	100	75	21.0	192.0	75
2,3,4,7,8-PeCDF-13C	100	72	13.0	328.0	72
1,2,3,7,8-PeCDD-13C	100	82	21.0	227.0	82
1,2,3,4,7,8-HxCDF-13C	100	67	19.0	202.0	67
1,2,3,6,7,8-HxCDF-13C	100	61	21.0	159.0	61
2,3,4,6,7,8-HxCDF-13C	100	62	22.0	176.0	62
1,2,3,7,8,9-HxCDF-13C	100	59	17.0	205.0	59
1,2,3,4,7,8-HxCDD-13C	100	60	21.0	193.0	60
1,2,3,6,7,8-HxCDD-13C	100	67	25.0	163.0	67
1,2,3,4,6,7,8-HpCDF-13C	100	62	21.0	158.0	62
1,2,3,4,7,8,9-HpCDF-13C	100	57	20.0	186.0	57
1,2,3,4,6,7,8-HpCDD-13C	100	65	26.0	166.0	65
OCDD-13C	200	100	26.0	397.0	50

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1613B Spiked Sample Report

Client - Pace Analytical National

Client's Sample ID	LFP_SM-01-MS		
Lab Sample ID	10665016001-MS		
Filename	L230828A_18	Matrix	SOLID
Total Amount Extracted	10.2 g	Dilution	NA
ICAL ID	L230816	Extracted	08/18/2023 15:05
CCal Filename(s)	L230828A_07	Analyzed	08/28/2023 17:45
Method Blank ID	BLANK-107917	Injected By	SMT

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDF	0.20	0.21	103	2,3,7,8-TCDF-13C	2.00	60
Total TCDF				2,3,7,8-TCDD-13C	2.00	53
				1,2,3,7,8-PeCDF-13C	2.00	71
2,3,7,8-TCDD	0.20	0.23	114	2,3,4,7,8-PeCDF-13C	2.00	70
Total TCDD				1,2,3,7,8-PeCDD-13C	2.00	76
				1,2,3,4,7,8-HxCDF-13C	2.00	68
1,2,3,7,8-PeCDF	1.00	1.00	100	1,2,3,6,7,8-HxCDF-13C	2.00	61
2,3,4,7,8-PeCDF	1.00	1.01	101	2,3,4,6,7,8-HxCDF-13C	2.00	63
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.00	61
				1,2,3,4,7,8-HxCDD-13C	2.00	62
1,2,3,7,8-PeCDD	1.00	0.98	98	1,2,3,6,7,8-HxCDD-13C	2.00	64
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.00	61
				1,2,3,4,7,8,9-HpCDF-13C	2.00	58
1,2,3,4,7,8-HxCDF	1.00	1.01	101	1,2,3,4,6,7,8-HpCDD-13C	2.00	65
1,2,3,6,7,8-HxCDF	1.00	1.07	107	OCDD-13C	4.00	53
2,3,4,6,7,8-HxCDF	1.00	1.07	107			
1,2,3,7,8,9-HxCDF	1.00	1.03	103	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.16	116	2,3,7,8-TCDD-37Cl4	0.20	50
1,2,3,6,7,8-HxCDD	1.00	1.06	106			
1,2,3,7,8,9-HxCDD	1.00	1.10	110			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.00	1.09	109			
1,2,3,4,7,8,9-HpCDF	1.00	1.05	105			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.00	1.04	104			
Total HpCDD						
OCDF	2.00	2.36	118			
OCDD	2.00	2.62	116			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Isotope ratio out of specification

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1613B Spiked Sample Report

Client - Pace Analytical National

Client's Sample ID	LFP_SM-01-MSD		
Lab Sample ID	10665016001-MSD		
Filename	L230828A_19	Matrix	SOLID
Total Amount Extracted	10.5 g	Dilution	NA
ICAL ID	L230816	Extracted	08/18/2023 15:05
CCal Filename(s)	L230828A_07	Analyzed	08/28/2023 18:29
Method Blank ID	BLANK-107917	Injected By	SMT

Native Isomers	**Qs** (ng)	**Qm** (ng)	% Rec.	**Internal Standards**	**ng's Added**	**Percent Recovery**
2,3,7,8-TCDF	0.20	0.21	104	2,3,7,8-TCDF-13C	2.00	55
Total TCDF				2,3,7,8-TCDD-13C	2.00	50
				1,2,3,7,8-PeCDF-13C	2.00	65
2,3,7,8-TCDD	0.20	0.24	118	2,3,4,7,8-PeCDF-13C	2.00	65
Total TCDD				1,2,3,7,8-PeCDD-13C	2.00	70
				1,2,3,4,7,8-HxCDF-13C	2.00	64
1,2,3,7,8-PeCDF	1.00	1.01	101	1,2,3,6,7,8-HxCDF-13C	2.00	56
2,3,4,7,8-PeCDF	1.00	1.00	100	2,3,4,6,7,8-HxCDF-13C	2.00	59
Total PeCDF				1,2,3,7,8,9-HxCDF-13C	2.00	56
				1,2,3,4,7,8-HxCDD-13C	2.00	54
1,2,3,7,8-PeCDD	1.00	0.98	98	1,2,3,6,7,8-HxCDD-13C	2.00	59
Total PeCDD				1,2,3,4,6,7,8-HpCDF-13C	2.00	55
				1,2,3,4,7,8,9-HpCDF-13C	2.00	50
1,2,3,4,7,8-HxCDF	1.00	1.01	101	1,2,3,4,6,7,8-HpCDD-13C	2.00	58
1,2,3,6,7,8-HxCDF	1.00	1.07	107	OCDD-13C	4.00	45
2,3,4,6,7,8-HxCDF	1.00	1.05	105			
1,2,3,7,8,9-HxCDF	1.00	1.03	103	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.14	114	2,3,7,8-TCDD-37Cl4	0.20	48
1,2,3,6,7,8-HxCDD	1.00	1.06	106			
1,2,3,7,8,9-HxCDD	1.00	1.09	109			
Total HxCDD						
1,2,3,4,6,7,8-HpCDF	1.00	1.08	108			
1,2,3,4,7,8,9-HpCDF	1.00	1.10	110			
Total HpCDF						
1,2,3,4,6,7,8-HpCDD	1.00	1.03	103			
Total HpCDD						
OCDF	2.00	2.43	121			
OCDD	2.00	2.84	127			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Isotope ratio out of specification

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Minneapolis, MN 55414
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Method 1613 Spike Sample Results

Client - Pace Analytical National

Client Sample ID	LFP_SM-01		
Lab Sample ID	10665016001	Sample Filename	L230828A_12
MS ID	10665016001-MS	MS Filename	L230828A_18
MSD ID	10665016001-MSD	MSD Filename	L230828A_19

	Quantity	Unspiked Sample Contribution		Quantity Measured			Subtracted Recovery	
	Spiked	to MS	to MSD	MS	MSD		MS	MSD
Analyte	**(ng)**	**(ng)**	**(ng)**	**(ng)**	**(ng)**	**RPD**	**(%)**	**(%)**
2,3,7,8-TCDF	0.20	ND	ND	0.21	0.21	1.0	103	104
2,3,7,8-TCDD	0.20	ND	ND	0.23	0.24	3.5	114	118
1,2,3,7,8-PeCDF	1.00	ND	ND	1.00	1.01	0.2	100	101
2,3,4,7,8-PeCDF	1.00	ND	ND	1.01	1.00	0.7	101	100
1,2,3,7,8-PeCDD	1.00	ND	ND	0.98	0.98	0.1	98	98
1,2,3,4,7,8-HxCDF	1.00	ND	ND	1.01	1.01	0.2	101	101
1,2,3,6,7,8-HxCDF	1.00	ND	ND	1.07	1.07	0.7	107	107
2,3,4,6,7,8-HxCDF	1.00	ND	ND	1.07	1.05	2.2	107	105
1,2,3,7,8,9-HxCDF	1.00	ND	ND	1.03	1.03	0.0	103	103
1,2,3,4,7,8-HxCDD	1.00	0.00327	0.00336	1.16	1.14	2.0	116	114
1,2,3,6,7,8-HxCDD	1.00	ND	ND	1.06	1.06	0.1	106	106
1,2,3,7,8,9-HxCDD	1.00	ND	ND	1.10	1.09	0.3	110	109
1,2,3,4,6,7,8-HpCDF	1.00	0.0101	0.0104	1.09	1.08	0.6	109	108
1,2,3,4,7,8,9-HpCDF	1.00	ND	ND	1.05	1.10	4.3	105	110
1,2,3,4,6,7,8-HpCDD	1.00	0.0284	0.0291	1.04	1.03	1.1	104	103
OCDF	2.00	0.0308	0.0317	2.36	2.43	2.6	118	121
OCDD	2.00	0.293	0.300	2.62	2.84	7.9	116	127

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Quantity Spiked - the amount of analyte spiked into the spiked samples
Unspiked Sample Contribution - calculated based on the amount found in the sample and the extracted amounts of the spiked and unspiked samples
Quantity Measured - the total amount of analyte measured in the spiked samples
RPD - the Relative Percent Difference of the spiked sample Quantity Measured values
Subtracted Recovery - calculated after subtracting the unspiked sample contribution