CFA | Cape Fear Analytical LLC
an affiliate of The GEL Group INC

3306 Kitty Hawk Road, Suite 120 Wilmington, NC 28405
P 910.795.0421

www.capefearanalytical.com

October 02, 2019

Mr. Jeffrey Parker
Pacific Groundwater Group
2377 Eastlake Avenue E
Seattle, Washington 98102

Re: Swan Island Lagoon Sediment Investigation
Work Order: 15471
SDG: 2006-00115_4

Dear Mr. Parker:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on August 30, 2019, September 04, 2019 and September 10, 2019. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,

Cynde Larkins

Cynde Larkins
Project Manager

Enclosures

Other
CF

CFA WO#15471

Chain of Custody Record

Client Contact	Project Manager: Janet Knox	Site Contact/Sampler: Jeff Parker	Date: 8/27/2019	COC No: 6 of 8 COCs
Jeff Parker & Janet Knox	Tel/Fax:	Lab Contact:	Carrier:	
Pacific Groundwater Group	Analysis Turnaround Time			Job No. 2006-00115
2377 Eastlake Ave E, Seattle WA 98102	*standard*			SDG No.
206 329 0141 Phone	TAT if different from Below ____			
206 329 6968 FAX	[X] standard			
Swan Island Lagoon Sediment Investigation	[ ] 1 week			
Site:	[ ] 2 days			
P O #	[ ] 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Dioxin/Furans 1613B	Archive	Sample Specific Notes:
J5-SC1b-20to30-8 27 19	8/27/19	1455		S	1	X		3.9'
J5-SC1b-30to40-8 27 19	8/27/19	1500		S	1	X		
J5-SC1b-40to50-8 27 19	8/27/19	1610		S	1	X		
J5-SC1b-50to60-8 27 19	8/27/19	1615		S	1	X		
J5-SC1b-60to70-8 27 19	8/27/19	1620		S	1	X		
J5-SC1b-70to80-8 27 19	8/27/19	1625		S	1	X		
J5-SC1b-80to90-8 27 19	8/27/19	1725		S	1	X		
J5-SC1b-90to100-8 27 19	8/27/19	1730		S	1	X		
J5-SC1b-100to110-8 27 19	8/27/19	1735		S	1	X		
[illegible]	[illegible]	[illegible]						
J5-SC1b-00to10-82719	8/27/19	1445		S	1		X	
J5-SC1b-10to20-82719	8/27/19	1450		S	1		X	

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other _____

Possible Hazard Identification
[ ] 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 [X] Archive For _____ Months

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	POG	8/29/19 1300	Fedex		
Relinquished by: Fedex	Company:	Date/Time:	Received by: [signature]	Company: CFA	Date/Time: 9/30/19 9:55
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

other CF

CFA WO#15471

Chain of Custody Record

Client Contact	Project Manager: Janet Knox	Site Contact/Sampler: Jeff Parker	Date:8/__/2019	COC No: 7 of 8 COCs
Jeff Parker & Janet Knox	Tel/Fax:	Lab Contact:	Carrier:	
Pacific Groundwater Group	Analysis Turnaround Time			Job No. 2006-00115
2377 Eastlake Ave E, Seattle WA 98102	*standard*			
206 329 0141 Phone	TAT if different from Below _____			SDG No.
206 329 6968 FAX	[x] standard			
Swan Island Lagoon Sediment Investigation	[ ] 1 week			
Site:	[ ] 2 days			
P O #	[ ] 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Dioxins/Furans 1613B	ARCHIVE	Sample Specific Notes:
L3-SC1b-20to30-826 19	8/26/19	1030		S	1	X		3.50
L3-SC1b-30to40-826 19	8/26/19	1035		S	1	X		
L3-SC1b-00to10-82619	8/26/19	1006		S	1		✓	
L3-SC1b-10to20-82619	8/26/19	1007		S	1		✓	
	8/ /19			S	1			
	8/ /19			S	1			
	8/ /19			S	1			
	8/ /19			S	1			
	8/ /19			S	1			
	8/ /19			S	1			
	8/ /19			S	1			
	8/ /19			S	1			

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

Possible Hazard Identification
[ ] 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 [x] Archive For _____ Months

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	PGG	8/29/19 1300	Fedex		
Relinquished by: Fed Ex	Company:	Date/Time:	Received by: [signature]	Company: CFA	Date/Time: 3/30/19 9:55
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

ALS Environmental

CHAIN OF CUSTODY

Sediment and Tissue Chemistry

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • FAX (360) 636-1068

CFA WO# 15471

SR#: _____

PAGE 8 OF 8 COC# _____

PROJECT NAME	Swan Island Lagoon Sed. Invest.
PROJECT NUMBER	2006-00115
PROJECT MANAGER	Janet Knox
COMPANY NAME	Pacific Groundwater Group
ADDRESS	2377 East Lake Ave E
CITY/STATE/ZIP	Seattle WA 98102
E-MAIL ADDRESS	
PHONE #	206 329 0141 FAX #
SAMPLER'S SIGNATURE	

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	☐ Total Volatile Solids ☐ Total Solids	TOC ☐ (ASTM D4129M) ☐ PSEP	Grain Size ☐PSEP ☐ASTMD422	Sulfide ☐ Total (9030M)	☐AVS ☐ SEM (metals list below)	☐PSEP ☐ Water Soluble	Ammonia ☐ Total (350.1M)	Metals (list below) ☐ Plumb ☐ Pore Water	Pesticides (8081)	PCBs (8082) ☐ Aroclors ☐ Congeners	Semivolatiles ☐ GC/MS SIM (PAH) ☐8270-L	Organotins ☐ Bulk ☐ Pore Water ☐ TBT only	Volatiles (8260)	Dioxins ☐1613 ☐8290	TPH ☐GRO ☐ DRO ☐ RRO	☐Lipids	Tissue Sample Preparations (Instructions below)	Dioxins/Furans 1613B			REMARKS
✓ 711-82719	8/27/19	0840		A																			X			33°
712-82819	8/27/19	0820		A																			X			

REPORT REQUIREMENTS

- ___ I. Routine Report: Method Blank, Surrogate, as required
- ___ II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- ___ IV. Data Validation Report
- ___ V. EDD

INVOICE INFORMATION

P.O. # _____

Bill To: _____

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.

___ 5 day

___ Standard (15 working days)

Requested Report Date

Circle which metals are to be analyzed:

SMS Metals:	As	Cd	Cr	Cu	Pb	Hg	Ag	Zn																															
CA Metals:	Ag	As	Cd	Cr	Cu	Hg	Ni	Pb	Se	Zn																													
SEM Metals:	Cd	Cu	Pb	Hg	Ni	Zn																																	
Total Metals:	Al	As	Sb	Ba	Be	B	Ca	Cd	Co	Cr	Cu	Fe	Pb	Mg	Mn	Mo	Ni	K	Ag	Na	Se	Sr	Tl	Sn	V	Zn	Hg											

SPECIAL INSTRUCTIONS/COMMENTS:

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature]	Signature: FedEx	Signature: FedEx	Signature: [signature]
Date/Time: 1300 8/29/19	Date/Time:	Date/Time:	Date/Time: 8/30/19 9:55
Printed Name: Jeff Parker	Printed Name:	Printed Name:	Printed Name: Rebecca O'Toole
Firm: PGG	Firm:	Firm:	Firm: CFA

SAMPLE RECEIPT CHECKLIST

Cape Fear Analytical

Client: Pacific Groundwater Group	Work Order: 15471
Shipping Company: FedEx	Date/Time Received: 30AUG19 0955

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			✓
Samples identified as Foreign Soil?			✓

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?		✓	
Samples < 2x background?		✓	

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			✓

Air Witness: _____

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken damaged container leaking container other(describe)
2	Custody seal/s present on cooler?	✓			Seal intact? (Yes) No
3	Chain of Custody documents included with shipment?	✓			
4	Samples requiring cold preservation within 0-6°C?	✓			Preservation Method: (ice bags) blue ice dry ice none other (describe) Temperature Blank present: (Yes) No 3.9°-0.1=3.8° 5.3°-0.1=5.2° 3.4°-0.1=3.3°
5	Aqueous samples found to have visible solids?			✓	Sample IDs, containers affected:
5	Samples requiring chemical preservation at proper pH?		✓		Sample IDs, containers affected and pH observed: pH=8 on both water containers If preservative added, Lot#:
7	Samples requiring preservation have no residual chlorine?	✓			Sample IDs, containers affected: If preservative added, Lot#:
8	Samples received within holding time?	✓			Sample IDs, tests affected:
9	Sample IDs on COC match IDs on containers?			✓	Sample IDs, containers affected: See below *
10	Date & time of COC match date & time on containers?	✓			Sample IDs, containers affected:
11	Number of containers received match number indicated on COC?			✓	List type and number of containers / Sample IDs, containers affected: 2-1L NMAG received for 711-82719 75-4 oz amber glass soil jars No containers received for 712-82819
12	COC form is properly signed in relinquished/received sections?	✓			

Comments:

* Sample ID discrepancies:

COC	Label
J6-SC1b-00to10-82719	J6-SC1-00to10-82719
J6-SC1b-10to20-82719	J6-SC1-10to20-82719
L3-SC1b-00to10-82619	CR 30AUG19 L3-SC2-00to10-82619
L3-SC1b-10to20-82619	L3-SC2-10to20-82619
D6-SC1b-10to20-82619	D6-SC2-10to20-82619

Checklist performed by: Initials: CL for RO Date: 30AUG19

CF-UD-F-7

Subject: RE: Swan Island sample receipt 30AUG19
From: "Jeff S. Parker" <JParker@PGWG.COM>
Date: 8/30/2019, 2:54 PM
To: Cynde Larkins <Cynde.larkins@cfanalytical.com>

No problems, thanks!

From: Cynde Larkins <Cynde.larkins@cfanalytical.com>
Sent: Friday, August 30, 2019 11:42 AM
To: Jeff S. Parker <JParker@PGWG.COM>
Subject: Re: Swan Island sample receipt 30AUG19

Thank you!

By the way - that "00to20" was my mistake. The COC and the label have "00to10". My apologies!

On 8/30/2019 2:36 PM, Jeff S. Parker wrote:

> HI Cynde,
> I'm glad you got them without too much ice melt! Here are the answers to the login questions:
>
> 1. D6-SC1b-10to20-82619 is archive, 411-SC1b-50to60-82619 is analyze.
> 2. We misplaced those in a cooler to another lab and will get those to you asap.
> 3. The ID on the COC are correct (highlighted are correct) for those samples with one exception where both are incorrect. The first L3 sample should be "00to10" instead of "00to20":

ID on COC	ID on la
J6-SC1b-00to10-82719	J6-SC1-00to1
J6-SC1b-10to20-082719	J6-SC1-10to2
L3-SC1b-00to20-82619	L3-SC2-00to2
L3-SC1b-10to20-82619	L3-SC2-10to2
D6-SC1b-10to20-82619	D6-SC2-10to2

> Thanks,
> Jeff

Jeffrey Parker, LG | Environmental Geologist
Pacific Groundwater Group **Water Resource & Environmental Consulting**
(360) 570-8244 | jparker@pgwg.com | www.pgwg.com

From: Cynde Larkins <Cynde.larkins@cfanalytical.com>
Sent: Friday, August 30, 2019 11:28 AM
To: Jeff S. Parker <JParker@PGWG.COM>
Subject: Swan Island sample receipt 30AUG19

Good afternoon,

CFA received your samples today for the Swan Island Lagoon project in good condition and within temperature. There are several discrepancies listed below that I need to your help to resolve.

1. Sample D6-SC1b-10to20-82619, collected 8/26/19 at 12:10, is marked on the COC for both 1613B analysis and Archive. The sample listed beneath this one, 411-SC1b-50to60-82619, collected 8/26/19 at 15:00 is not marked for either 1613B or Archive. It looks like one of the X's is on the wrong line perhaps? Please advise.

2. There were no bottles received for sample 712-82819. Two containers were received for 711-82719.

3. There are sample ID discrepancies between the COC and the labels for the samples listed in the table below (collection dates and times match). Please verify which ID should be used for log in.

ID on COC	ID on label
J6-SC1b-00to10-82719	J6-SC1-00to10-82719
J6-SC1b-10to20-082719	J6-SC1-10to20-82719
L3-SC1b-00to20-82619	L3-SC2-00to20-82619
L3-SC1b-10to20-82619	L3-SC2-10to20-82619
D6-SC1b-10to20-82619	D6-SC2-10to20-82619

Thank you!

--
Cynde Larkins
Project Manager
Cape Fear Analytical, LLC
3306 Kitty Hawk Road, Suite 120
Wilmington, NC 28405
(910) 795-0421

this e-mail in error and that any review, distribution or copying of this e-mail or any files transmitted with it is strictly prohibited. If you have received this e-mail in error, please notify the sender immediately and delete the original message and any files transmitted. The unauthorized use of this e-mail or any files transmitted with it is prohibited and disclaimed by Cape Fear Analytcal, LLC and its affiliates. How was your customer experience? Customer service is a high priority for us, so we listen to what our customers have to say! Thank you for taking time to email us your thoughts and opinions at feedback@cfanalytical.com
http://www.gellaboratories.com

--
Cynde Larkins
Project Manager
Cape Fear Analytical, LLC
3306 Kitty Hawk Road, Suite 120
Wilmington, NC 28405
(910) 795-0421

Subject: RE: Fwd: RE: Swan Island sample receipt 30AUG19
From: "Jeff S. Parker" <JParker@PGWG.COM>
Date: 8/30/2019, 3:38 PM
To: Chris Cornwell <chr00735@cfanalytical.com>
CC: Janet Knox <janet@PGWG.COM>

Hi Chris,
Yes, please order 3 of the EDF-5183 (Cambridge SRM). I think the frequency of 1 per SDG (for 3 of the 4 SDGs Cynde is creating) makes sense.

Happy Holiday Weekend,
Jeff

Jeffrey Parker, LG | Environmental Geologist
Pacific Groundwater Group **Water Resource & Environmental Consulting** http://ww
(360) 570-8244 | jparker@pgwg.com | www.pgwg.com

From: Chris Cornwell <chr00735@cfanalytical.com>
Sent: Friday, August 30, 2019 12:14 PM
To: Jeff S. Parker <JParker@PGWG.COM>
Subject: Re: Fwd: RE: Swan Island sample receipt 30AUG19

Jeff,

Looks like we received about 75 samples. Everything looks OK receipt wise, Cynde is logging in now.

We have the Wellington SRM, not the Cambridge one. Want me to order the Cambridge? What frequency would you like for SRM's?

Having these logged in for method 1613, reporting J flags down to the EDL, EMPC's reported with a K flag.

Happy Friday!

Christopher K. Cornwell
Laboratory Director
Cape Fear Analytical
3306 Kitty Hawk Road
Suite 120
Wilmington, NC 28405
CCornwell@CFAnalytical.com
On 8/30/2019 3:05 PM, Cynde Larkins wrote:

-------- Forwarded Message --------
Subject:RE: Swan Island sample receipt 30AUG19
Date: Fri, 30 Aug 2019 19:02:55 +0000
From: Jeff S. Parker <JParker@PGWG.COM>
To: Cynde Larkins <Cynde.larkins@cfanalytical.com>
CC: Janet Knox <janet@PGWG.COM>

HI Cynde,

Can you send me copies of the COCs or the login file when you get a chance. We taped the COCs in the cooler before making copies and I didn't get a count of the # analyzed. We may need to remove a couple if we're way over our scope.

Also, I need to communicate with Chris about ordering the EDF-5183 (Cambridge SRM) to run with this batch. So, please hold the samples until we get those ordered and added too.

Thanks!
Jeff

From: Jeff S. Parker
Sent: Friday, August 30, 2019 11:55 AM
To: Cynde Larkins <Cynde.larkins@cfanalytical.com>
Subject: RE: Swan Island sample receipt 30AUG19

SRM1613 EDF-5183 9-9-19

Cerilliant
Analytical Reference Standards
a SIGMA-ALDRICH company

CIL
Rev 0

Certificate of Analysis

Clean Soil Reference Material

Catalog Number:	EDF-5183
Lot Number:	ER10091501
Expiration Date:	May 2023
Matrix:	Soil
Amount per Vial:	10 g
Storage and Handling:	Freezer.

Intended Use: For laboratory use only. This product is a sample of homogeneous soil matrix taken from an area where no known chemical contamination has occurred. This sample is intended for use in evaluating the performance of an analytical laboratory for the listed analytes.

Preparation: "Clean" soil was obtained from a location in Texas which was expected to contain minimal contamination. The soil was sieved to achieve uniform particle size and homogenized to within 5% using a disodium fluorescein indicator. Samples were then sterilized three times for two hours at 121°C and 15 psi.

Interlaboratory Analysis: This product was included in the Second Round of International Interlaboratory Study conducted by Cambridge Isotope Laboratories and Cerilliant Corporation. Participating laboratories used a variety of sample preparation and analytical techniques. The results listed below supersede those obtained in the First Round of Interlaboratory Study. This Second Round of Interlaboratory Study adds consensus values for one new dioxin, seventeen new PCBs, ten BDEs, and two new PAHs.

Interlaboratory Results: Results of the international interlaboratory study are attached. Consensus values were independently assigned by Manna Associates in the UK using the Cofino model of statistical analysis. These numbers are certified reference values. All values are presented at three significant figures. Analytes with fewer than five laboratories contributing acceptable data do not have assigned values reported in this study.

Cerilliant certifies that this standard meets or exceeds the specifications stated in this data sheet.

Authorized Signature: _____
Darron Ellsworth, Quality Assurance Manager

December 02, 2015
Date

Interlaboratory Participants:

Alta Analytical Laboratory, USA
CARSO, France
CEAEQ, Canada
Chinese Center for Disease Control and Prevention, China
Clean Harbors Environmental Services, USA
Columbia Analytical Services, Inc., USA
East Bay Municipal Utility District, USA
GfA (Gesellschaft für Arbeitsplatz und Umweltanalytik) mbH, Germany
Hong Kong Baptist University, Hong Kong
Labo Van Vooren, Belgium
Maxxam Analytics, Inc., Ontario Canada
Maxxam Analytics, Inc., British Columbia Canada
Military Institute of Chemistry and Radiometry, Poland
Nab Labs Ympäristöanalytiika Oy, Finland
National Central University, Taiwan
Oekometric GmbH, Germany
Pace Analytical Services, Inc., USA
Severn Trent Laboratories, CA USA
Severn Trent Laboratories, TN USA
SGS Institut Fresenius GmbH Bayreuth, Germany
Sun Dreams Environmental Technology Corp., Taiwan
Xiamen University, China

Interlaboratory Results:

Compound	*Assigned[1] Value (ng/kg)*	*Standard Deviation*	*Reference[2] Value (ng/kg)*	*(n)[3]*
Polychlorinated dioxins and furans				
2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.11	0.07	0.11 ± 0.14	18
Total Tetrachlorodibenzo-p-dioxin	0.32	0.44	0.32 ± 0.88	8
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	0.39	0.16	0.39 ± 0.32	18
Total Pentachlorodibenzo-p-dioxin	2.96	1.20	2.96 ± 2.40	10
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	1.12	0.26	1.12 ± 0.52	18
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	4.39	0.44	4.39 ± 0.88	18
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	2.00	0.60	2.00 ± 1.20	18
Total Hexachlorodibenzo-p-dioxin	50.9	11.4	50.9 ± 22.8	10
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	153	28.6	153 ± 57.2	18
Total Heptachlorodibenzo-p-dioxin	492	123	492 ± 246	10
Octachlorodibenzo-p-dioxin	7,870	825	7,870 ± 1,650	18
2,3,7,8-Tetrachlorodibenzofuran	0.70	0.17	0.70 ± 0.34	18
Total Tetrachlorodibenzofuran	3.21	1.06	3.21 ± 2.12	10
1,2,3,7,8-Pentachlorodibenzofuran	0.23	0.11	0.23± 0.22	18
2,3,4,7,8-Pentachlorodibenzofuran	0.34	0.07	0.34 ± 0.14	18
Total Pentachlorodibenzofuran	3.31	2.87	3.31 ± 5.74	10
1,2,3,4,7,8-Hexachlorodibenzofuran	0.86	0.22	0.86 ± 0.44	18
1,2,3,6,7,8-Hexachlorodibenzofuran	0.58	0.13	0.58 ± 0.26	18
1,2,3,7,8,9-Hexachlorodibenzofuran	0.12	0.08	0.12 ± 0.16	17
2,3,4,6,7,8-Hexachlorodibenzofuran	0.72	0.48	0.72 ± 0.92	18
Total Hexachlorodibenzofuran	15.6	6.35	15.6 ± 12.7	10
1,2,3,4,6,7,8-Heptachlorodibenzofuran	13.9	1.84	13.9 ± 3.68	18
1,2,3,4,7,8,9-Heptachlorodibenzofuran	1.25	0.31	1.25 ± 0.62	18
Total Heptachlorodibenzofuran	54.0	7.98	54.0 ± 16.0	10
Octachlorodibenzofuran	58.2	16.2	58.2 ± 32.4	18

Interlaboratory Results (continued):

Compound	Assigned[1] Value (ng/kg)	Standard Deviation	Reference[2] Value (ng/kg)	(n)[3]
Polychlorinated biphenyls [4]				
2,2',5-Trichlorobiphenyl (#18)	78.9	15.2	78.9 ± 30.4	6
2,4,4'-Trichlorobiphenyl (#28)	140	63.6	140 ± 127	13
3,4,4'-Trichlorobiphenyl (#37)	1,710	220	1,710 ± 440	5
2,2',3,5'-Tetrachlorobiphenyl (#44)	1,070	276	1,070 ± 552	7
2,2',4,5'-Tetrachlorobiphenyl (#49)	638	175	638 ± 350	5
2,2',5,5'-Tetrachlorobiphenyl (#52)	2,020	372	2,020 ± 744	12
2,4,4',5-Tetrachlorobiphenyl (#74)	447,000	174,000	447,000 ± 348,000	5
3,3',4,4'-Tetrachlorobiphenyl (#77)	2,230	494	2,230 ± 988	13
3,4,4',5-Tetrachlorobiphenyl (#81)	5.52	3.71	5.52 ± 7.42	11
2,2',3,4,5'-Pentachlorobiphenyl (#87)	2,370	266	2,370 ± 532	6
2,2',4,4',5-Pentachlorobiphenyl (#99)	1,100	222	1,110 ± 444	7
2,2',4,5,5'-Pentachlorobiphenyl (#101)	5,370	782	5,370 ± 1,564	11
2,3,3',4,4'-Pentachlorobiphenyl (#105)	629	79.2	629 ± 158.4	15
2,3,3',4',6-Pentachlorobiphenyl (#110)	5,880	1,050	5,880 ± 2,110	7
2,3,4,4',5-Pentachlorobiphenyl (#114)	34.6	9.01	34.6 ± 18.0	13
2,3',4,4',5-Pentachlorobiphenyl (#118)	6,520	1,150	6,520 ± 2,300	14
2',3,4,4',5-Pentachlorobiphenyl (#123)	24.1	11.6	24.1 ± 23.2	12
3,3',4,4',5-Pentachlorobiphenyl (#126)	33.5	5.13	33.5 ± 10.3	13
2,2',3,3',4,4'-Hexachlorobiphenyl (#128)	342	68	342 ± 135	6
2,2',3,4,4',5-Hexachlorobiphenyl (#137)	87.1	16.4	87.1 ± 32.8	5
2,2',3,4,4',5'-Hexachlorobiphenyl (#138)	2,350	382	2,350 ± 764	11
2,2',3,4,5,5'-Hexachlorobiphenyl (#141)	514	55.8	514 ± 112	6
2,2',3,4',5',6-Hexachlorobiphenyl (#149)	2,280	212	2,280 ± 424	6
2,2',3,5,5',6-Hexachlorobiphenyl (#151)	910	376	910 ± 752	7
2,2',4,4',5,5'-Hexachlorobiphenyl (#153)	2,330	421	2,330 ± 842	13
2,3,3',4,4',5-Hexachlorobiphenyl (#156)	189	25.0	189 ± 25.0	14
2,3,3',4,4',5'-Hexachlorobiphenyl (#157)	31.0	7.56	31.0 ± 15.1	12
2,3,3',4,4',6-Hexachlorobiphenyl (#158)	224	22.4	224 ± 44.8	6
2,3',4,4',5,5'-Hexachlorobiphenyl (#167)	83.2	12.0	83.2 ± 12.0	13
3,3',4,4',5,5'-Hexachlorobiphenyl (#169)	0.57	0.34	0.57 ± 0.68	11
2,2',3,3',4,4',5-Heptachlorobiphenyl (#170)	436	51.2	436 ± 102	7
2,2',3,3',4',5,6-Heptachlorobiphenyl (#177)	362	39.5	362 ± 79.0	7
2,2',3,3',5,5',6-Heptachlorobiphenyl (#178)	135	11.3	135 ± 22.6	5
2,2',3,4,4',5,5'-Heptachlorobiphenyl (#180)	1,116	250	1,116 ± 500	13
2,2',3,4,4',5',6-Heptachlorobiphenyl (#183)	360	12.6	360 ± 25.2	7
2,2',3,4',5,5',6-Heptachlorobiphenyl (#187)	679	71.6	679 ± 143	5
2,3,3',4,4',5,5'-Heptachlorobiphenyl (#189)	14.2	2.66	14.2 ± 5.32	13
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (#194)	182	22.3	182 ± 44.6	7
2,2',3,3',4,4',5,6-Octachlorobiphenyl (#195)	90.6	8.61	90.6 ± 17.2	7
2,2',3,3',4,5,6,6'-Octachlorobiphenyl (#199)	229	17.1	229 ± 34.2	6
2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (#206)[5]	74.8	54.1	74.8 ± 108	7
2,2',3,3',4,5,5',6,6'-Nonachlorobiphenyl (#208)[5]	38.3	30.7	38.3 ± 61.4	7
Decachlorobiphenyl (#209)	12.9	11.5	12.9 ± 23.0	7

Interlaboratory Results (continued):

Compound	Assigned[1] Value (ng/kg)	Standard Deviation	Reference[2] Value (ng/kg)	(n)[3]
Brominated diphenyl ethers [6]				
2,2',4-Tribromodiphenyl ether (#17)	4.80	3.05	4.80 ± 6.10	7
2,4,4'-Tribromodiphenyl ether (#28)	38.0	39.9	38.0 ± 79.8	11
2,2',4,4'-Tetrabromodiphenyl ether (#47)	192	123	192 ± 246	11
2,2',4,5'-Tetrabromodiphenyl ether (#49)	24.4	9.86	24.4 ± 19.7	5
2,3',4,4'-Tetrabromodiphenyl ether (#66)	12.6	5.46	12.6 ± 10.9	8
2,2',3,4,4'-Pentabromodiphenyl ether (#85)	19.5	8.97	19.5 ± 17.9	8
2,2',4,4',5-Pentabromodiphenyl ether (#99)	213	93.0	213 ± 186	11
2,2',4,4',6-Pentabromodiphenyl ether (#100)	55.4	15.5	55.4 ± 31.0	11
2,2',3,4,4',5-Hexabromodiphenyl ether (#138)	25.8	12.9	25.8 ± 25.8	9
2,2',4,4',5,5'-Hexabromodiphenyl ether (#153)	111	12.0	111 ± 24.0	11
2,2',4,4',5,6'-Hexabromodiphenyl ether (#154)	46.0	13.3	46.0 ± 26.6	11
2,2',3,4,4',5',6-Heptabromodiphenyl ether (#183)	286	35.4	286 ± 70.8	11
Decabromodiphenyl ether (#209)	1,930	1,150	1,930 ± 2,300	7
Polyaromatic hydrocarbons				
Anthracene	9,650	2,990	9,650 ± 5,980	6
Benz[*a*]anthracene	11,200	4,710	11,200 ± 9,420	7
Benzo[*b*]fluoranthene	18,100	9,580	18,100 ± 19,200	7
Benzo[*k*]fluoranthene	5,870	1,660	5,870 ± 3,320	7
Benzo[*g* ,*h* ,*i*]perylene	8,280	1,300	8,280 ± 2,600	7
Benzo[*a*]pyrene	7,620	3,080	7,620 ± 6,160	7
Chrysene	16,000	3,750	16,000 ± 7,500	7
Fluoranthene	33,000	5,170	33,000 ± 10,300	7
Indeno[1,2,3-*cd*]pyrene	9,550	2,070	9,550 ± 4,140	7
Phenanthrene	25,900	19,100	25,900 ± 38,200	6
Pyrene	26,300	4,340	26,300 ± 8,680	7

[1] Assigned Value as determined by Manna Associates in the UK using Cofino analysis of raw interlaboratory study data.

[2] Reference Value is the Assigned Value plus or minus two standard deviations. Negative numbers resulting from two standard deviations being greater than the assigned value have no significance.

[3] Number of laboratories providing results for this analyte.

[4] All numbers in parentheses refer to the IUPAC designation for the compound.

[5] Assigned values from the First Round of International Interlaboratory Study.

[6] All numbers in parentheses refer to the IUPAC designation for the related PCB congener.

COA Revision History

Revision No.	Date	Reason for Revision
00	December 02, 2015	Initial version

Cerilliant®
Analytical Reference Standards
a SIGMA-ALDRICH company

SAFETY DATA SHEET

Version 5.0
Revision Date 05/20/2015
Print Date 05/20/2015

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name : Clean Soil Reference Material 2003

Product Number : EDF-5183
Brand : Cerilliant

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832
Fax : +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Not a hazardous substance or mixture.

2.2 GHS Label elements, including precautionary statements

Not a hazardous substance or mixture.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

No components need to be disclosed according to the applicable regulations.

4. FIRST AID MEASURES

4.1 Description of first aid measures

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration.

In case of skin contact
Wash off with soap and plenty of water.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Nature of decomposition products not known.

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Avoid dust formation. Avoid breathing vapours, mist or gas.
For personal protection see section 8.

6.2 Environmental precautions
No special environmental precautions required.

6.3 Methods and materials for containment and cleaning up
Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.
Provide appropriate exhaust ventilation at places where dust is formed.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.
Storage class (TRGS 510): Non Combustible Solids

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls
General industrial hygiene practice.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection
Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
No special environmental precautions required.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odour	No data available
c)	Odour Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	No data available
f)	Initial boiling point and boiling range	No data available
g)	Flash point	No data available
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapour pressure	No data available
l)	Vapour density	No data available
m)	Relative density	No data available
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	No data available
p)	Auto-ignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
Other decomposition products - No data available
In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
No data available

Inhalation: No data available

Dermal: No data available

No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
No data available

No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information
RTECS: Not available

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. ECOLOGICAL INFORMATION

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

IMDG

IATA

15. REGULATORY INFORMATION

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
No SARA Hazards

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Soil	-	

New Jersey Right To Know Components

	CAS-No.	Revision Date

Soil

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

HMIS Rating

Health hazard:	0
Chronic Health Hazard:	
Flammability:	0
Physical Hazard	0

NFPA Rating

Health hazard:	0
Fire Hazard:	0
Reactivity Hazard:	0

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

Preparation Information
Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

Version: 5.0 Revision Date: 05/20/2015 Print Date: 05/20/2015

High Resolution Dioxins and Furans Analysis

Case Narrative

HDOX Case Narrative
Pacific Groundwater Group (PGWG)
SDG 2006-00115_4
Work Order 15471

Method/Analysis Information

Product: **Dioxins/Furans by EPA Method 1613B**
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3520C, 3540C
Analytical Batch Number: 41726, 41761
Clean Up Batch Number: 41725, 41760
Extraction Batch Number: 41724, 41759

Sample Analysis

Samples were received at 3.8°C (15471001, 15471002, 15471003, 15471004, 15471005, 15471006, 15471007, 15471008, 15471009, 15471010, 15471011, 15471012, 15471013, 15471014, 15471015) , Ambient (15471016) , 3.3°C (15471017) and 4.2°C (15471018). The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
12024769	Method Blank (MB)
12024770	Laboratory Control Sample (LCS)
12024771	Laboratory Control Sample Duplicate (LCSD)
12024810	Method Blank (MB)
12024811	Laboratory Control Sample (LCS)
12024812	Laboratory Control Sample Duplicate (LCSD)
12024813	15471001(J5-SC1b-20to30-82719) Matrix Spike (MS)
12024814	15471001(J5-SC1b-20to30-82719) Matrix Spike Duplicate (MSD)
15471001	J5-SC1b-20to30-82719
15471002	J5-SC1b-30to40-82719
15471003	J5-SC1b-40to50-82719
15471004	J5-SC1b-50to60-82719
15471005	J5-SC1b-60to70-82719
15471006	J5-SC1b-70to80-82719
15471007	J5-SC1b-80to90-82719
15471008	J5-SC1b-90to100-82719
15471009	J5-SC1b-100to110-82719
15471012	L3-SC1b-20to30-82619
15471013	L3-SC1b-30to40-82619

15471016	SRM Lot# ER10091501
15471017	711-82719
15471018	712-82819

Samples 15471 001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013, 014 and 015 in this SDG were analyzed on a "dry weight" basis. Samples 15471 016, 017 and 018 in this SDG were analyzed on an "as received" basis.

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 15.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration
All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements
All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement
The test results presented in this document are certified to meet all requirements of the 2009 TNI Standard.

Method Blank (MB) Statement
The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries
All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery
The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery
The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement
The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 15471001 (J5-SC1b-20to30-82719)- Batch 41761 was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike (MS) Recovery Statement
The MS recoveies were outside the acceptance limits, possibly due to matrix interference. 12024813 (J5-SC1b-20to30-82719)- Batch 41761.

Matrix Spike Duplicate (MSD) Recovery Statement
One MSD recovery was outside acceptance limits. 12024814 (J5-SC1b-20to30-82719)- Batch 41761.

MS/MSD Relative Percent Difference (RPD) Statement
The relative percent differences (RPD) between each MS and MSD were not within the acceptance limits. Sample data is validated based on acceptable LCS/LCSD results. 12024814 (J5-SC1b-20to30-82719)- Batch 41761.

Technical Information

Holding Time Specifications
CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification
All procedures were performed as stated in the SOP.

Sample Dilutions
The samples in this SDG did not require dilutions.
Sample Re-extraction/Re-analysis
Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation
The following NCR was generated for this SDG: 647556 12024814 (J5-SC1b-20to30-82719)- Batch 41761.

Manual Integrations
Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation
No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Qualifier Definition Report
for

PGWG001 Pacific Groundwater Group

Client SDG: 2006-00115_4 CFA Work Order: 15471

The Qualifiers in this report are defined as follows:

* A quality control analyte recovery is outside of specified acceptance criteria

** Analyte is a surrogate compound

B The target analyte was detected in the associated blank.

E Value is estimated - Concentration of the target analyte exceeds the instrument calibration range

J Value is estimated

K Estimated Maximum Possible Concentration

Q Quantitative Interference; value is estimated

U Analyte was analyzed for, but not detected above the specified detection limit.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature:  **Name: Heather Patterson**

Date: 02 OCT 2019 **Title: Group Leader**

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471001**	**Date Collected:**	**08/27/2019 14:55**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**49.6**
Client ID:	**J5-SC1b-20to30-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/25/2019 03:08**	**Analyst:**	**MJC**	**Instrument:**	**HRP750**
Data File:	**A24SEP19A_3-5**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**19.95 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF	BJ	0.841	pg/g	0.296	0.994

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

B The target analyte was detected in the associated blank.
J Value is estimated
K Estimated Maximum Possible Concentration
Q Quantitative Interference; value is estimated
U Analyte was analyzed for, but not detected above the specified detection limit.

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471001**	**Date Collected:**	**08/27/2019 14:55**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**49.6**
Client ID:	**J5-SC1b-20to30-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/23/2019 22:58**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-4**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**19.95 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	JK	0.358	pg/g	0.0718	0.994
40321-76-4	1,2,3,7,8-PeCDD	BJ	0.954	pg/g	0.106	4.97
39227-28-6	1,2,3,4,7,8-HxCDD	BJ	0.982	pg/g	0.260	4.97
57653-85-7	1,2,3,6,7,8-HxCDD		5.17	pg/g	0.252	4.97
19408-74-3	1,2,3,7,8,9-HxCDD	J	2.74	pg/g	0.260	4.97
35822-46-9	1,2,3,4,6,7,8-HpCDD		138	pg/g	0.741	4.97
3268-87-9	1,2,3,4,6,7,8,9-OCDD		1990	pg/g	1.57	9.94
51207-31-9	2,3,7,8-TCDF	B	1.07	pg/g	0.160	0.994
57117-41-6	1,2,3,7,8-PeCDF	BJ	0.729	pg/g	0.0702	4.97
57117-31-4	2,3,4,7,8-PeCDF	J	1.65	pg/g	0.0626	4.97
70648-26-9	1,2,3,4,7,8-HxCDF	J	3.09	pg/g	0.125	4.97
57117-44-9	1,2,3,6,7,8-HxCDF	J	3.16	pg/g	0.123	4.97
60851-34-5	2,3,4,6,7,8-HxCDF	J	2.29	pg/g	0.130	4.97
72918-21-9	1,2,3,7,8,9-HxCDF	BJ	0.789	pg/g	0.175	4.97
67562-39-4	1,2,3,4,6,7,8-HpCDF		38.4	pg/g	0.252	4.97
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	2.68	pg/g	0.374	4.97
39001-02-0	1,2,3,4,6,7,8,9-OCDF		123	pg/g	0.555	9.94
41903-57-5	Total TeCDD	JK	3.69	pg/g	0.0718	0.994
36088-22-9	Total PeCDD	JKQ	8.27	pg/g	0.106	4.97
34465-46-8	Total HxCDD	J	44.7	pg/g	0.252	4.97
37871-00-4	Total HpCDD		304	pg/g	0.741	4.97
30402-14-3	Total TeCDF	JK	12.4	pg/g	0.160	0.994
30402-15-4	Total PeCDF	JKQ	29.0	pg/g	0.034	4.97
55684-94-1	Total HxCDF	J	57.9	pg/g	0.123	4.97
38998-75-3	Total HpCDF	J	143	pg/g	0.252	4.97
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		6.19	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		6.19	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		137	199	pg/g	69.1	(25%-164%)
13C-1,2,3,7,8-PeCDD		125	199	pg/g	62.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		145	199	pg/g	73.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		142	199	pg/g	71.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		170	199	pg/g	85.4	(23%-140%)
13C-OCDD		290	398	pg/g	73.1	(17%-157%)
13C-2,3,7,8-TCDF		131	199	pg/g	66.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		118	199	pg/g	59.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		117	199	pg/g	58.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		141	199	pg/g	70.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		140	199	pg/g	70.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		138	199	pg/g	69.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		138	199	pg/g	69.6	(29%-147%)

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471001**	**Date Collected:**	**08/27/2019 14:55**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**49.6**
Client ID:	**J5-SC1b-20to30-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/23/2019 22:58**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-4**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**19.95 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		148	199	pg/g	74.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		162	199	pg/g	81.7	(26%-138%)
37Cl-2,3,7,8-TCDD		15.7	19.9	pg/g	78.9	(35%-197%)

Comments:

B **The target analyte was detected in the associated blank.**
J **Value is estimated**
K **Estimated Maximum Possible Concentration**
Q **Quantitative Interference; value is estimated**
U **Analyte was analyzed for, but not detected above the specified detection limit.**

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471002**	**Date Collected:**	**08/27/2019 15:00**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**47.9**
Client ID:	**J5-SC1b-30to40-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/24/2019 01:23**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-7**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**19.26 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	JK	0.213	pg/g	0.0737	0.996
40321-76-4	1,2,3,7,8-PeCDD	BJ	0.595	pg/g	0.122	4.98
39227-28-6	1,2,3,4,7,8-HxCDD	BJ	0.482	pg/g	0.164	4.98
57653-85-7	1,2,3,6,7,8-HxCDD	J	3.02	pg/g	0.159	4.98
19408-74-3	1,2,3,7,8,9-HxCDD	J	1.52	pg/g	0.165	4.98
35822-46-9	1,2,3,4,6,7,8-HpCDD		68.8	pg/g	0.474	4.98
3268-87-9	1,2,3,4,6,7,8,9-OCDD		926	pg/g	1.15	9.96
51207-31-9	2,3,7,8-TCDF	BJ	0.733	pg/g	0.163	0.996
57117-41-6	1,2,3,7,8-PeCDF	BJ	0.410	pg/g	0.0854	4.98
57117-31-4	2,3,4,7,8-PeCDF	BJ	0.777	pg/g	0.0791	4.98
70648-26-9	1,2,3,4,7,8-HxCDF	BJ	1.13	pg/g	0.095	4.98
57117-44-9	1,2,3,6,7,8-HxCDF	J	1.46	pg/g	0.097	4.98
60851-34-5	2,3,4,6,7,8-HxCDF	BJ	0.998	pg/g	0.107	4.98
72918-21-9	1,2,3,7,8,9-HxCDF	BJ	0.460	pg/g	0.146	4.98
67562-39-4	1,2,3,4,6,7,8-HpCDF		14.2	pg/g	0.125	4.98
55673-89-7	1,2,3,4,7,8,9-HpCDF	BJ	1.15	pg/g	0.186	4.98
39001-02-0	1,2,3,4,6,7,8,9-OCDF		41.4	pg/g	0.376	9.96
41903-57-5	Total TeCDD	JK	1.97	pg/g	0.0737	0.996
36088-22-9	Total PeCDD	J	4.93	pg/g	0.122	4.98
34465-46-8	Total HxCDD	J	24.2	pg/g	0.159	4.98
37871-00-4	Total HpCDD		152	pg/g	0.474	4.98
30402-14-3	Total TeCDF	JK	7.30	pg/g	0.163	0.996
30402-15-4	Total PeCDF	J	14.2	pg/g	0.0394	4.98
55684-94-1	Total HxCDF	J	23.9	pg/g	0.095	4.98
38998-75-3	Total HpCDF	JK	50.6	pg/g	0.125	4.98
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		3.17	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		3.17	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		148	199	pg/g	74.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		135	199	pg/g	67.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		160	199	pg/g	80.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		150	199	pg/g	75.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		177	199	pg/g	89.0	(23%-140%)
13C-OCDD		301	398	pg/g	75.6	(17%-157%)
13C-2,3,7,8-TCDF		142	199	pg/g	71.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		128	199	pg/g	64.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		127	199	pg/g	63.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		152	199	pg/g	76.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		144	199	pg/g	72.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		144	199	pg/g	72.4	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		151	199	pg/g	75.7	(29%-147%)

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471002**	**Date Collected:**	**08/27/2019 15:00**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**47.9**
Client ID:	**J5-SC1b-30to40-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/24/2019 01:23**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-7**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**19.26 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		157	199	pg/g	79.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		175	199	pg/g	87.6	(26%-138%)
37Cl-2,3,7,8-TCDD		16.7	19.9	pg/g	83.8	(35%-197%)

Comments:

B **The target analyte was detected in the associated blank.**

J **Value is estimated**

K **Estimated Maximum Possible Concentration**

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471003**	**Date Collected:**	**08/27/2019 16:10**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**45.4**
Client ID:	**J5-SC1b-40to50-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/24/2019 02:12**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-8**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**18.37 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	JK	0.225	pg/g	0.063	0.996
40321-76-4	1,2,3,7,8-PeCDD	BJ	0.779	pg/g	0.0859	4.98
39227-28-6	1,2,3,4,7,8-HxCDD	BJ	0.767	pg/g	0.165	4.98
57653-85-7	1,2,3,6,7,8-HxCDD		5.49	pg/g	0.162	4.98
19408-74-3	1,2,3,7,8,9-HxCDD	J	2.59	pg/g	0.167	4.98
35822-46-9	1,2,3,4,6,7,8-HpCDD		136	pg/g	0.616	4.98
3268-87-9	1,2,3,4,6,7,8,9-OCDD		1460	pg/g	1.06	9.96
51207-31-9	2,3,7,8-TCDF	BJ	0.841	pg/g	0.169	0.996
57117-41-6	1,2,3,7,8-PeCDF	BJ	0.566	pg/g	0.0707	4.98
57117-31-4	2,3,4,7,8-PeCDF	J	1.33	pg/g	0.0624	4.98
70648-26-9	1,2,3,4,7,8-HxCDF	J	3.30	pg/g	0.143	4.98
57117-44-9	1,2,3,6,7,8-HxCDF	J	1.96	pg/g	0.147	4.98
60851-34-5	2,3,4,6,7,8-HxCDF	J	1.86	pg/g	0.152	4.98
72918-21-9	1,2,3,7,8,9-HxCDF	BJ	0.727	pg/g	0.203	4.98
67562-39-4	1,2,3,4,6,7,8-HpCDF		34.8	pg/g	0.225	4.98
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	2.31	pg/g	0.345	4.98
39001-02-0	1,2,3,4,6,7,8,9-OCDF		103	pg/g	0.476	9.96
41903-57-5	Total TeCDD	JK	2.29	pg/g	0.063	0.996
36088-22-9	Total PeCDD	JKQ	6.13	pg/g	0.0859	4.98
34465-46-8	Total HxCDD	J	37.7	pg/g	0.162	4.98
37871-00-4	Total HpCDD		268	pg/g	0.616	4.98
30402-14-3	Total TeCDF	JK	10.4	pg/g	0.169	0.996
30402-15-4	Total PeCDF	JKQ	21.5	pg/g	0.0309	4.98
55684-94-1	Total HxCDF	J	50.2	pg/g	0.143	4.98
38998-75-3	Total HpCDF	J	129	pg/g	0.225	4.98
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		5.38	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		5.38	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		145	199	pg/g	72.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		130	199	pg/g	65.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		159	199	pg/g	79.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		147	199	pg/g	73.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		177	199	pg/g	88.7	(23%-140%)
13C-OCDD		316	399	pg/g	79.4	(17%-157%)
13C-2,3,7,8-TCDF		139	199	pg/g	70.0	(24%-169%)
13C-1,2,3,7,8-PeCDF		122	199	pg/g	61.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		123	199	pg/g	61.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		152	199	pg/g	76.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		142	199	pg/g	71.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		143	199	pg/g	72.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		148	199	pg/g	74.3	(29%-147%)

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471003**	**Date Collected:**	**08/27/2019 16:10**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**45.4**
Client ID:	**J5-SC1b-40to50-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/24/2019 02:12**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-8**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**18.37 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		161	199	pg/g	80.7	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		177	199	pg/g	88.6	(26%-138%)
37Cl-2,3,7,8-TCDD		16.4	19.9	pg/g	82.4	(35%-197%)

Comments:

B **The target analyte was detected in the associated blank.**
J **Value is estimated**
K **Estimated Maximum Possible Concentration**
Q **Quantitative Interference; value is estimated**

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471004**	**Date Collected:**	**08/27/2019 16:15**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**44.6**
Client ID:	**J5-SC1b-50to60-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/25/2019 04:38**	**Analyst:**	**MJC**	**Instrument:**	**HRP750**
Data File:	**A24SEP19A_3-9**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**18.18 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF	B	1.01	pg/g	0.336	0.994

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

B The target analyte was detected in the associated blank.
J Value is estimated
K Estimated Maximum Possible Concentration
Q Quantitative Interference; value is estimated
U Analyte was analyzed for, but not detected above the specified detection limit.

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471004**	**Date Collected:**	**08/27/2019 16:15**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**44.6**
Client ID:	**J5-SC1b-50to60-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/24/2019 03:00**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-9**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**18.18 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	J	0.308	pg/g	0.0956	0.994
40321-76-4	1,2,3,7,8-PeCDD	BJ	0.858	pg/g	0.120	4.97
39227-28-6	1,2,3,4,7,8-HxCDD	BJ	0.976	pg/g	0.205	4.97
57653-85-7	1,2,3,6,7,8-HxCDD		6.96	pg/g	0.205	4.97
19408-74-3	1,2,3,7,8,9-HxCDD	J	2.54	pg/g	0.209	4.97
35822-46-9	1,2,3,4,6,7,8-HpCDD		218	pg/g	0.616	4.97
3268-87-9	1,2,3,4,6,7,8,9-OCDD		1880	pg/g	1.22	9.94
51207-31-9	2,3,7,8-TCDF	B	1.10	pg/g	0.158	0.994
57117-41-6	1,2,3,7,8-PeCDF	BJQ	0.974	pg/g	0.189	4.97
57117-31-4	2,3,4,7,8-PeCDF	JQ	1.65	pg/g	0.166	4.97
70648-26-9	1,2,3,4,7,8-HxCDF		5.43	pg/g	0.131	4.97
57117-44-9	1,2,3,6,7,8-HxCDF	J	2.49	pg/g	0.136	4.97
60851-34-5	2,3,4,6,7,8-HxCDF	J	2.52	pg/g	0.144	4.97
72918-21-9	1,2,3,7,8,9-HxCDF	BJ	0.854	pg/g	0.179	4.97
67562-39-4	1,2,3,4,6,7,8-HpCDF		89.9	pg/g	0.290	4.97
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	4.86	pg/g	0.445	4.97
39001-02-0	1,2,3,4,6,7,8,9-OCDF		405	pg/g	0.743	9.94
41903-57-5	Total TeCDD	JK	3.56	pg/g	0.0956	0.994
36088-22-9	Total PeCDD	JKQ	7.70	pg/g	0.120	4.97
34465-46-8	Total HxCDD	JK	41.9	pg/g	0.205	4.97
37871-00-4	Total HpCDD		386	pg/g	0.616	4.97
30402-14-3	Total TeCDF	JK	14.9	pg/g	0.158	0.994
30402-15-4	Total PeCDF	JQ	29.0	pg/g	0.0368	4.97
55684-94-1	Total HxCDF	J	108	pg/g	0.131	4.97
38998-75-3	Total HpCDF	J	413	pg/g	0.290	4.97
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		7.80	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		7.80	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		133	199	pg/g	66.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		118	199	pg/g	59.3	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		146	199	pg/g	73.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		137	199	pg/g	69.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		166	199	pg/g	83.6	(23%-140%)
13C-OCDD		296	397	pg/g	74.5	(17%-157%)
13C-2,3,7,8-TCDF		131	199	pg/g	66.1	(24%-169%)
13C-1,2,3,7,8-PeCDF	Q	111	199	pg/g	55.7	(24%-185%)
13C-2,3,4,7,8-PeCDF	Q	113	199	pg/g	56.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		140	199	pg/g	70.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		130	199	pg/g	65.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		132	199	pg/g	66.5	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		129	199	pg/g	64.8	(29%-147%)

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471004**	**Date Collected:**	**08/27/2019 16:15**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**44.6**
Client ID:	**J5-SC1b-50to60-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/24/2019 03:00**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-9**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**18.18 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		147	199	pg/g	74.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		162	199	pg/g	81.5	(26%-138%)
37Cl-2,3,7,8-TCDD		16.0	19.9	pg/g	80.3	(35%-197%)

Comments:

B **The target analyte was detected in the associated blank.**
J **Value is estimated**
K **Estimated Maximum Possible Concentration**
Q **Quantitative Interference; value is estimated**
U **Analyte was analyzed for, but not detected above the specified detection limit.**

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471005**	**Date Collected:**	**08/27/2019 16:20**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**43.5**
Client ID:	**J5-SC1b-60to70-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/24/2019 03:49**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-10**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**17.95 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	J	0.158	pg/g	0.0515	0.987
40321-76-4	1,2,3,7,8-PeCDD	BJ	0.385	pg/g	0.0762	4.93
39227-28-6	1,2,3,4,7,8-HxCDD	BJK	0.410	pg/g	0.125	4.93
57653-85-7	1,2,3,6,7,8-HxCDD	J	1.98	pg/g	0.115	4.93
19408-74-3	1,2,3,7,8,9-HxCDD	BJ	1.18	pg/g	0.122	4.93
35822-46-9	1,2,3,4,6,7,8-HpCDD		57.3	pg/g	0.349	4.93
3268-87-9	1,2,3,4,6,7,8,9-OCDD		649	pg/g	0.957	9.87
51207-31-9	2,3,7,8-TCDF	BJ	0.541	pg/g	0.116	0.987
57117-41-6	1,2,3,7,8-PeCDF	BJ	0.314	pg/g	0.0523	4.93
57117-31-4	2,3,4,7,8-PeCDF	BJ	0.576	pg/g	0.0448	4.93
70648-26-9	1,2,3,4,7,8-HxCDF	BJ	1.31	pg/g	0.0673	4.93
57117-44-9	1,2,3,6,7,8-HxCDF	J	1.14	pg/g	0.072	4.93
60851-34-5	2,3,4,6,7,8-HxCDF	BJ	0.969	pg/g	0.0752	4.93
72918-21-9	1,2,3,7,8,9-HxCDF	BJ	0.391	pg/g	0.105	4.93
67562-39-4	1,2,3,4,6,7,8-HpCDF		20.8	pg/g	0.175	4.93
55673-89-7	1,2,3,4,7,8,9-HpCDF	BJ	1.18	pg/g	0.255	4.93
39001-02-0	1,2,3,4,6,7,8,9-OCDF		56.5	pg/g	0.464	9.87
41903-57-5	Total TeCDD	BJK	1.12	pg/g	0.0515	0.987
36088-22-9	Total PeCDD	JK	3.24	pg/g	0.0762	4.93
34465-46-8	Total HxCDD	JK	17.0	pg/g	0.115	4.93
37871-00-4	Total HpCDD		117	pg/g	0.349	4.93
30402-14-3	Total TeCDF	JK	4.55	pg/g	0.116	0.987
30402-15-4	Total PeCDF	J	12.6	pg/g	0.0302	4.93
55684-94-1	Total HxCDF	J	26.9	pg/g	0.0673	4.93
38998-75-3	Total HpCDF	JK	72.3	pg/g	0.175	4.93
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		2.52	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		2.52	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		144	197	pg/g	72.9	(25%-164%)
13C-1,2,3,7,8-PeCDD		132	197	pg/g	67.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		150	197	pg/g	76.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		144	197	pg/g	72.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		165	197	pg/g	83.4	(23%-140%)
13C-OCDD		270	395	pg/g	68.5	(17%-157%)
13C-2,3,7,8-TCDF		133	197	pg/g	67.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		124	197	pg/g	63.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		122	197	pg/g	61.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		147	197	pg/g	74.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		136	197	pg/g	69.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		136	197	pg/g	69.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		144	197	pg/g	73.1	(29%-147%)

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471005**	**Date Collected:**	**08/27/2019 16:20**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**43.5**
Client ID:	**J5-SC1b-60to70-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/24/2019 03:49**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-10**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**17.95 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		148	197	pg/g	75.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		161	197	pg/g	81.4	(26%-138%)
37Cl-2,3,7,8-TCDD		16.2	19.7	pg/g	82.1	(35%-197%)

Comments:

B **The target analyte was detected in the associated blank.**

J **Value is estimated**

K **Estimated Maximum Possible Concentration**

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471006**	**Date Collected:**	**08/27/2019 16:25**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**35.1**
Client ID:	**J5-SC1b-70to80-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/24/2019 04:37**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-11**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**15.53 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	J	0.191	pg/g	0.0649	0.992
40321-76-4	1,2,3,7,8-PeCDD	BJ	0.464	pg/g	0.109	4.96
39227-28-6	1,2,3,4,7,8-HxCDD	BJK	0.520	pg/g	0.128	4.96
57653-85-7	1,2,3,6,7,8-HxCDD	J	2.75	pg/g	0.126	4.96
19408-74-3	1,2,3,7,8,9-HxCDD	BJ	1.22	pg/g	0.130	4.96
35822-46-9	1,2,3,4,6,7,8-HpCDD		69.3	pg/g	0.395	4.96
3268-87-9	1,2,3,4,6,7,8,9-OCDD		899	pg/g	1.06	9.92
51207-31-9	2,3,7,8-TCDF	BJ	0.629	pg/g	0.0984	0.992
57117-41-6	1,2,3,7,8-PeCDF	BJK	0.530	pg/g	0.0607	4.96
57117-31-4	2,3,4,7,8-PeCDF	JK	1.41	pg/g	0.0603	4.96
70648-26-9	1,2,3,4,7,8-HxCDF	J	2.30	pg/g	0.108	4.96
57117-44-9	1,2,3,6,7,8-HxCDF	J	3.14	pg/g	0.111	4.96
60851-34-5	2,3,4,6,7,8-HxCDF	J	2.25	pg/g	0.114	4.96
72918-21-9	1,2,3,7,8,9-HxCDF	BJ	0.552	pg/g	0.150	4.96
67562-39-4	1,2,3,4,6,7,8-HpCDF		61.6	pg/g	0.194	4.96
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	2.03	pg/g	0.300	4.96
39001-02-0	1,2,3,4,6,7,8,9-OCDF		97.2	pg/g	0.339	9.92
41903-57-5	Total TeCDD	JK	3.27	pg/g	0.0649	0.992
36088-22-9	Total PeCDD	JQ	6.47	pg/g	0.109	4.96
34465-46-8	Total HxCDD	JK	23.7	pg/g	0.126	4.96
37871-00-4	Total HpCDD		156	pg/g	0.395	4.96
30402-14-3	Total TeCDF	JK	11.7	pg/g	0.0984	0.992
30402-15-4	Total PeCDF	JKQ	36.9	pg/g	0.0272	4.96
55684-94-1	Total HxCDF	JK	59.1	pg/g	0.108	4.96
38998-75-3	Total HpCDF	J	156	pg/g	0.194	4.96
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		4.06	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		4.06	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		145	198	pg/g	73.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		96.9	198	pg/g	48.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		155	198	pg/g	78.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		153	198	pg/g	76.8	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		182	198	pg/g	91.8	(23%-140%)
13C-OCDD		318	397	pg/g	80.2	(17%-157%)
13C-2,3,7,8-TCDF		144	198	pg/g	72.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		122	198	pg/g	61.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		107	198	pg/g	54.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		150	198	pg/g	75.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		147	198	pg/g	73.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		143	198	pg/g	72.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		146	198	pg/g	73.7	(29%-147%)

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471006**	**Date Collected:**	**08/27/2019 16:25**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**35.1**
Client ID:	**J5-SC1b-70to80-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/24/2019 04:37**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-11**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**15.53 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		162	198	pg/g	81.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		178	198	pg/g	89.5	(26%-138%)
37Cl-2,3,7,8-TCDD		15.9	19.8	pg/g	80.1	(35%-197%)

Comments:

B **The target analyte was detected in the associated blank.**
J **Value is estimated**
K **Estimated Maximum Possible Concentration**
Q **Quantitative Interference; value is estimated**

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471007**	**Date Collected:**	**08/27/2019 17:25**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**29**
Client ID:	**J5-SC1b-80to90-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/24/2019 05:25**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-12**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**14.2 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.0377	pg/g	0.0377	0.991
40321-76-4	1,2,3,7,8-PeCDD	U	0.0587	pg/g	0.0587	4.96
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.0575	pg/g	0.0575	4.96
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.0565	pg/g	0.0565	4.96
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.0581	pg/g	0.0581	4.96
35822-46-9	1,2,3,4,6,7,8-HpCDD	BJ	0.244	pg/g	0.124	4.96
3268-87-9	1,2,3,4,6,7,8,9-OCDD	BJ	2.31	pg/g	0.240	9.91
51207-31-9	2,3,7,8-TCDF	BJ	0.325	pg/g	0.0674	0.991
57117-41-6	1,2,3,7,8-PeCDF	U	0.0613	pg/g	0.0613	4.96
57117-31-4	2,3,4,7,8-PeCDF	U	0.0476	pg/g	0.0476	4.96
70648-26-9	1,2,3,4,7,8-HxCDF	BJK	0.0476	pg/g	0.0408	4.96
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.043	pg/g	0.043	4.96
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.045	pg/g	0.045	4.96
72918-21-9	1,2,3,7,8,9-HxCDF	BJ	0.0813	pg/g	0.070	4.96
67562-39-4	1,2,3,4,6,7,8-HpCDF	BJ	0.190	pg/g	0.0537	4.96
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.0946	pg/g	0.0946	4.96
39001-02-0	1,2,3,4,6,7,8,9-OCDF	BJ	0.230	pg/g	0.162	9.91
41903-57-5	Total TeCDD	BJK	0.180	pg/g	0.0377	0.991
36088-22-9	Total PeCDD	U	0.0587	pg/g	0.0587	4.96
34465-46-8	Total HxCDD	BJK	0.125	pg/g	0.0565	4.96
37871-00-4	Total HpCDD	BJ	0.577	pg/g	0.124	4.96
30402-14-3	Total TeCDF	BJK	0.757	pg/g	0.0674	0.991
30402-15-4	Total PeCDF	BJK	0.230	pg/g	0.0287	4.96
55684-94-1	Total HxCDF	BJK	0.276	pg/g	0.0408	4.96
38998-75-3	Total HpCDF	BJK	0.379	pg/g	0.0537	4.96
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.0505	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.120	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		152	198	pg/g	76.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		110	198	pg/g	55.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		154	198	pg/g	77.5	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		160	198	pg/g	80.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		172	198	pg/g	86.8	(23%-140%)
13C-OCDD		258	397	pg/g	65.0	(17%-157%)
13C-2,3,7,8-TCDF		140	198	pg/g	70.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		93.9	198	pg/g	47.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		105	198	pg/g	53.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		158	198	pg/g	79.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		151	198	pg/g	76.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		145	198	pg/g	73.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		152	198	pg/g	76.6	(29%-147%)

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471007**	**Date Collected:**	**08/27/2019 17:25**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**29**
Client ID:	**J5-SC1b-80to90-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/24/2019 05:25**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-12**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**14.2 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		158	198	pg/g	79.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		160	198	pg/g	80.5	(26%-138%)
37Cl-2,3,7,8-TCDD		17.1	19.8	pg/g	86.0	(35%-197%)

Comments:

B **The target analyte was detected in the associated blank.**
J **Value is estimated**
K **Estimated Maximum Possible Concentration**
U **Analyte was analyzed for, but not detected above the specified detection limit.**

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471008**	**Date Collected:**	**08/27/2019 17:30**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**27.8**
Client ID:	**J5-SC1b-90to100-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/24/2019 06:14**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-13**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**14.06 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	JK	0.0532	pg/g	0.0353	0.985
40321-76-4	1,2,3,7,8-PeCDD	U	0.0611	pg/g	0.0611	4.93
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.0757	pg/g	0.0757	4.93
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.0769	pg/g	0.0769	4.93
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.078	pg/g	0.078	4.93
35822-46-9	1,2,3,4,6,7,8-HpCDD	BJ	1.49	pg/g	0.0922	4.93
3268-87-9	1,2,3,4,6,7,8,9-OCDD		17.0	pg/g	0.323	9.85
51207-31-9	2,3,7,8-TCDF	BJ	0.280	pg/g	0.0696	0.985
57117-41-6	1,2,3,7,8-PeCDF	BJ	0.0788	pg/g	0.0388	4.93
57117-31-4	2,3,4,7,8-PeCDF	BJ	0.0493	pg/g	0.0365	4.93
70648-26-9	1,2,3,4,7,8-HxCDF	BJ	0.0887	pg/g	0.0422	4.93
57117-44-9	1,2,3,6,7,8-HxCDF	BJ	0.0591	pg/g	0.043	4.93
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.0465	pg/g	0.0465	4.93
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.0715	pg/g	0.0715	4.93
67562-39-4	1,2,3,4,6,7,8-HpCDF	BJ	0.623	pg/g	0.0497	4.93
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.0808	pg/g	0.0808	4.93
39001-02-0	1,2,3,4,6,7,8,9-OCDF	BJ	1.22	pg/g	0.225	9.85
41903-57-5	Total TeCDD	BJK	0.365	pg/g	0.0353	0.985
36088-22-9	Total PeCDD	BJK	0.177	pg/g	0.0611	4.93
34465-46-8	Total HxCDD	BJK	0.770	pg/g	0.0757	4.93
37871-00-4	Total HpCDD	J	3.45	pg/g	0.0922	4.93
30402-14-3	Total TeCDF	BJK	0.786	pg/g	0.0696	0.985
30402-15-4	Total PeCDF	BJK	0.556	pg/g	0.0184	4.93
55684-94-1	Total HxCDF	BJK	0.798	pg/g	0.0422	4.93
38998-75-3	Total HpCDF	BJ	1.96	pg/g	0.0497	4.93
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.140	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.188	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		159	197	pg/g	80.7	(25%-164%)
13C-1,2,3,7,8-PeCDD		148	197	pg/g	75.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		163	197	pg/g	82.8	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		158	197	pg/g	80.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		175	197	pg/g	88.8	(23%-140%)
13C-OCDD		265	394	pg/g	67.2	(17%-157%)
13C-2,3,7,8-TCDF		147	197	pg/g	74.8	(24%-169%)
13C-1,2,3,7,8-PeCDF		140	197	pg/g	71.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		138	197	pg/g	70.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		158	197	pg/g	80.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		156	197	pg/g	79.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		149	197	pg/g	75.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		157	197	pg/g	79.7	(29%-147%)

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471008**	**Date Collected:**	**08/27/2019 17:30**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**27.8**
Client ID:	**J5-SC1b-90to100-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/24/2019 06:14**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-13**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**14.06 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		161	197	pg/g	81.5	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		164	197	pg/g	83.1	(26%-138%)
37Cl-2,3,7,8-TCDD		17.1	19.7	pg/g	87.0	(35%-197%)

Comments:

B **The target analyte was detected in the associated blank.**
J **Value is estimated**
K **Estimated Maximum Possible Concentration**
U **Analyte was analyzed for, but not detected above the specified detection limit.**

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471009**	**Date Collected:**	**08/27/2019 17:35**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**28.9**
Client ID:	**J5-SC1b-100to110-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/27/2019 19:40**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b26sep19a_4-10**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**14.17 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.166	pg/g	0.166	0.992
40321-76-4	1,2,3,7,8-PeCDD	U	0.158	pg/g	0.158	4.96
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.181	pg/g	0.181	4.96
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.168	pg/g	0.168	4.96
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.178	pg/g	0.178	4.96
35822-46-9	1,2,3,4,6,7,8-HpCDD	BJ	1.27	pg/g	0.256	4.96
3268-87-9	1,2,3,4,6,7,8,9-OCDD		16.3	pg/g	0.429	9.92
51207-31-9	2,3,7,8-TCDF	BJ	0.464	pg/g	0.206	0.992
57117-41-6	1,2,3,7,8-PeCDF	U	0.0966	pg/g	0.0966	4.96
57117-31-4	2,3,4,7,8-PeCDF	U	0.0883	pg/g	0.0883	4.96
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.116	pg/g	0.116	4.96
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.116	pg/g	0.116	4.96
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.122	pg/g	0.122	4.96
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.165	pg/g	0.165	4.96
67562-39-4	1,2,3,4,6,7,8-HpCDF	BJK	0.288	pg/g	0.119	4.96
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.17	pg/g	0.170	4.96
39001-02-0	1,2,3,4,6,7,8,9-OCDF	BJ	0.534	pg/g	0.359	9.92
41903-57-5	Total TeCDD	BJK	0.377	pg/g	0.166	0.992
36088-22-9	Total PeCDD	U	0.158	pg/g	0.158	4.96
34465-46-8	Total HxCDD	BJK	0.859	pg/g	0.168	4.96
37871-00-4	Total HpCDD	J	3.30	pg/g	0.256	4.96
30402-14-3	Total TeCDF	BJK	0.754	pg/g	0.206	0.992
30402-15-4	Total PeCDF	BJK	0.125	pg/g	0.0458	4.96
55684-94-1	Total HxCDF	BJ	0.171	pg/g	0.116	4.96
38998-75-3	Total HpCDF	BJK	0.734	pg/g	0.119	4.96
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.0671	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.297	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		147	198	pg/g	74.2	(25%-164%)
13C-1,2,3,7,8-PeCDD		179	198	pg/g	90.1	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		159	198	pg/g	80.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		145	198	pg/g	73.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		184	198	pg/g	92.9	(23%-140%)
13C-OCDD		377	397	pg/g	94.9	(17%-157%)
13C-2,3,7,8-TCDF		138	198	pg/g	69.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		165	198	pg/g	83.3	(24%-185%)
13C-2,3,4,7,8-PeCDF		167	198	pg/g	84.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		148	198	pg/g	74.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		136	198	pg/g	68.4	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		143	198	pg/g	71.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		157	198	pg/g	79.1	(29%-147%)

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471009**	**Date Collected:**	**08/27/2019 17:35**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**28.9**
Client ID:	**J5-SC1b-100to110-82719**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/27/2019 19:40**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b26sep19a_4-10**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**14.17 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		155	198	pg/g	78.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		188	198	pg/g	94.7	(26%-138%)
37Cl-2,3,7,8-TCDD		16.3	19.8	pg/g	82.1	(35%-197%)

Comments:

B **The target analyte was detected in the associated blank.**
J **Value is estimated**
K **Estimated Maximum Possible Concentration**
U **Analyte was analyzed for, but not detected above the specified detection limit.**

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471012**	**Date Collected:**	**08/26/2019 10:30**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**18.6**
Client ID:	**L3-SC1b-20to30-82619**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/27/2019 20:28**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b26sep19a_4-11**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**12.47 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.164	pg/g	0.164	0.985
40321-76-4	1,2,3,7,8-PeCDD	U	0.276	pg/g	0.276	4.93
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.258	pg/g	0.258	4.93
57653-85-7	1,2,3,6,7,8-HxCDD	J	2.20	pg/g	0.256	4.93
19408-74-3	1,2,3,7,8,9-HxCDD	BJ	0.440	pg/g	0.262	4.93
35822-46-9	1,2,3,4,6,7,8-HpCDD		57.7	pg/g	0.684	4.93
3268-87-9	1,2,3,4,6,7,8,9-OCDD		571	pg/g	1.31	9.85
51207-31-9	2,3,7,8-TCDF	BJ	0.501	pg/g	0.260	0.985
57117-41-6	1,2,3,7,8-PeCDF	BJK	0.392	pg/g	0.139	4.93
57117-31-4	2,3,4,7,8-PeCDF	J	1.18	pg/g	0.128	4.93
70648-26-9	1,2,3,4,7,8-HxCDF		9.14	pg/g	0.284	4.93
57117-44-9	1,2,3,6,7,8-HxCDF	J	1.76	pg/g	0.284	4.93
60851-34-5	2,3,4,6,7,8-HxCDF	J	2.24	pg/g	0.305	4.93
72918-21-9	1,2,3,7,8,9-HxCDF	BJ	1.29	pg/g	0.374	4.93
67562-39-4	1,2,3,4,6,7,8-HpCDF		37.8	pg/g	0.416	4.93
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	3.57	pg/g	0.581	4.93
39001-02-0	1,2,3,4,6,7,8,9-OCDF		57.4	pg/g	0.623	9.85
41903-57-5	Total TeCDD	BJK	0.424	pg/g	0.164	0.985
36088-22-9	Total PeCDD	BJK	0.944	pg/g	0.276	4.93
34465-46-8	Total HxCDD	JK	10.5	pg/g	0.256	4.93
37871-00-4	Total HpCDD		108	pg/g	0.684	4.93
30402-14-3	Total TeCDF	BJ	2.93	pg/g	0.260	0.985
30402-15-4	Total PeCDF	JK	12.3	pg/g	0.0786	4.93
55684-94-1	Total HxCDF	J	69.9	pg/g	0.284	4.93
38998-75-3	Total HpCDF	J	134	pg/g	0.416	4.93
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		3.30	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		3.54	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		148	197	pg/g	75.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		161	197	pg/g	81.5	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		160	197	pg/g	81.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		145	197	pg/g	73.6	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		180	197	pg/g	91.3	(23%-140%)
13C-OCDD		366	394	pg/g	92.8	(17%-157%)
13C-2,3,7,8-TCDF		139	197	pg/g	70.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		151	197	pg/g	76.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		150	197	pg/g	76.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		146	197	pg/g	74.1	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		143	197	pg/g	72.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		140	197	pg/g	71.1	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		158	197	pg/g	80.4	(29%-147%)

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471012**	**Date Collected:**	**08/26/2019 10:30**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**18.6**
Client ID:	**L3-SC1b-20to30-82619**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/27/2019 20:28**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b26sep19a_4-11**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**12.47 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		150	197	pg/g	76.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		182	197	pg/g	92.2	(26%-138%)
37Cl-2,3,7,8-TCDD		17.1	19.7	pg/g	87.0	(35%-197%)

Comments:

B **The target analyte was detected in the associated blank.**
J **Value is estimated**
K **Estimated Maximum Possible Concentration**
U **Analyte was analyzed for, but not detected above the specified detection limit.**

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471013**	**Date Collected:**	**08/26/2019 10:35**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**17.7**
Client ID:	**L3-SC1b-30to40-82619**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/27/2019 21:16**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b26sep19a_4-12**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**12.8 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.146	pg/g	0.146	0.950
40321-76-4	1,2,3,7,8-PeCDD	U	0.155	pg/g	0.155	4.75
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.293	pg/g	0.293	4.75
57653-85-7	1,2,3,6,7,8-HxCDD	BJ	0.775	pg/g	0.262	4.75
19408-74-3	1,2,3,7,8,9-HxCDD	BJ	0.511	pg/g	0.283	4.75
35822-46-9	1,2,3,4,6,7,8-HpCDD		23.1	pg/g	0.450	4.75
3268-87-9	1,2,3,4,6,7,8,9-OCDD		254	pg/g	0.952	9.50
51207-31-9	2,3,7,8-TCDF	BJ	0.482	pg/g	0.289	0.950
57117-41-6	1,2,3,7,8-PeCDF	BJ	0.213	pg/g	0.127	4.75
57117-31-4	2,3,4,7,8-PeCDF	BJK	0.317	pg/g	0.117	4.75
70648-26-9	1,2,3,4,7,8-HxCDF	BJ	0.819	pg/g	0.144	4.75
57117-44-9	1,2,3,6,7,8-HxCDF	BJ	0.532	pg/g	0.142	4.75
60851-34-5	2,3,4,6,7,8-HxCDF	BJ	0.454	pg/g	0.151	4.75
72918-21-9	1,2,3,7,8,9-HxCDF	BJ	0.234	pg/g	0.187	4.75
67562-39-4	1,2,3,4,6,7,8-HpCDF		9.29	pg/g	0.247	4.75
55673-89-7	1,2,3,4,7,8,9-HpCDF	BJ	0.424	pg/g	0.355	4.75
39001-02-0	1,2,3,4,6,7,8,9-OCDF		22.7	pg/g	0.505	9.50
41903-57-5	Total TeCDD	BJK	0.437	pg/g	0.146	0.950
36088-22-9	Total PeCDD	BJK	1.57	pg/g	0.155	4.75
34465-46-8	Total HxCDD	J	7.40	pg/g	0.262	4.75
37871-00-4	Total HpCDD		47.8	pg/g	0.450	4.75
30402-14-3	Total TeCDF	BJK	2.08	pg/g	0.289	0.950
30402-15-4	Total PeCDF	JK	5.72	pg/g	0.0775	4.75
55684-94-1	Total HxCDF	J	11.6	pg/g	0.142	4.75
38998-75-3	Total HpCDF	J	29.3	pg/g	0.247	4.75
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.894	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		1.06	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		156	190	pg/g	82.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		174	190	pg/g	91.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		160	190	pg/g	84.3	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		146	190	pg/g	76.9	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		184	190	pg/g	96.7	(23%-140%)
13C-OCDD		373	380	pg/g	98.3	(17%-157%)
13C-2,3,7,8-TCDF		144	190	pg/g	75.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		169	190	pg/g	89.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		163	190	pg/g	86.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		150	190	pg/g	78.9	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		138	190	pg/g	72.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		142	190	pg/g	74.7	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		160	190	pg/g	84.0	(29%-147%)

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471013**	**Date Collected:**	**08/26/2019 10:35**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**17.7**
Client ID:	**L3-SC1b-30to40-82619**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/27/2019 21:16**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b26sep19a_4-12**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**12.8 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		153	190	pg/g	80.6	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		181	190	pg/g	95.2	(26%-138%)
37Cl-2,3,7,8-TCDD		17.4	19.0	pg/g	91.7	(35%-197%)

Comments:

B **The target analyte was detected in the associated blank.**
J **Value is estimated**
K **Estimated Maximum Possible Concentration**
U **Analyte was analyzed for, but not detected above the specified detection limit.**

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471016**	**Date Collected:**	**08/26/2019 12:00**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil SRM**	**Date Received:**	**09/10/2019 09:43**		
Client ID:	**SRM Lot# ER10091501**			**Prep Basis:**	**As Received**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/27/2019 22:05**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b26sep19a_4-13**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**10.12 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	J	0.352	pg/g	0.184	0.988
40321-76-4	1,2,3,7,8-PeCDD	BJK	0.585	pg/g	0.255	4.94
39227-28-6	1,2,3,4,7,8-HxCDD	J	1.03	pg/g	0.409	4.94
57653-85-7	1,2,3,6,7,8-HxCDD	J	3.58	pg/g	0.421	4.94
19408-74-3	1,2,3,7,8,9-HxCDD	J	1.74	pg/g	0.425	4.94
35822-46-9	1,2,3,4,6,7,8-HpCDD		162	pg/g	1.91	4.94
3268-87-9	1,2,3,4,6,7,8,9-OCDD	E	8550	pg/g	2.94	9.88
51207-31-9	2,3,7,8-TCDF	BK	1.07	pg/g	0.338	0.988
57117-41-6	1,2,3,7,8-PeCDF	BJK	0.292	pg/g	0.138	4.94
57117-31-4	2,3,4,7,8-PeCDF	BJK	0.374	pg/g	0.123	4.94
70648-26-9	1,2,3,4,7,8-HxCDF	BJ	0.881	pg/g	0.194	4.94
57117-44-9	1,2,3,6,7,8-HxCDF	BJ	0.457	pg/g	0.200	4.94
60851-34-5	2,3,4,6,7,8-HxCDF	BJ	0.812	pg/g	0.208	4.94
72918-21-9	1,2,3,7,8,9-HxCDF	BJ	0.304	pg/g	0.261	4.94
67562-39-4	1,2,3,4,6,7,8-HpCDF		15.0	pg/g	0.308	4.94
55673-89-7	1,2,3,4,7,8,9-HpCDF	BJ	1.27	pg/g	0.409	4.94
39001-02-0	1,2,3,4,6,7,8,9-OCDF		63.5	pg/g	0.711	9.88
41903-57-5	Total TeCDD	JK	2.03	pg/g	0.184	0.988
36088-22-9	Total PeCDD	JK	4.04	pg/g	0.255	4.94
34465-46-8	Total HxCDD	J	38.4	pg/g	0.409	4.94
37871-00-4	Total HpCDD		452	pg/g	1.91	4.94
30402-14-3	Total TeCDF	JK	9.19	pg/g	0.338	0.988
30402-15-4	Total PeCDF	JK	5.08	pg/g	0.0709	4.94
55684-94-1	Total HxCDF	J	17.6	pg/g	0.194	4.94
38998-75-3	Total HpCDF	J	54.5	pg/g	0.308	4.94
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		6.41	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		6.41	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		149	198	pg/g	75.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		174	198	pg/g	87.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		161	198	pg/g	81.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		143	198	pg/g	72.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		182	198	pg/g	92.3	(23%-140%)
13C-OCDD		404	395	pg/g	102	(17%-157%)
13C-2,3,7,8-TCDF		141	198	pg/g	71.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		163	198	pg/g	82.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		163	198	pg/g	82.3	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		146	198	pg/g	73.8	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		139	198	pg/g	70.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		140	198	pg/g	71.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		156	198	pg/g	78.9	(29%-147%)

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471016**	**Date Collected:**	**08/26/2019 12:00**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil SRM**	**Date Received:**	**09/10/2019 09:43**		
Client ID:	**SRM Lot# ER10091501**			**Prep Basis:**	**As Received**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/27/2019 22:05**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b26sep19a_4-13**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**10.12 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		150	198	pg/g	75.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		181	198	pg/g	91.7	(26%-138%)
37Cl-2,3,7,8-TCDD		16.6	19.8	pg/g	83.9	(35%-197%)

Comments:

B **The target analyte was detected in the associated blank.**
E **Value is estimated - Concentration of the target analyte exceeds the instrument calibration range**
J **Value is estimated**
K **Estimated Maximum Possible Concentration**
U **Analyte was analyzed for, but not detected above the specified detection limit.**

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471016**	**Date Collected:**	**08/26/2019 12:00**	**Matrix:**	**SOIL**
Client Sample:	**1613B Soil SRM**	**Date Received:**	**09/10/2019 09:43**		
Client ID:	**SRM Lot# ER10091501**			**Prep Basis:**	**As Received**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/30/2019 18:41**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b30sep19a_2-9**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**10.12 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF	BJ	0.842	pg/g	0.194	0.988

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

B The target analyte was detected in the associated blank.
E Value is estimated - Concentration of the target analyte exceeds the instrument calibration range
J Value is estimated
K Estimated Maximum Possible Concentration
U Analyte was analyzed for, but not detected above the specified detection limit.

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471017**	**Date Collected:**	**08/27/2019 08:40**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**08/30/2019 09:55**		
Client ID:	**711-82719**			**Prep Basis:**	**As Received**
Batch ID:	**41726**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/18/2019 23:33**	**Analyst:**	**MJC**	**Instrument:**	**HRP750**
Data File:	**A18SEP19D-9**			**Dilution:**	**1**
Prep Batch:	**41724**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**12-SEP-19**	**Prep Aliquot:**	**966.9 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.658	pg/L	0.658	10.3
40321-76-4	1,2,3,7,8-PeCDD	U	0.968	pg/L	0.968	51.7
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.935	pg/L	0.935	51.7
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.894	pg/L	0.894	51.7
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.929	pg/L	0.929	51.7
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	1.11	pg/L	1.11	51.7
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	1.97	pg/L	1.97	103
51207-31-9	2,3,7,8-TCDF	U	0.685	pg/L	0.685	10.3
57117-41-6	1,2,3,7,8-PeCDF	U	0.716	pg/L	0.716	51.7
57117-31-4	2,3,4,7,8-PeCDF	U	0.654	pg/L	0.654	51.7
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.707	pg/L	0.707	51.7
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.751	pg/L	0.751	51.7
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.718	pg/L	0.718	51.7
72918-21-9	1,2,3,7,8,9-HxCDF	JK	0.951	pg/L	0.918	51.7
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	0.848	pg/L	0.848	51.7
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	1.18	pg/L	1.18	51.7
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	2.25	pg/L	2.25	103
41903-57-5	Total TeCDD	U	0.658	pg/L	0.658	10.3
36088-22-9	Total PeCDD	U	0.968	pg/L	0.968	51.7
34465-46-8	Total HxCDD	U	0.894	pg/L	0.894	51.7
37871-00-4	Total HpCDD	U	1.11	pg/L	1.11	51.7
30402-14-3	Total TeCDF	U	0.685	pg/L	0.685	10.3
30402-15-4	Total PeCDF	U	0.465	pg/L	0.465	51.7
55684-94-1	Total HxCDF	JK	0.951	pg/L	0.707	51.7
38998-75-3	Total HpCDF	U	0.848	pg/L	0.848	51.7
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.0951	pg/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		1.31	pg/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1670	2070	pg/L	81.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		1860	2070	pg/L	89.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1740	2070	pg/L	84.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1760	2070	pg/L	85.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1890	2070	pg/L	91.2	(23%-140%)
13C-OCDD		2790	4140	pg/L	67.4	(17%-157%)
13C-2,3,7,8-TCDF		1720	2070	pg/L	83.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		1880	2070	pg/L	90.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		1860	2070	pg/L	89.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1680	2070	pg/L	81.2	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1610	2070	pg/L	77.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1700	2070	pg/L	82.0	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1770	2070	pg/L	85.3	(29%-147%)

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471017**	**Date Collected:**	**08/27/2019 08:40**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**08/30/2019 09:55**		
Client ID:	**711-82719**			**Prep Basis:**	**As Received**
Batch ID:	**41726**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/18/2019 23:33**	**Analyst:**	**MJC**	**Instrument:**	**HRP750**
Data File:	**A18SEP19D-9**			**Dilution:**	**1**
Prep Batch:	**41724**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**12-SEP-19**	**Prep Aliquot:**	**966.9 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1660	2070	pg/L	80.3	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1680	2070	pg/L	81.1	(26%-138%)
37Cl-2,3,7,8-TCDD		204	207	pg/L	98.8	(35%-197%)

Comments:

J **Value is estimated**

K **Estimated Maximum Possible Concentration**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471018**	**Date Collected:**	**08/27/2019 08:20**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**09/04/2019 11:30**		
Client ID:	**712-82819**			**Prep Basis:**	**As Received**
Batch ID:	**41726**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/19/2019 00:22**	**Analyst:**	**MJC**	**Instrument:**	**HRP750**
Data File:	**A18SEP19D-10**			**Dilution:**	**1**
Prep Batch:	**41724**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**12-SEP-19**	**Prep Aliquot:**	**959.5 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.788	pg/L	0.788	10.4
40321-76-4	1,2,3,7,8-PeCDD	U	1.01	pg/L	1.01	52.1
39227-28-6	1,2,3,4,7,8-HxCDD	U	1.04	pg/L	1.04	52.1
57653-85-7	1,2,3,6,7,8-HxCDD	U	1.03	pg/L	1.03	52.1
19408-74-3	1,2,3,7,8,9-HxCDD	U	1.05	pg/L	1.05	52.1
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	0.959	pg/L	0.959	52.1
3268-87-9	1,2,3,4,6,7,8,9-OCDD	U	1.88	pg/L	1.88	104
51207-31-9	2,3,7,8-TCDF	U	0.727	pg/L	0.727	10.4
57117-41-6	1,2,3,7,8-PeCDF	U	0.769	pg/L	0.769	52.1
57117-31-4	2,3,4,7,8-PeCDF	U	0.719	pg/L	0.719	52.1
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.8	pg/L	0.800	52.1
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.78	pg/L	0.780	52.1
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.74	pg/L	0.740	52.1
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.973	pg/L	0.973	52.1
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	0.944	pg/L	0.944	52.1
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	1.28	pg/L	1.28	52.1
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	2.31	pg/L	2.31	104
41903-57-5	Total TeCDD	U	0.788	pg/L	0.788	10.4
36088-22-9	Total PeCDD	U	1.01	pg/L	1.01	52.1
34465-46-8	Total HxCDD	U	1.03	pg/L	1.03	52.1
37871-00-4	Total HpCDD	U	0.959	pg/L	0.959	52.1
30402-14-3	Total TeCDF	U	0.727	pg/L	0.727	10.4
30402-15-4	Total PeCDF	U	0.594	pg/L	0.594	52.1
55684-94-1	Total HxCDF	U	0.74	pg/L	0.740	52.1
38998-75-3	Total HpCDF	U	0.944	pg/L	0.944	52.1
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.00	pg/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		1.39	pg/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1690	2080	pg/L	81.3	(25%-164%)
13C-1,2,3,7,8-PeCDD		1980	2080	pg/L	95.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1700	2080	pg/L	81.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1710	2080	pg/L	82.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1780	2080	pg/L	85.6	(23%-140%)
13C-OCDD		2800	4170	pg/L	67.2	(17%-157%)
13C-2,3,7,8-TCDF		1630	2080	pg/L	78.4	(24%-169%)
13C-1,2,3,7,8-PeCDF		1970	2080	pg/L	94.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		1970	2080	pg/L	94.5	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1610	2080	pg/L	77.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1540	2080	pg/L	73.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1650	2080	pg/L	79.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1720	2080	pg/L	82.3	(29%-147%)

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**15471018**	**Date Collected:**	**08/27/2019 08:20**	**Matrix:**	**WATER**
Client Sample:	**1613B Water**	**Date Received:**	**09/04/2019 11:30**		
Client ID:	**712-82819**			**Prep Basis:**	**As Received**
Batch ID:	**41726**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/19/2019 00:22**	**Analyst:**	**MJC**	**Instrument:**	**HRP750**
Data File:	**A18SEP19D-10**			**Dilution:**	**1**
Prep Batch:	**41724**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**12-SEP-19**	**Prep Aliquot:**	**959.5 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1520	2080	pg/L	73.0	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1570	2080	pg/L	75.1	(26%-138%)
37Cl-2,3,7,8-TCDD		206	208	pg/L	98.9	(35%-197%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 2006-00115_4

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12024770	LCS for batch 41724	13C-2,3,7,8-TCDD		88.2	(20%-175%)
		13C-1,2,3,7,8-PeCDD		90.2	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		87.2	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		85.5	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		91.4	(22%-166%)
		13C-OCDD		71.0	(13%-199%)
		13C-2,3,7,8-TCDF		90.4	(22%-152%)
		13C-1,2,3,7,8-PeCDF		94.2	(21%-192%)
		13C-2,3,4,7,8-PeCDF		94.1	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		84.3	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		80.9	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		83.4	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		87.1	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		78.2	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		83.3	(20%-186%)
		37Cl-2,3,7,8-TCDD		96.5	(31%-191%)
12024771	LCSD for batch 41724	13C-2,3,7,8-TCDD		82.3	(20%-175%)
		13C-1,2,3,7,8-PeCDD		82.1	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		80.0	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		78.8	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		81.2	(22%-166%)
		13C-OCDD		63.3	(13%-199%)
		13C-2,3,7,8-TCDF		85.3	(22%-152%)
		13C-1,2,3,7,8-PeCDF		85.8	(21%-192%)
		13C-2,3,4,7,8-PeCDF		85.2	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		78.6	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		76.3	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		78.1	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		80.9	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		71.9	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		71.7	(20%-186%)
		37Cl-2,3,7,8-TCDD		94.4	(31%-191%)
12024769	MB for batch 41724	13C-2,3,7,8-TCDD		83.6	(25%-164%)
		13C-1,2,3,7,8-PeCDD		85.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		82.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		82.5	(23%-140%)
		13C-OCDD		61.0	(17%-157%)
		13C-2,3,7,8-TCDF		89.3	(24%-169%)
		13C-1,2,3,7,8-PeCDF		90.5	(24%-185%)
		13C-2,3,4,7,8-PeCDF		87.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		82.0	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		78.9	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		81.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		85.2	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		73.1	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		74.7	(26%-138%)
		37Cl-2,3,7,8-TCDD		94.0	(35%-197%)
15471017	711-82719	13C-2,3,7,8-TCDD		81.0	(25%-164%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 2006-00115_4

Matrix Type: LIQUID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
15471017	711-82719	13C-1,2,3,7,8-PeCDD		89.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		84.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		85.0	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		91.2	(23%-140%)
		13C-OCDD		67.4	(17%-157%)
		13C-2,3,7,8-TCDF		83.1	(24%-169%)
		13C-1,2,3,7,8-PeCDF		90.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		89.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		81.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		77.9	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		82.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		85.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		80.3	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		81.1	(26%-138%)
		37Cl-2,3,7,8-TCDD		98.8	(35%-197%)
15471018	712-82819	13C-2,3,7,8-TCDD		81.3	(25%-164%)
		13C-1,2,3,7,8-PeCDD		95.0	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		81.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		82.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		85.6	(23%-140%)
		13C-OCDD		67.2	(17%-157%)
		13C-2,3,7,8-TCDF		78.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		94.4	(24%-185%)
		13C-2,3,4,7,8-PeCDF		94.5	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		73.8	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		79.3	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		73.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		75.1	(26%-138%)
		37Cl-2,3,7,8-TCDD		98.9	(35%-197%)

* Recovery outside Acceptance Limits
# Column to be used to flag recovery values
D Sample Diluted

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 2006-00115_4

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12024811	LCS for batch 41759	13C-2,3,7,8-TCDD		72.8	(20%-175%)
		13C-1,2,3,7,8-PeCDD		64.3	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		72.2	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		71.2	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		74.3	(22%-166%)
		13C-OCDD		53.6	(13%-199%)
		13C-2,3,7,8-TCDF		64.7	(22%-152%)
		13C-1,2,3,7,8-PeCDF		63.2	(21%-192%)
		13C-2,3,4,7,8-PeCDF		60.4	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		68.8	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		70.0	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		66.2	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		66.6	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		68.0	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		66.7	(20%-186%)
		37Cl-2,3,7,8-TCDD		82.4	(31%-191%)
12024812	LCSD for batch 41759	13C-2,3,7,8-TCDD		73.4	(20%-175%)
		13C-1,2,3,7,8-PeCDD		69.2	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		75.1	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		73.4	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		77.4	(22%-166%)
		13C-OCDD		57.8	(13%-199%)
		13C-2,3,7,8-TCDF		66.9	(22%-152%)
		13C-1,2,3,7,8-PeCDF		67.0	(21%-192%)
		13C-2,3,4,7,8-PeCDF		64.4	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		71.8	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		73.1	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		68.9	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		70.1	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		72.8	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		71.8	(20%-186%)
		37Cl-2,3,7,8-TCDD		86.3	(31%-191%)
12024810	MB for batch 41759	13C-2,3,7,8-TCDD		74.6	(25%-164%)
		13C-1,2,3,7,8-PeCDD		67.4	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		70.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		75.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		75.9	(23%-140%)
		13C-OCDD		56.3	(17%-157%)
		13C-2,3,7,8-TCDF		65.6	(24%-169%)
		13C-1,2,3,7,8-PeCDF		65.8	(24%-185%)
		13C-2,3,4,7,8-PeCDF		61.9	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		71.0	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		70.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		67.8	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		66.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		68.8	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		67.4	(26%-138%)
		37Cl-2,3,7,8-TCDD		85.4	(35%-197%)
15471001	J5-SC1b-20to30-82719	13C-2,3,7,8-TCDD		69.1	(25%-164%)

SDG Number: 2006-00115_4

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
15471001	J5-SC1b-20to30-82719	13C-1,2,3,7,8-PeCDD		62.7	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		73.0	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		71.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		85.4	(23%-140%)
		13C-OCDD		73.1	(17%-157%)
		13C-2,3,7,8-TCDF		66.1	(24%-169%)
		13C-1,2,3,7,8-PeCDF		59.4	(24%-185%)
		13C-2,3,4,7,8-PeCDF		58.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		70.7	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		70.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		69.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		69.6	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		74.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		81.7	(26%-138%)
		37Cl-2,3,7,8-TCDD		78.9	(35%-197%)
12024813	J5-SC1b-20to30-82719(15471001MS)	13C-2,3,7,8-TCDD		72.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		60.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		87.7	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		71.3	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		98.9	(23%-140%)
		13C-OCDD		97.3	(17%-157%)
		13C-2,3,7,8-TCDF		72.1	(24%-169%)
		13C-1,2,3,7,8-PeCDF		60.0	(24%-185%)
		13C-2,3,4,7,8-PeCDF		59.2	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		83.7	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		69.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		74.8	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		61.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		84.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		100	(26%-138%)
		37Cl-2,3,7,8-TCDD		77.5	(35%-197%)
12024814	J5-SC1b-20to30-82719(15471001MSD)	13C-2,3,7,8-TCDD		73.4	(25%-164%)
		13C-1,2,3,7,8-PeCDD		66.7	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		83.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		77.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		93.1	(23%-140%)
		13C-OCDD		81.9	(17%-157%)
		13C-2,3,7,8-TCDF		73.1	(24%-169%)
		13C-1,2,3,7,8-PeCDF		62.1	(24%-185%)
		13C-2,3,4,7,8-PeCDF		62.4	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		79.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		73.8	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		73.8	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		73.5	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		83.2	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		90.7	(26%-138%)
		37Cl-2,3,7,8-TCDD		82.6	(35%-197%)
15471002	J5-SC1b-30to40-82719	13C-2,3,7,8-TCDD		74.2	(25%-164%)
		13C-1,2,3,7,8-PeCDD		67.6	(25%-181%)

Surrogate Recovery Report

SDG Number: 2006-00115_4

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
15471002	J5-SC1b-30to40-82719	13C-1,2,3,4,7,8-HxCDD		80.5	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		75.3	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		89.0	(23%-140%)
		13C-OCDD		75.6	(17%-157%)
		13C-2,3,7,8-TCDF		71.3	(24%-169%)
		13C-1,2,3,7,8-PeCDF		64.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		63.6	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		76.4	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		72.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		72.4	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		75.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		79.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		87.6	(26%-138%)
		37Cl-2,3,7,8-TCDD		83.8	(35%-197%)
15471003	J5-SC1b-40to50-82719	13C-2,3,7,8-TCDD		72.7	(25%-164%)
		13C-1,2,3,7,8-PeCDD		65.0	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		79.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		73.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		88.7	(23%-140%)
		13C-OCDD		79.4	(17%-157%)
		13C-2,3,7,8-TCDF		70.0	(24%-169%)
		13C-1,2,3,7,8-PeCDF		61.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		61.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		76.2	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		71.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		72.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		74.3	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		80.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		88.6	(26%-138%)
		37Cl-2,3,7,8-TCDD		82.4	(35%-197%)
15471004	J5-SC1b-50to60-82719	13C-2,3,7,8-TCDD		66.9	(25%-164%)
		13C-1,2,3,7,8-PeCDD		59.3	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		73.6	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		69.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		83.6	(23%-140%)
		13C-OCDD		74.5	(17%-157%)
		13C-2,3,7,8-TCDF		66.1	(24%-169%)
		13C-1,2,3,7,8-PeCDF	Q	55.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF	Q	56.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		70.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		65.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		66.5	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		64.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		74.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		81.5	(26%-138%)
		37Cl-2,3,7,8-TCDD		80.3	(35%-197%)
15471005	J5-SC1b-60to70-82719	13C-2,3,7,8-TCDD		72.9	(25%-164%)
		13C-1,2,3,7,8-PeCDD		67.1	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		76.1	(32%-141%)

Surrogate Recovery Report

SDG Number: 2006-00115_4

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
15471005	J5-SC1b-60to70-82719	13C-1,2,3,6,7,8-HxCDD		72.9	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		83.4	(23%-140%)
		13C-OCDD		68.5	(17%-157%)
		13C-2,3,7,8-TCDF		67.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		63.0	(24%-185%)
		13C-2,3,4,7,8-PeCDF		61.9	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		74.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		69.1	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		69.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		73.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		75.2	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		81.4	(26%-138%)
		37Cl-2,3,7,8-TCDD		82.1	(35%-197%)
15471006	J5-SC1b-70to80-82719	13C-2,3,7,8-TCDD		73.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		48.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		78.0	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		76.8	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		91.8	(23%-140%)
		13C-OCDD		80.2	(17%-157%)
		13C-2,3,7,8-TCDF		72.3	(24%-169%)
		13C-1,2,3,7,8-PeCDF		61.5	(24%-185%)
		13C-2,3,4,7,8-PeCDF		54.1	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		75.7	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		73.9	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		72.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		73.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		81.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		89.5	(26%-138%)
		37Cl-2,3,7,8-TCDD		80.1	(35%-197%)
15471007	J5-SC1b-80to90-82719	13C-2,3,7,8-TCDD		76.6	(25%-164%)
		13C-1,2,3,7,8-PeCDD		55.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		77.5	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		80.5	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		86.8	(23%-140%)
		13C-OCDD		65.0	(17%-157%)
		13C-2,3,7,8-TCDF		70.4	(24%-169%)
		13C-1,2,3,7,8-PeCDF		47.4	(24%-185%)
		13C-2,3,4,7,8-PeCDF		53.1	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		79.8	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		76.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		73.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		76.6	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		79.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		80.5	(26%-138%)
		37Cl-2,3,7,8-TCDD		86.0	(35%-197%)
15471008	J5-SC1b-90to100-82719	13C-2,3,7,8-TCDD		80.7	(25%-164%)
		13C-1,2,3,7,8-PeCDD		75.1	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		82.8	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		80.2	(28%-130%)

Surrogate Recovery Report

SDG Number: 2006-00115_4

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
15471008	J5-SC1b-90to100-82719	13C-1,2,3,4,6,7,8-HpCDD		88.8	(23%-140%)
		13C-OCDD		67.2	(17%-157%)
		13C-2,3,7,8-TCDF		74.8	(24%-169%)
		13C-1,2,3,7,8-PeCDF		71.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		70.1	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		80.0	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		79.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		75.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		79.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		81.5	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		83.1	(26%-138%)
		37Cl-2,3,7,8-TCDD		87.0	(35%-197%)
15471009	J5-SC1b-100to110-82719	13C-2,3,7,8-TCDD		74.2	(25%-164%)
		13C-1,2,3,7,8-PeCDD		90.1	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		80.0	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		73.1	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		92.9	(23%-140%)
		13C-OCDD		94.9	(17%-157%)
		13C-2,3,7,8-TCDF		69.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		83.3	(24%-185%)
		13C-2,3,4,7,8-PeCDF		84.0	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		74.4	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		68.4	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		71.9	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		79.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		78.1	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		94.7	(26%-138%)
		37Cl-2,3,7,8-TCDD		82.1	(35%-197%)
15471012	L3-SC1b-20to30-82619	13C-2,3,7,8-TCDD		75.3	(25%-164%)
		13C-1,2,3,7,8-PeCDD		81.5	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		81.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		73.6	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		91.3	(23%-140%)
		13C-OCDD		92.8	(17%-157%)
		13C-2,3,7,8-TCDF		70.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		76.8	(24%-185%)
		13C-2,3,4,7,8-PeCDF		76.0	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		74.1	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		72.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		71.1	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		80.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		76.3	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		92.2	(26%-138%)
		37Cl-2,3,7,8-TCDD		87.0	(35%-197%)
15471013	L3-SC1b-30to40-82619	13C-2,3,7,8-TCDD		82.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		91.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		84.3	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		76.9	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		96.7	(23%-140%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: 2006-00115_4

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
15471013	L3-SC1b-30to40-82619	13C-OCDD		98.3	(17%-157%)
		13C-2,3,7,8-TCDF		75.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		86.0	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		78.9	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		72.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		74.7	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		84.0	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		80.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		95.2	(26%-138%)
		37Cl-2,3,7,8-TCDD		91.7	(35%-197%)
15471016	SRM Lot# ER10091501	13C-2,3,7,8-TCDD		75.3	(25%-164%)
		13C-1,2,3,7,8-PeCDD		87.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		81.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		72.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		92.3	(23%-140%)
		13C-OCDD		102	(17%-157%)
		13C-2,3,7,8-TCDF		71.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		82.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		82.3	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		73.8	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		70.1	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		71.0	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		78.9	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		75.9	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		91.7	(26%-138%)
		37Cl-2,3,7,8-TCDD		83.9	(35%-197%)

* Recovery outside Acceptance Limits
# Column to be used to flag recovery values
D Sample Diluted

Hi-Res Dioxins/Furans

Quality Control Summary
Spike Recovery Report

SDG Number: 2006-00115_4 **Sample Type:** Laboratory Control Sample

Client ID: LCS for batch 41724 **Matrix:** WATER

Lab Sample ID: 12024770

Instrument: HRP750 **Analysis Date:** 09/18/2019 17:52 **Dilution:** 1

Analyst: MJC **Prep Batch ID:** 41724

Batch ID: 41726

CAS No.		Parmname	Amount Added pg/L	Spike Conc. pg/L	Recovery %	Acceptance Limits
1746-01-6	LCS	2,3,7,8-TCDD	200	202	101	67-158
40321-76-4	LCS	1,2,3,7,8-PeCDD	1000	1110	111	70-142
39227-28-6	LCS	1,2,3,4,7,8-HxCDD	1000	1060	106	70-164
57653-85-7	LCS	1,2,3,6,7,8-HxCDD	1000	1050	105	74-134
19408-74-3	LCS	1,2,3,7,8,9-HxCDD	1000	1090	109	64-162
35822-46-9	LCS	1,2,3,4,6,7,8-HpCDD	1000	963	96.3	70-140
3268-87-9	LCS	1,2,3,4,6,7,8,9-OCDD	2000	2060	103	78-144
51207-31-9	LCS	2,3,7,8-TCDF	200	194	96.8	75-158
57117-41-6	LCS	1,2,3,7,8-PeCDF	1000	1020	102	80-134
57117-31-4	LCS	2,3,4,7,8-PeCDF	1000	1000	100	68-160
70648-26-9	LCS	1,2,3,4,7,8-HxCDF	1000	1060	106	72-134
57117-44-9	LCS	1,2,3,6,7,8-HxCDF	1000	1110	111	84-130
60851-34-5	LCS	2,3,4,6,7,8-HxCDF	1000	1070	107	70-156
72918-21-9	LCS	1,2,3,7,8,9-HxCDF	1000	1060	106	78-130
67562-39-4	LCS	1,2,3,4,6,7,8-HpCDF	1000	1090	109	82-122
55673-89-7	LCS	1,2,3,4,7,8,9-HpCDF	1000	1060	106	78-138
39001-02-0	LCS	1,2,3,4,6,7,8,9-OCDF	2000	2020	101	63-170

Hi-Res Dioxins/Furans

Quality Control Summary
Spike Recovery Report

SDG Number: 2006-00115_4 **Sample Type:** Laboratory Control Sample Duplicate

Client ID: LCSD for batch 41724 **Matrix:** WATER

Lab Sample ID: 12024771

Instrument: HRP750 **Analysis Date:** 09/18/2019 18:40 **Dilution:** 1

Analyst: MJC **Prep Batch ID:** 41724

Batch ID: 41726

CAS No.		Parmname	Amount Added pg/L	Spike Conc. pg/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD	2,3,7,8-TCDD	200	197	98.4	67-158	2.67	0-20
40321-76-4	LCSD	1,2,3,7,8-PeCDD	1000	1080	108	70-142	2.98	0-20
39227-28-6	LCSD	1,2,3,4,7,8-HxCDD	1000	1060	106	70-164	0.789	0-20
57653-85-7	LCSD	1,2,3,6,7,8-HxCDD	1000	1050	105	74-134	0.449	0-20
19408-74-3	LCSD	1,2,3,7,8,9-HxCDD	1000	1110	111	64-162	1.98	0-20
35822-46-9	LCSD	1,2,3,4,6,7,8-HpCDD	1000	961	96.1	70-140	0.189	0-20
3268-87-9	LCSD	1,2,3,4,6,7,8,9-OCDD	2000	2010	100	78-144	2.63	0-20
51207-31-9	LCSD	2,3,7,8-TCDF	200	186	92.8	75-158	4.26	0-20
57117-41-6	LCSD	1,2,3,7,8-PeCDF	1000	988	98.8	80-134	3.21	0-20
57117-31-4	LCSD	2,3,4,7,8-PeCDF	1000	1010	101	68-160	0.539	0-20
70648-26-9	LCSD	1,2,3,4,7,8-HxCDF	1000	1040	104	72-134	1.94	0-20
57117-44-9	LCSD	1,2,3,6,7,8-HxCDF	1000	1040	104	84-130	6.61	0-20
60851-34-5	LCSD	2,3,4,6,7,8-HxCDF	1000	1040	104	70-156	2.63	0-20
72918-21-9	LCSD	1,2,3,7,8,9-HxCDF	1000	1020	102	78-130	3.81	0-20
67562-39-4	LCSD	1,2,3,4,6,7,8-HpCDF	1000	1060	106	82-122	2.75	0-20
55673-89-7	LCSD	1,2,3,4,7,8,9-HpCDF	1000	1050	105	78-138	0.539	0-20
39001-02-0	LCSD	1,2,3,4,6,7,8,9-OCDF	2000	1980	98.8	63-170	2.28	0-20

Hi-Res Dioxins/Furans

Quality Control Summary
Spike Recovery Report

SDG Number: 2006-00115_4 **Sample Type:** Laboratory Control Sample

Client ID: LCS for batch 41759 **Matrix:** SOIL

Lab Sample ID: 12024811

Instrument: HRP763 **Analysis Date:** 09/23/2019 20:33 **Dilution:** 1

Analyst: MLS **Prep Batch ID:** 41759

Batch ID: 41761

CAS No.		Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS	2,3,7,8-TCDD	20.0	17.9	89.6	67-158
40321-76-4	LCS	1,2,3,7,8-PeCDD	100	101	101	70-142
39227-28-6	LCS	1,2,3,4,7,8-HxCDD	100	97.9	97.9	70-164
57653-85-7	LCS	1,2,3,6,7,8-HxCDD	100	104	104	76-134
19408-74-3	LCS	1,2,3,7,8,9-HxCDD	100	107	107	64-162
35822-46-9	LCS	1,2,3,4,6,7,8-HpCDD	100	103	103	70-140
3268-87-9	LCS	1,2,3,4,6,7,8,9-OCDD	200	203	101	78-144
51207-31-9	LCS	2,3,7,8-TCDF	20.0	21.9	109	75-158
57117-41-6	LCS	1,2,3,7,8-PeCDF	100	108	108	80-134
57117-31-4	LCS	2,3,4,7,8-PeCDF	100	110	110	68-160
70648-26-9	LCS	1,2,3,4,7,8-HxCDF	100	107	107	72-134
57117-44-9	LCS	1,2,3,6,7,8-HxCDF	100	114	114	84-130
60851-34-5	LCS	2,3,4,6,7,8-HxCDF	100	112	112	70-156
72918-21-9	LCS	1,2,3,7,8,9-HxCDF	100	110	110	78-130
67562-39-4	LCS	1,2,3,4,6,7,8-HpCDF	100	117	117	82-122
55673-89-7	LCS	1,2,3,4,7,8,9-HpCDF	100	113	113	78-138
39001-02-0	LCS	1,2,3,4,6,7,8,9-OCDF	200	206	103	63-170

Hi-Res Dioxins/Furans

Quality Control Summary
Spike Recovery Report

SDG Number: 2006-00115_4 **Sample Type:** Laboratory Control Sample Duplicate

Client ID: LCSD for batch 41759 **Matrix:** SOIL

Lab Sample ID: 12024812

Instrument: HRP763 **Analysis Date:** 09/23/2019 21:21 **Dilution:** 1

Analyst: MLS **Prep Batch ID:** 41759

Batch ID: 41761

CAS No.		Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD	2,3,7,8-TCDD	20.0	17.8	88.9	67-158	0.684	0-20
40321-76-4	LCSD	1,2,3,7,8-PeCDD	100	98.7	98.7	70-142	2.69	0-20
39227-28-6	LCSD	1,2,3,4,7,8-HxCDD	100	95.4	95.4	70-164	2.62	0-20
57653-85-7	LCSD	1,2,3,6,7,8-HxCDD	100	102	102	76-134	2.64	0-20
19408-74-3	LCSD	1,2,3,7,8,9-HxCDD	100	106	106	64-162	0.748	0-20
35822-46-9	LCSD	1,2,3,4,6,7,8-HpCDD	100	101	101	70-140	1.44	0-20
3268-87-9	LCSD	1,2,3,4,6,7,8,9-OCDD	200	192	96.1	78-144	5.43	0-20
51207-31-9	LCSD	2,3,7,8-TCDF	20.0	21.3	106	75-158	2.82	0-20
57117-41-6	LCSD	1,2,3,7,8-PeCDF	100	105	105	80-134	2.74	0-20
57117-31-4	LCSD	2,3,4,7,8-PeCDF	100	107	107	68-160	2.98	0-20
70648-26-9	LCSD	1,2,3,4,7,8-HxCDF	100	104	104	72-134	2.51	0-20
57117-44-9	LCSD	1,2,3,6,7,8-HxCDF	100	110	110	84-130	3.68	0-20
60851-34-5	LCSD	2,3,4,6,7,8-HxCDF	100	111	111	70-156	0.417	0-20
72918-21-9	LCSD	1,2,3,7,8,9-HxCDF	100	108	108	78-130	1.75	0-20
67562-39-4	LCSD	1,2,3,4,6,7,8-HpCDF	100	112	112	82-122	3.80	0-20
55673-89-7	LCSD	1,2,3,4,7,8,9-HpCDF	100	108	108	78-138	4.73	0-20
39001-02-0	LCSD	1,2,3,4,6,7,8,9-OCDF	200	199	99.3	63-170	3.63	0-20

Hi-Res Dioxins/Furans

Quality Control Summary
Spike Recovery Report

SDG Number:	**2006-00115_4**	**Sample Type:**	**Matrix Spike**		
Client ID:	**J5-SC1b-20to30-82719(15471001MS)**	**Matrix:**	**SOIL**		
Lab Sample ID:	**12024813**	**%Moisture:**	**49.6**		
Instrument:	**HRP750**	**Analysis Date:**	**09/25/2019 03:31**	**Dilution:**	**1**
Analyst:	**MJC**	**Prep Batch ID:**	**41759**		
		Batch ID:	**41761**		

CAS No.		Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits
51207-31-9	MS	2,3,7,8-TCDF	19.9	BJ	23.9	116	70-130

Hi-Res Dioxins/Furans

Quality Control Summary
Spike Recovery Report

SDG Number:	**2006-00115_4**	**Sample Type:**	**Matrix Spike Duplicate**
Client ID:	**J5-SC1b-20to30-82719(15471001MSD)**	**Matrix:**	**SOIL**
Lab Sample ID:	**12024814**	**%Moisture:**	**49.6**
Instrument:	**HRP750**	**Analysis Date:**	**09/25/2019 03:53**
Analyst:	**MJC**	**Prep Batch ID:**	**41759**
		Batch ID:	**41761**

Dilution: 1

CAS No.		Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
51207-31-9	MSD	2,3,7,8-TCDF	20.0	BJ	21.1	101	70-130	12.1	0-20

Hi-Res Dioxins/Furans

Quality Control Summary
Spike Recovery Report

SDG Number: 2006-00115_4
Client ID: J5-SC1b-20to30-82719(15471001MS)
Lab Sample ID: 12024813
Instrument: HRP763
Analyst: MLS

Sample Type: Matrix Spike
Matrix: SOIL
%Moisture: 49.6
Analysis Date: 09/23/2019 23:46
Prep Batch ID: 41759
Batch ID: 41761

Dilution: 1

CAS No.		Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	MS	2,3,7,8-TCDD	19.9	JK	19.3	95.1	70-130
40321-76-4	MS	1,2,3,7,8-PeCDD	99.4	BJ	106	106	70-130
39227-28-6	MS	1,2,3,4,7,8-HxCDD	99.4	BJ	108	108	70-130
57653-85-7	MS	1,2,3,6,7,8-HxCDD	99.4		133	129	70-130
19408-74-3	MS	1,2,3,7,8,9-HxCDD	99.4	J	127	125	70-130
35822-46-9	MS	1,2,3,4,6,7,8-HpCDD	99.4		1240	1110 *	70-130
3268-87-9	MS	1,2,3,4,6,7,8,9-OCDD	199		9710	3880 *	70-130
51207-31-9	MS	2,3,7,8-TCDF	19.9	B	26.6	129	70-130
57117-41-6	MS	1,2,3,7,8-PeCDF	99.4	BJ	113	113	70-130
57117-31-4	MS	2,3,4,7,8-PeCDF	99.4	J	117	116	70-130
70648-26-9	MS	1,2,3,4,7,8-HxCDF	99.4	J	123	121	70-130
57117-44-9	MS	1,2,3,6,7,8-HxCDF	99.4	J	127	124	70-130
60851-34-5	MS	2,3,4,6,7,8-HxCDF	99.4	J	123	121	70-130
72918-21-9	MS	1,2,3,7,8,9-HxCDF	99.4	BJ	108	108	70-130
67562-39-4	MS	1,2,3,4,6,7,8-HpCDF	99.4		291	254 *	70-130
55673-89-7	MS	1,2,3,4,7,8,9-HpCDF	99.4	J	123	121	70-130
39001-02-0	MS	1,2,3,4,6,7,8,9-OCDF	199		833	357 *	70-130

Hi-Res Dioxins/Furans

Quality Control Summary
Spike Recovery Report

SDG Number: 2006-00115_4
Sample Type: Matrix Spike Duplicate
Client ID: J5-SC1b-20to30-82719(15471001MSD)
Matrix: SOIL
Lab Sample ID: 12024814
%Moisture: 49.6
Instrument: HRP763
Analysis Date: 09/24/2019 00:35
Dilution: 1
Analyst: MLS
Prep Batch ID: 41759
Batch ID: 41761

CAS No.		Parmname	Amount Added pg/g		Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	MSD	2,3,7,8-TCDD	20.0	JK	18.8	92.1	70-130	2.65	0-20
40321-76-4	MSD	1,2,3,7,8-PeCDD	100	BJ	102	101	70-130	3.63	0-20
39227-28-6	MSD	1,2,3,4,7,8-HxCDD	100	BJ	104	103	70-130	3.80	0-20
57653-85-7	MSD	1,2,3,6,7,8-HxCDD	100		108	103	70-130	20.9 *	0-20
19408-74-3	MSD	1,2,3,7,8,9-HxCDD	100	J	112	109	70-130	12.8	0-20
35822-46-9	MSD	1,2,3,4,6,7,8-HpCDD	100		235	97.2	70-130	136 *	0-20
3268-87-9	MSD	1,2,3,4,6,7,8,9-OCDD	200		1860	-68.1 *	70-130	136 *	0-20
51207-31-9	MSD	2,3,7,8-TCDF	20.0	B	22.5	107	70-130	17.0	0-20
57117-41-6	MSD	1,2,3,7,8-PeCDF	100	BJ	111	110	70-130	1.81	0-20
57117-31-4	MSD	2,3,4,7,8-PeCDF	100	J	113	111	70-130	3.57	0-20
70648-26-9	MSD	1,2,3,4,7,8-HxCDF	100	J	114	111	70-130	7.50	0-20
57117-44-9	MSD	1,2,3,6,7,8-HxCDF	100	J	113	110	70-130	11.2	0-20
60851-34-5	MSD	2,3,4,6,7,8-HxCDF	100	J	116	114	70-130	5.30	0-20
72918-21-9	MSD	1,2,3,7,8,9-HxCDF	100	BJ	113	112	70-130	4.51	0-20
67562-39-4	MSD	1,2,3,4,6,7,8-HpCDF	100		145	107	70-130	66.7 *	0-20
55673-89-7	MSD	1,2,3,4,7,8,9-HpCDF	100	J	115	112	70-130	6.50	0-20
39001-02-0	MSD	1,2,3,4,6,7,8,9-OCDF	200		319	98.1	70-130	89.2 *	0-20

Method Blank Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Matrix:**	**WATER**
Client ID:	**MB for batch 41724**	**Instrument ID:**	**HRP750**	**Data File:**	**A18SEP19D-4**
Lab Sample ID:	**12024769**	**Prep Date:**	**12-SEP-19**	**Analyzed:**	**09/18/19 19:29**
Column:					

This method blank applies to the following samples and quality control samples:

	Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01	LCS for batch 41724	12024770	A18SEP19D-2	09/18/19	1752
02	LCSD for batch 41724	12024771	A18SEP19D-3	09/18/19	1840
03	711-82719	15471017	A18SEP19D-9	09/18/19	2333
04	712-82819	15471018	A18SEP19D-10	09/19/19	0022

Method Blank Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Matrix:**	**SOIL**
Client ID:	**MB for batch 41759**	**Instrument ID:**	**HRP763**	**Data File:**	**b23sep19a_2-3**
Lab Sample ID:	**12024810**	**Prep Date:**	**17-SEP-19**	**Analyzed:**	**09/23/19 22:10**
Column:					

This method blank applies to the following samples and quality control samples:

	Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01	LCS for batch 41759	12024811	b23sep19a_2-1	09/23/19	2033
02	LCSD for batch 41759	12024812	b23sep19a_2-2	09/23/19	2121
03	J5-SC1b-20to30-82719	15471001	b23sep19a_2-4	09/23/19	2258
04	J5-SC1b-20to30-82719(15471001MS)	12024813	b23sep19a_2-5	09/23/19	2346
05	J5-SC1b-20to30-82719(15471001MSD)	12024814	b23sep19a_2-6	09/24/19	0035
06	J5-SC1b-30to40-82719	15471002	b23sep19a_2-7	09/24/19	0123
07	J5-SC1b-40to50-82719	15471003	b23sep19a_2-8	09/24/19	0212
08	J5-SC1b-50to60-82719	15471004	b23sep19a_2-9	09/24/19	0300
09	J5-SC1b-60to70-82719	15471005	b23sep19a_2-10	09/24/19	0349
10	J5-SC1b-70to80-82719	15471006	b23sep19a_2-11	09/24/19	0437
11	J5-SC1b-80to90-82719	15471007	b23sep19a_2-12	09/24/19	0525
12	J5-SC1b-90to100-82719	15471008	b23sep19a_2-13	09/24/19	0614
13	J5-SC1b-20to30-82719	15471001	A24SEP19A_3-5	09/25/19	0308
14	J5-SC1b-20to30-82719(15471001MS)	12024813	A24SEP19A_3-6	09/25/19	0331
15	J5-SC1b-20to30-82719(15471001MSD)	12024814	A24SEP19A_3-7	09/25/19	0353
16	J5-SC1b-50to60-82719	15471004	A24SEP19A_3-9	09/25/19	0438
17	J5-SC1b-100to110-82719	15471009	b26sep19a_4-10	09/27/19	1940
18	L3-SC1b-20to30-82619	15471012	b26sep19a_4-11	09/27/19	2028
19	L3-SC1b-30to40-82619	15471013	b26sep19a_4-12	09/27/19	2116
20	SRM Lot# ER10091501	15471016	b26sep19a_4-13	09/27/19	2205
21	SRM Lot# ER10091501	15471016	b30sep19a_2-9	09/30/19	1841

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**12024769**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 41724**				
Client ID:	**MB for batch 41724**			**Prep Basis:**	**As Received**
Batch ID:	**41726**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/18/2019 19:29**	**Analyst:**	**MJC**	**Instrument:**	**HRP750**
Data File:	**A18SEP19D-4**			**Dilution:**	**1**
Prep Batch:	**41724**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**12-SEP-19**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.734	pg/L	0.734	10.0
40321-76-4	1,2,3,7,8-PeCDD	U	0.962	pg/L	0.962	50.0
39227-28-6	1,2,3,4,7,8-HxCDD	U	1.27	pg/L	1.27	50.0
57653-85-7	1,2,3,6,7,8-HxCDD	U	1.2	pg/L	1.20	50.0
19408-74-3	1,2,3,7,8,9-HxCDD	U	1.26	pg/L	1.26	50.0
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	1.72	pg/L	1.72	50.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD	JK	2.26	pg/L	1.90	100
51207-31-9	2,3,7,8-TCDF	U	0.858	pg/L	0.858	10.0
57117-41-6	1,2,3,7,8-PeCDF	U	0.942	pg/L	0.942	50.0
57117-31-4	2,3,4,7,8-PeCDF	U	0.878	pg/L	0.878	50.0
70648-26-9	1,2,3,4,7,8-HxCDF	U	1.14	pg/L	1.14	50.0
57117-44-9	1,2,3,6,7,8-HxCDF	U	1.26	pg/L	1.26	50.0
60851-34-5	2,3,4,6,7,8-HxCDF	U	1.24	pg/L	1.24	50.0
72918-21-9	1,2,3,7,8,9-HxCDF	U	1.57	pg/L	1.57	50.0
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	1.41	pg/L	1.41	50.0
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	2.08	pg/L	2.08	50.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	2.44	pg/L	2.44	100
41903-57-5	Total TeCDD	U	0.734	pg/L	0.734	10.0
36088-22-9	Total PeCDD	U	0.962	pg/L	0.962	50.0
34465-46-8	Total HxCDD	U	1.2	pg/L	1.20	50.0
37871-00-4	Total HpCDD	U	1.72	pg/L	1.72	50.0
30402-14-3	Total TeCDF	U	0.858	pg/L	0.858	10.0
30402-15-4	Total PeCDF	U	0.658	pg/L	0.658	50.0
55684-94-1	Total HxCDF	U	1.14	pg/L	1.14	50.0
38998-75-3	Total HpCDF	U	1.41	pg/L	1.41	50.0
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.000678	pg/L		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		1.51	pg/L		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1670	2000	pg/L	83.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		1710	2000	pg/L	85.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		1650	2000	pg/L	82.6	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		1670	2000	pg/L	83.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		1650	2000	pg/L	82.5	(23%-140%)
13C-OCDD		2440	4000	pg/L	61.0	(17%-157%)
13C-2,3,7,8-TCDF		1790	2000	pg/L	89.3	(24%-169%)
13C-1,2,3,7,8-PeCDF		1810	2000	pg/L	90.5	(24%-185%)
13C-2,3,4,7,8-PeCDF		1750	2000	pg/L	87.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		1640	2000	pg/L	82.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		1580	2000	pg/L	78.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		1630	2000	pg/L	81.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		1700	2000	pg/L	85.2	(29%-147%)

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**12024769**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 41724**				
Client ID:	**MB for batch 41724**			**Prep Basis:**	**As Received**
Batch ID:	**41726**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/18/2019 19:29**	**Analyst:**	**MJC**	**Instrument:**	**HRP750**
Data File:	**A18SEP19D-4**			**Dilution:**	**1**
Prep Batch:	**41724**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**12-SEP-19**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		1460	2000	pg/L	73.1	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		1490	2000	pg/L	74.7	(26%-138%)
37Cl-2,3,7,8-TCDD		188	200	pg/L	94.0	(35%-197%)

Comments:

J **Value is estimated**

K **Estimated Maximum Possible Concentration**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**12024770**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 41724**				
Client ID:	**LCS for batch 41724**			**Prep Basis:**	**As Received**
Batch ID:	**41726**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/18/2019 17:52**	**Analyst:**	**MJC**	**Instrument:**	**HRP750**
Data File:	**A18SEP19D-2**			**Dilution:**	**1**
Prep Batch:	**41724**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**12-SEP-19**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		202	pg/L	0.802	10.0
40321-76-4	1,2,3,7,8-PeCDD		1110	pg/L	2.42	50.0
39227-28-6	1,2,3,4,7,8-HxCDD		1060	pg/L	4.30	50.0
57653-85-7	1,2,3,6,7,8-HxCDD		1050	pg/L	4.20	50.0
19408-74-3	1,2,3,7,8,9-HxCDD		1090	pg/L	4.32	50.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		963	pg/L	7.22	50.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		2060	pg/L	10.9	100
51207-31-9	2,3,7,8-TCDF		194	pg/L	0.986	10.0
57117-41-6	1,2,3,7,8-PeCDF		1020	pg/L	2.78	50.0
57117-31-4	2,3,4,7,8-PeCDF		1000	pg/L	2.52	50.0
70648-26-9	1,2,3,4,7,8-HxCDF		1060	pg/L	5.44	50.0
57117-44-9	1,2,3,6,7,8-HxCDF		1110	pg/L	5.62	50.0
60851-34-5	2,3,4,6,7,8-HxCDF		1070	pg/L	5.30	50.0
72918-21-9	1,2,3,7,8,9-HxCDF		1060	pg/L	7.66	50.0
67562-39-4	1,2,3,4,6,7,8-HpCDF		1090	pg/L	6.88	50.0
55673-89-7	1,2,3,4,7,8,9-HpCDF		1060	pg/L	8.98	50.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF		2020	pg/L	8.38	100

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1760	2000	pg/L	88.2	(20%-175%)
13C-1,2,3,7,8-PeCDD		1800	2000	pg/L	90.2	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		1740	2000	pg/L	87.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		1710	2000	pg/L	85.5	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		1830	2000	pg/L	91.4	(22%-166%)
13C-OCDD		2840	4000	pg/L	71.0	(13%-199%)
13C-2,3,7,8-TCDF		1810	2000	pg/L	90.4	(22%-152%)
13C-1,2,3,7,8-PeCDF		1880	2000	pg/L	94.2	(21%-192%)
13C-2,3,4,7,8-PeCDF		1880	2000	pg/L	94.1	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		1690	2000	pg/L	84.3	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		1620	2000	pg/L	80.9	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		1670	2000	pg/L	83.4	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		1740	2000	pg/L	87.1	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		1560	2000	pg/L	78.2	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		1670	2000	pg/L	83.3	(20%-186%)
37Cl-2,3,7,8-TCDD		193	200	pg/L	96.5	(31%-191%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**12024771**			**Matrix:**	**WATER**
Client Sample:	**QC for batch 41724**				
Client ID:	**LCSD for batch 41724**			**Prep Basis:**	**As Received**
Batch ID:	**41726**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/18/2019 18:40**	**Analyst:**	**MJC**	**Instrument:**	**HRP750**
Data File:	**A18SEP19D-3**			**Dilution:**	**1**
Prep Batch:	**41724**	**Prep Method:**	**SW846 3520C**		
Prep Date:	**12-SEP-19**	**Prep Aliquot:**	**1000 mL**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		197	pg/L	0.760	10.0
40321-76-4	1,2,3,7,8-PeCDD		1080	pg/L	2.22	50.0
39227-28-6	1,2,3,4,7,8-HxCDD		1060	pg/L	3.84	50.0
57653-85-7	1,2,3,6,7,8-HxCDD		1050	pg/L	3.74	50.0
19408-74-3	1,2,3,7,8,9-HxCDD		1110	pg/L	3.84	50.0
35822-46-9	1,2,3,4,6,7,8-HpCDD		961	pg/L	7.96	50.0
3268-87-9	1,2,3,4,6,7,8,9-OCDD		2010	pg/L	7.82	100
51207-31-9	2,3,7,8-TCDF		186	pg/L	1.01	10.0
57117-41-6	1,2,3,7,8-PeCDF		988	pg/L	2.42	50.0
57117-31-4	2,3,4,7,8-PeCDF		1010	pg/L	2.16	50.0
70648-26-9	1,2,3,4,7,8-HxCDF		1040	pg/L	4.74	50.0
57117-44-9	1,2,3,6,7,8-HxCDF		1040	pg/L	4.86	50.0
60851-34-5	2,3,4,6,7,8-HxCDF		1040	pg/L	4.94	50.0
72918-21-9	1,2,3,7,8,9-HxCDF		1020	pg/L	6.48	50.0
67562-39-4	1,2,3,4,6,7,8-HpCDF		1060	pg/L	7.40	50.0
55673-89-7	1,2,3,4,7,8,9-HpCDF		1050	pg/L	10.7	50.0
39001-02-0	1,2,3,4,6,7,8,9-OCDF		1980	pg/L	6.60	100

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		1650	2000	pg/L	82.3	(20%-175%)
13C-1,2,3,7,8-PeCDD		1640	2000	pg/L	82.1	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		1600	2000	pg/L	80.0	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		1580	2000	pg/L	78.8	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		1620	2000	pg/L	81.2	(22%-166%)
13C-OCDD		2530	4000	pg/L	63.3	(13%-199%)
13C-2,3,7,8-TCDF		1710	2000	pg/L	85.3	(22%-152%)
13C-1,2,3,7,8-PeCDF		1720	2000	pg/L	85.8	(21%-192%)
13C-2,3,4,7,8-PeCDF		1700	2000	pg/L	85.2	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		1570	2000	pg/L	78.6	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		1530	2000	pg/L	76.3	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		1560	2000	pg/L	78.1	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		1620	2000	pg/L	80.9	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		1440	2000	pg/L	71.9	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		1430	2000	pg/L	71.7	(20%-186%)
37Cl-2,3,7,8-TCDD		189	200	pg/L	94.4	(31%-191%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**12024810**			**Matrix:**	**SOIL**
Client Sample:	**QC for batch 41759**				
Client ID:	**MB for batch 41759**			**Prep Basis:**	**As Received**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/23/2019 22:10**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-3**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**10 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.0462	pg/g	0.0462	1.00
40321-76-4	1,2,3,7,8-PeCDD	J	0.100	pg/g	0.050	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	JK	0.102	pg/g	0.0852	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	JK	0.098	pg/g	0.083	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.124	pg/g	0.0856	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	J	0.228	pg/g	0.117	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.620	pg/g	0.248	10.0
51207-31-9	2,3,7,8-TCDF	JK	0.198	pg/g	0.069	1.00
57117-41-6	1,2,3,7,8-PeCDF	JK	0.124	pg/g	0.0558	5.00
57117-31-4	2,3,4,7,8-PeCDF	JK	0.104	pg/g	0.0494	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.160	pg/g	0.0452	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	J	0.110	pg/g	0.045	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.118	pg/g	0.0502	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	J	0.222	pg/g	0.0774	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	0.186	pg/g	0.072	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	0.180	pg/g	0.122	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	JK	0.296	pg/g	0.228	10.0
41903-57-5	Total TeCDD	J	0.122	pg/g	0.0462	1.00
36088-22-9	Total PeCDD	JK	0.256	pg/g	0.050	5.00
34465-46-8	Total HxCDD	JK	0.554	pg/g	0.083	5.00
37871-00-4	Total HpCDD	J	0.228	pg/g	0.117	5.00
30402-14-3	Total TeCDF	JK	0.438	pg/g	0.069	1.00
30402-15-4	Total PeCDF	JK	0.294	pg/g	0.038	5.00
55684-94-1	Total HxCDF	J	0.610	pg/g	0.045	5.00
38998-75-3	Total HpCDF	J	0.366	pg/g	0.072	5.00
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.254	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.277	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		149	200	pg/g	74.6	(25%-164%)
13C-1,2,3,7,8-PeCDD		135	200	pg/g	67.4	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		140	200	pg/g	70.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		151	200	pg/g	75.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		152	200	pg/g	75.9	(23%-140%)
13C-OCDD		225	400	pg/g	56.3	(17%-157%)
13C-2,3,7,8-TCDF		131	200	pg/g	65.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		132	200	pg/g	65.8	(24%-185%)
13C-2,3,4,7,8-PeCDF		124	200	pg/g	61.9	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		142	200	pg/g	71.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		141	200	pg/g	70.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		136	200	pg/g	67.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		134	200	pg/g	66.8	(29%-147%)

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**12024810**			**Matrix:**	**SOIL**
Client Sample:	**QC for batch 41759**				
Client ID:	**MB for batch 41759**			**Prep Basis:**	**As Received**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/23/2019 22:10**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-3**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**10 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF		138	200	pg/g	68.8	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		135	200	pg/g	67.4	(26%-138%)
37Cl-2,3,7,8-TCDD		17.1	20.0	pg/g	85.4	(35%-197%)

Comments:

J **Value is estimated**

K **Estimated Maximum Possible Concentration**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**12024811**			**Matrix:**	**SOIL**
Client Sample:	**QC for batch 41759**				
Client ID:	**LCS for batch 41759**			**Prep Basis:**	**As Received**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/23/2019 20:33**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-1**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**10 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		17.9	pg/g	0.0472	1.00
40321-76-4	1,2,3,7,8-PeCDD		101	pg/g	0.117	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		97.9	pg/g	0.248	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		104	pg/g	0.234	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		107	pg/g	0.246	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		103	pg/g	0.364	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		203	pg/g	0.844	10.0
51207-31-9	2,3,7,8-TCDF		21.9	pg/g	0.0762	1.00
57117-41-6	1,2,3,7,8-PeCDF		108	pg/g	0.175	5.00
57117-31-4	2,3,4,7,8-PeCDF		110	pg/g	0.164	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		107	pg/g	0.244	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		114	pg/g	0.240	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		112	pg/g	0.264	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		110	pg/g	0.426	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		117	pg/g	0.288	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		113	pg/g	0.504	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		206	pg/g	0.568	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		146	200	pg/g	72.8	(20%-175%)
13C-1,2,3,7,8-PeCDD		129	200	pg/g	64.3	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		144	200	pg/g	72.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		142	200	pg/g	71.2	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		149	200	pg/g	74.3	(22%-166%)
13C-OCDD		214	400	pg/g	53.6	(13%-199%)
13C-2,3,7,8-TCDF		129	200	pg/g	64.7	(22%-152%)
13C-1,2,3,7,8-PeCDF		126	200	pg/g	63.2	(21%-192%)
13C-2,3,4,7,8-PeCDF		121	200	pg/g	60.4	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		138	200	pg/g	68.8	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		140	200	pg/g	70.0	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		132	200	pg/g	66.2	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		133	200	pg/g	66.6	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		136	200	pg/g	68.0	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		133	200	pg/g	66.7	(20%-186%)
37Cl-2,3,7,8-TCDD		16.5	20.0	pg/g	82.4	(31%-191%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**12024812**			**Matrix:**	**SOIL**
Client Sample:	**QC for batch 41759**				
Client ID:	**LCSD for batch 41759**			**Prep Basis:**	**As Received**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/23/2019 21:21**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-2**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**10 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		17.8	pg/g	0.0542	1.00
40321-76-4	1,2,3,7,8-PeCDD		98.7	pg/g	0.116	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		95.4	pg/g	0.224	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		102	pg/g	0.216	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		106	pg/g	0.224	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		101	pg/g	0.380	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		192	pg/g	1.15	10.0
51207-31-9	2,3,7,8-TCDF		21.3	pg/g	0.103	1.00
57117-41-6	1,2,3,7,8-PeCDF		105	pg/g	0.136	5.00
57117-31-4	2,3,4,7,8-PeCDF		107	pg/g	0.124	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		104	pg/g	0.218	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		110	pg/g	0.212	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		111	pg/g	0.244	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		108	pg/g	0.376	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		112	pg/g	0.322	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		108	pg/g	0.574	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		199	pg/g	0.678	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		147	200	pg/g	73.4	(20%-175%)
13C-1,2,3,7,8-PeCDD		138	200	pg/g	69.2	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		150	200	pg/g	75.1	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		147	200	pg/g	73.4	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		155	200	pg/g	77.4	(22%-166%)
13C-OCDD		231	400	pg/g	57.8	(13%-199%)
13C-2,3,7,8-TCDF		134	200	pg/g	66.9	(22%-152%)
13C-1,2,3,7,8-PeCDF		134	200	pg/g	67.0	(21%-192%)
13C-2,3,4,7,8-PeCDF		129	200	pg/g	64.4	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		144	200	pg/g	71.8	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		146	200	pg/g	73.1	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		138	200	pg/g	68.9	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		140	200	pg/g	70.1	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		146	200	pg/g	72.8	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		144	200	pg/g	71.8	(20%-186%)
37Cl-2,3,7,8-TCDD		17.3	20.0	pg/g	86.3	(31%-191%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**12024813**	**Date Collected:**	**08/27/2019 14:55**	**Matrix:**	**SOIL**
Client Sample:	**QC for batch 41759**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**49.6**
Client ID:	**J5-SC1b-20to30-82719(15471001MS)**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/25/2019 03:31**	**Analyst:**	**MJC**	**Instrument:**	**HRP750**
Data File:	**A24SEP19A_3-6**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**19.95 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		23.9	pg/g	0.382	0.994

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

E **Value is estimated - Concentration of the target analyte exceeds the instrument calibration range**

U **Analyte was analyzed for, but not detected above the specified detection limit.**

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**12024813**	**Date Collected:**	**08/27/2019 14:55**	**Matrix:**	**SOIL**
Client Sample:	**QC for batch 41759**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**49.6**
Client ID:	**J5-SC1b-20to30-82719(15471001MS)**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/23/2019 23:46**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-5**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**19.95 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		19.3	pg/g	0.099	0.994
40321-76-4	1,2,3,7,8-PeCDD		106	pg/g	0.310	4.97
39227-28-6	1,2,3,4,7,8-HxCDD		108	pg/g	0.527	4.97
57653-85-7	1,2,3,6,7,8-HxCDD		133	pg/g	0.539	4.97
19408-74-3	1,2,3,7,8,9-HxCDD		127	pg/g	0.547	4.97
35822-46-9	1,2,3,4,6,7,8-HpCDD		1240	pg/g	1.48	4.97
3268-87-9	1,2,3,4,6,7,8,9-OCDD	E	9710	pg/g	2.39	9.94
51207-31-9	2,3,7,8-TCDF		26.6	pg/g	0.179	0.994
57117-41-6	1,2,3,7,8-PeCDF		113	pg/g	0.213	4.97
57117-31-4	2,3,4,7,8-PeCDF		117	pg/g	0.190	4.97
70648-26-9	1,2,3,4,7,8-HxCDF		123	pg/g	0.411	4.97
57117-44-9	1,2,3,6,7,8-HxCDF		127	pg/g	0.423	4.97
60851-34-5	2,3,4,6,7,8-HxCDF		123	pg/g	0.421	4.97
72918-21-9	1,2,3,7,8,9-HxCDF		108	pg/g	0.539	4.97
67562-39-4	1,2,3,4,6,7,8-HpCDF		291	pg/g	0.616	4.97
55673-89-7	1,2,3,4,7,8,9-HpCDF		123	pg/g	0.841	4.97
39001-02-0	1,2,3,4,6,7,8,9-OCDF		833	pg/g	0.815	9.94

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		143	199	pg/g	72.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		121	199	pg/g	60.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		174	199	pg/g	87.7	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		142	199	pg/g	71.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		197	199	pg/g	98.9	(23%-140%)
13C-OCDD		387	398	pg/g	97.3	(17%-157%)
13C-2,3,7,8-TCDF		143	199	pg/g	72.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		119	199	pg/g	60.0	(24%-185%)
13C-2,3,4,7,8-PeCDF		118	199	pg/g	59.2	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		166	199	pg/g	83.7	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		138	199	pg/g	69.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		149	199	pg/g	74.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		123	199	pg/g	61.7	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		168	199	pg/g	84.4	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		199	199	pg/g	100	(26%-138%)
37Cl-2,3,7,8-TCDD		15.4	19.9	pg/g	77.5	(35%-197%)

Comments:

E Value is estimated - Concentration of the target analyte exceeds the instrument calibration range

U Analyte was analyzed for, but not detected above the specified detection limit.

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**12024814**	**Date Collected:**	**08/27/2019 14:55**	**Matrix:**	**SOIL**
Client Sample:	**QC for batch 41759**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**49.6**
Client ID:	**J5-SC1b-20to30-82719(15471001MSD**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/25/2019 03:53**	**Analyst:**	**MJC**	**Instrument:**	**HRP750**
Data File:	**A24SEP19A_3-7**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**19.83 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
51207-31-9	2,3,7,8-TCDF		21.1	pg/g	0.356	1.00

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.

Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary

SDG Number:	**2006-00115_4**	**Client:**	**PGWG001**	**Project:**	**PGWG00119**
Lab Sample ID:	**12024814**	**Date Collected:**	**08/27/2019 14:55**	**Matrix:**	**SOIL**
Client Sample:	**QC for batch 41759**	**Date Received:**	**08/30/2019 09:55**	**%Moisture:**	**49.6**
Client ID:	**J5-SC1b-20to30-82719(15471001MSD**			**Prep Basis:**	**Dry Weight**
Batch ID:	**41761**	**Method:**	**EPA Method 1613B**		
Run Date:	**09/24/2019 00:35**	**Analyst:**	**MLS**	**Instrument:**	**HRP763**
Data File:	**b23sep19a_2-6**			**Dilution:**	**1**
Prep Batch:	**41759**	**Prep Method:**	**SW846 3540C**		
Prep Date:	**17-SEP-19**	**Prep Aliquot:**	**19.83 g**		

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		18.8	pg/g	0.065	1.00
40321-76-4	1,2,3,7,8-PeCDD		102	pg/g	0.165	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		104	pg/g	0.244	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		108	pg/g	0.226	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		112	pg/g	0.238	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		235	pg/g	0.692	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		1860	pg/g	1.20	10.0
51207-31-9	2,3,7,8-TCDF		22.5	pg/g	0.116	1.00
57117-41-6	1,2,3,7,8-PeCDF		111	pg/g	0.159	5.00
57117-31-4	2,3,4,7,8-PeCDF		113	pg/g	0.140	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		114	pg/g	0.236	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		113	pg/g	0.222	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		116	pg/g	0.252	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		113	pg/g	0.338	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		145	pg/g	0.352	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		115	pg/g	0.516	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		319	pg/g	0.486	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		147	200	pg/g	73.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		133	200	pg/g	66.7	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		166	200	pg/g	83.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		154	200	pg/g	77.1	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		186	200	pg/g	93.1	(23%-140%)
13C-OCDD		328	400	pg/g	81.9	(17%-157%)
13C-2,3,7,8-TCDF		146	200	pg/g	73.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		124	200	pg/g	62.1	(24%-185%)
13C-2,3,4,7,8-PeCDF		125	200	pg/g	62.4	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		159	200	pg/g	79.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		148	200	pg/g	73.8	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		148	200	pg/g	73.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		147	200	pg/g	73.5	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		166	200	pg/g	83.2	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		181	200	pg/g	90.7	(26%-138%)
37Cl-2,3,7,8-TCDD		16.5	20.0	pg/g	82.6	(35%-197%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.