# Infrastructure Interim Action Report for East Bay Redevelopment Site

PREPARED FOR:



PORT OF OLYMPIA 915 WASHINGTON STREET NE OLYMPIA, WA 98501

PREPARED BY:



2612 Yelm Hwy SE, Suite B Olympia, WA 98501-4826 Phone: 360.570.1700 Fax: 360.570.1777 www.uspioneer.com

**JUNE 2010** 

APPENDIX G

SOIL STOCKPILE ANALYTICAL REPORTS AND DATA QUALITY REVIEW

DRAGC Analytical Labora	)N tory	->	RCRA CHAIN O       USTODY RECORD         2818 Madrona Beach Ru: NW, Olympia, WA 98502         Phone: (360) 866-0543         Fax: (360) 866-0556         Email: DragonLab@comcast.net         Website: dragonlaboratory.com         Phone: <u>70-1000</u> Project Name: <u>844</u>																Samples Collected By: Contact Number:															
Client: <u>Pr</u>	161	m H		P	hone	e:5 <u>7</u>	70.	.1-	rol	,		P P	rojec	t Na	me:	64	51	IS.A	7	Z	1	510	K.K.	P	rojec	ct P.O	0.:_	1.	10	- 4	505	~	2	
014	Liny	1 98 E RI	501	E	imail	l: <u>b</u>	5/~	eng to	200	ip in	504.0	~ P	rojec	t Nu	mbe	r:								D	OAL	Proje	ect N	lo.: _						
Matrix Code:WW = wastewaterGW =SL = sludgeV = value	groun	dwater S O	= soil or so = other	olid							3PA 8081)			(MIS022			(EM)		9050)		eries)	1	13	GPA 900)	PA 900)		/	F		E		5		
Sample Identification	Materix       uoistight         Sample Matrix       uoistight         Sample Matrix       pate Sampled         Date Sampled       pate Sampled         MuberBrEx (EPA 8021b)       pate Sampled         MuberBrEx (EPA 8021b)       pissel (NWTPH-Dx)         Dissel (NWTPH-Dx)       pissel (NWTPH-Dx)         Process (EPA 8021b)       pissel (NWTPH-Dx)         Preseid (NWTPH-Dx)       pissel (PPA 8021b)         Preseid (NWTPH-Dx)       pissel (PPA 8021b)         Preseid (NWTPH-Dx)       pissel (PPA 8021b)         Preseid (NWTPH-Dx)       pissel (PPA 9040/9045)         Preseid (NWTPH-Dx)       pissel (PPA 9040/9045)         Preseid (PPA 9040/9045)       pint (EPA 9040/9045)         Phi (EPA 9040/9045)       pint Filter Test (EPA 1000)         Phi (EPA 9040/9045)       pint Filter Test (EPA 300)         Prurral Attenuation Indicicator																4																	
501-2014 N. 1. 06178	15	6/200	130	2 402 3 encons	X	MM Ga Fu VC VC VC VC VC VC VC VC VC VC VC VC VC																1		the second										
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																															1			
Relinquished by (Signature)       Date/Time       Received by (Signature)       Date/Time       Turn-Around-Time       *Heavy Metals:       Please circle the desired analytes.         Relinquished by (Signature)       Date/Time       Date/Time       Bate/Time       *Heavy Metals:       Please circle the desired analytes.         Relinquished by (Signature)       Date/Time       Date/Time       Bate/Time       Ag Al As Ba Be Cd Cr Cr-VI Co Cu Fe Hg Li Mg Mn Mo Ni Pb Sb Se Tl V Zn - Total         Ag Al As Ba Be Cd Cr Cr-VI Co Cu Fe Hg Li Mg Mn Mo Ni Pb Sb Se Tl V Zn - Dissolved       Bate/Time       Other:       Ag Al As Ba Be Cd Cr Cr-VI Co Cu Fe Hg Li Mg Mn Mo Ni Pb Sb Se Tl V Zn - Dissolved         Sample Disposal Instructions:       DAL Disposal @ \$2.50 per Container       Return       Pickup       Other:       Ag Al As Ba Be Cd Cr Cr-VI Co Cu Fe Hg Li Mg Mn Mo Ni Pb Sb Se Tl V Zn - TCLP										ed																								

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#### Pioneer Technologies Corporation Project: East Bay IA Stockpile

#### DAL Project No.: 090612-01

Sample Identification	Date Analyzed	Percent Solids (%)	Benzene EPA 8021B (mg/kg)	Toluene EPA 8021B (mg/kg)	Ethylbenzene EPA 8021B (mg/kg)	m&p-Xylene EPA 8021B (mg/kg)	o-Xylene EPA 8021B (mg/kg)	Gasoline NWTPH-Gx (mg/kg)	Surrogate Recovery BFB (%)	Data Flags
Method Blank	6/16/2009	n/a	nd	nd	nd	nd	nd	nd	97.7	
SP01-Zone n/a-061209	6/16/2009	87.4	nd	nd	nd	nd	nd	nd	113	
SP01-Zone n/a-061209 Dup.	6/16/2009	87.4	nd	nd	nd	nd	nd	nd	120	
LCS	6/16/2009	n/a	108%	122%	120%	98.9%	10.5%	94.9%	n/a	
090616-MS	6/16/2009	n/a	104%	101%	95.3%	110%	96.8%	108%	n/a	
Method Reporting Limits			0.05	0.10	0.10	0.10	0.10	5.0		

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF GASOLINE RANGE ORGANICS IN SOIL

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

## DAL Project No.: 090612-01

### ANALYTICAL RESULTS FOR THE ANALYSIS OF HEAVY METALS IN SOIL BY EPA METHOD 6020 A

Sample Identification	Date Analyzed	Percent Solids	Arsenic (As)	Cadmium (Cd)	Lead (Pb)
Chemical Abstract Number (CAS)			7440-38-2	7440-43-9	7439-92-1
Units		(%)	(mg/kg)	(mg/kg)	(mg/kg)
Method Blank	6/16/2009	n/a	nd	nd	nd
SP01-Zone n/a-061209	6/16/2009	87.4	12.7	0.43	19.3
SP01-Zone n/a-061209 Dup.	6/16/2009	87.4	11.6	0.54	17.8
LCS	6/16/2009	n/a	105%	102%	104%
090616-MS	6/16/2009	n/a	MI	99.2%	MI
090616-MSD	6/16/2009	n/a	MI	97.9%	MI
Method Reporting Limits			0.25	0.25	0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference

Sample results based on dry weight.

#### Pioneer Technologies Corporation Project: East Bay IA Stockpile

#### DAL Project No.: 090612-01

Sample Identification	Date Analyzed	Percent Solids (%)	Diesel Fuel #2 NWTPH-Dx (mg/kg)	Fuel Oil #6 (Buncker C) NWTPH-Dx (mg/kg)	Mineral Oil NWTPH-Dx (mg/kg)	Hydraulic Oil NWTPH-Dx (mg/kg)	Motor Oil NWTPH-Dx (mg/kg)	Surrogate Recovery 2-FBP (%)	Data Flags
Method Blank	6/12/2009	n/a	nd	nd	nd	nd	nd	101	
SP01-Zone n/a-061209	6/12/2009	87.4	nd	nd	nd	nd	324	102	
LCS	6/12/2009	n/a	105%	n/a	n/a	n/a	n/a	n/a	
090612-MS	6/12/2009	n/a	119%	n/a	n/a	n/a	n/a	n/a	
090612-MSD	6/12/2009	n/a	113%	n/a	n/a	n/a	n/a	n/a	
Method Reporting Limits			25	100	100	100	100		

### ANALYTICAL RESULTS FOR THE ANALYSIS OF FUEL IN SOIL

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

#### Pioneer Technologies Corporation Project: East Bay IA Stockpile DAL Project No.: 090612-01

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF SEMI-VOLATILE COMPOUNDS IN SOIL BY EPA METHOD 8270

Sample Identification			Blank	SP01-Zone n/a-061209	LCS	090618-MS	090618-MSD
Percent Solids (%)			n/a	87.4	n/a	n/a	n/a
Date Extracted	CAS	MRL	6/15/2009	6/15/2009	6/15/2009	6/15/2009	6/15/2009
Date Anlayzed	Number	(mg/kg)	6/18/2009	6/18/2009	6/18/2009	6/18/2009	6/18/2009
Acenaphthene	83-32-9	0.01	nd	nd	65.5%	71.1%	70.8%
Acenaphthylene	208-96-8	0.01	nd	nd	n/a	n/a	n/a
Anthracene	120-12-7	0.01	nd	0.03	n/a	n/a	n/a
Benzo(a)anthracene	56-55-3	0.01	nd	0.11	96.7%	101%	102%
Benzo(a)pyrene	50-32-8	0.01	nd	0.18	n/a	n/a	n/a
Benzo(b)fluoranthene	205-99-2	0.01	nd	0.07	n/a	n/a	n/a
Benzo(g,h,i)perylene	191-24-2	0.01	nd	0.10	n/a	n/a	n/a
Benzo(k)fluoranthene	207-08-9	0.01	nd	0.06	n/a	n/a	n/a
Chrysene	218-01-9	0.01	nd	0.15	102%	103%	104%
Dibenzo(a,h)anthracene	53-70-3	0.01	nd	nd	n/a	n/a	n/a
Fluoranthene	206-44-0	0.01	nd	0.27	n/a	n/a	n/a
Fluorene	86-73-7	0.01	nd	nd	n/a	n/a	n/a
Ideno(1,2,3-cd)pyrene	193-39-5	0.01	nd	0.28	73.3%	72.0%	75.9%
Naphthalene	91-20-3	0.01	nd	nd	n/a	n/a	n/a
Phenanthrene	85-01-8	0.01	nd	0.25	n/a	n/a	n/a
Pyrene	129-00-0	0.01	nd	0.23	98.1%	99.9%	101%
Surrogate Recovery (%)			_				
2-Fluorophenol			97.3	84.3	120	102	102
Phenol-d6			105	91.0	123	124	93.7
Nitrobenzene-d5			84	61.4	92.1	109	109
2-Fluorobiphenol			101	60.2	73.7	85.5	86.1
2,4,6-Tribromophenol			112	102	122	71.2	130
Terphenyl-d14			110	62.1	94.5	110	111
Data Flags							

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Acceptable surrogate recovery limits: 65% to 135%

Comments and Explanations: None

Analyst: T. McCall

Data reviewed by:

Anatek Labs, Inc. 1282 Alturas Driv 504 E Sprague Ste	Chain of Custody Record ve, Moscow ID 83843 (208) 883-2839 FAX 882-9246 O D, Spokane WA 99202 (509) 838-3999 FAX 838-4433 O	Anatek Log-In# 1097187
Company Name: PTC Address: 2612 Youn Huny So SVITE B City: DY Phone: 360 370 - 1700 Fax: Provide Sample Description	Project Manager: TROY VSUSSEY Project Name & #: CAST BAY EA STOCKPILES Email Address : SUSSEY C US PLONEY. COM Purchase Order #: CROBIT CARD Sampler Name & phone: SAME List Analyses Requested Preservative:	Turn Around Time & Reporting         Please refer to our normal turn around times at         http://www.anateklabs.com/services/guidelines/reporting.asp        Normal       *All rush order      Phone        Normal       *All rush order      Phone        Next Day*       requests must be      Mail         2nd Day*       requests must be      Fax         2nd Day*       prior approved.      Fax         YMY      Note Special Instructions/Comments
Lab ID       Sample Identification       Sampling Date/Time       Matrix         SPDI-2005 MA - 06209_06/12/05 1530       S01L         Interview       Interview       Interview         Interv	+ of Containers	Ster Ster Plevious         Ster Plevious         Ster Plevious         Inspection Checklist         Received Intact?       N         Labels & Chains Agree?       N         Containers Sealed?       N         VOC Head Space?       N
Printed Name     Signature       Relinquished by     TROT BUSSEY     Full       Received by     AILK/KUITLS     Full       Relinquished by     Received by     Full       Received by     Received by     Full	Company Date Time Um 972 Gli209 1430 The Gli209 0955	Temperature (°C): <u>5.0</u> Preservative Date & Time: Inspected By:

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•1



www.pacelabs.com

## **Report Prepared for:**

Troy Bussey Pioneer Technologies Corporation 2612 Yelm Highway S.E. Suite B Olympia WA 98501-4826

# REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

**Report Prepared Date:** June 19, 2009

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

### **Report Information:**

Pace Project #: 1097187 Sample Receipt Date: 06/13/2009 Client Project #: East Bay IA Stockpiles Client Sub PO #: N/A State Cert #: C218

#### **Invoicing & Reporting Options:**

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

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

This report has been reviewed and prepared by:

Ent C. Hunge

Scott Unze, Project Manager (612) 607-6383 (612) 607-6444 (fax) scott.unze@pacelabs.com



### **Report of Laboratory Analysis**

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.



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

## **DISCUSSION**

This report presents the results from the analyses performed on one sample submitted by a representative of Pioneer Technologies Corporation. The sample was analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. Reporting limits were based on signal-to-noise calculations.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extract ranged from 44-91%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In one case, an interfering substance impacted the determination of a PCDD congener. The affected value was flagged "I" due to an incorrect isotope ratio.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show that PCDDs and PCDFs were not detected. These results indicate that the sample processing steps did not contribute significantly to the levels reported for the field sample.

A laboratory spike sample was also prepared with the sample batch using clean sand that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 90-109%. These results indicate a high degree of accuracy for these determinations. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

# **REPORT OF LABORATORY ANALYSIS**

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# Appendix A

Sample Management

B <sup>arr</sup>	MSEMplexConch	lion Upon Recei	DIE	н Н
Pace Analytical Client N	ame: Anatek	labs we	_ Project #	109718
Courier: Z Fed Ex UPS USPS	Client Commerc	ial 🗌 Pace Other		
Tracking #: 2667-24/19389	·		Rioj	nai 2ue Date:
Costony Seal on Cooler/Box Present:	lyes 🛛 no Se	eals intact: 🗌 yes	Z no	Vame
Packing Material: Bubble Wrap	ubble Bags 🗌 None	Other	, Temp Blank: Ye	s No
hermometer Used 00344042, 179425	Type of Ice:	Blue None	Samples on ice, co	oling process has begu
Cooler Temperature 5.0 Temp should be above freezing to 6°C	Biological Tiss	ue is Frozen: Yes No Comments:	Date and Initia contents:	Is of person examinin 0113/0
Chain of Custody Present:	VYes INO IN	VA 1.		
Chain of Custody Filled Out:	Yes DNO DN	/A 2.	стан алан жана стан байраган ун ау урад так аууна так аууна байрайн арагтаг.	an a
Chain of Custody Relinquished:	AYES DNO DN/	A 3.		*******
Sampler Name & Signature on COC:		A 4.		
Samples Arrived within Hold Time:		4 5.		<u> </u>
Short Hold Time Analysis (<72hr):		6.		
Rush Turn Around Time Requested:	□Yes ANO □N/A	7.		
Sufficient Volume:	Yes INO IN/A	8,	in which the and the and the according to the activity of the activity of the activity of the activity of the a	ماد و میرون در این از مان این میرون این این میرون این میرون این این میرون این این میرون این میرون این میرون ای این میرون این میرون ای
Correct Containers Used:	ØYes □No □N/A	9.	₩,-₩,₽₩₩₩,₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩	Ĩ.)
-Pace Containers Used:				
Containers Intact:	Yes DNO DNA	10.	▆▆▙▙▟▆▖ <u>ᠧ</u> ᡡ᠘᠘▖ᡧ᠅ᡔᢋᡳᠧᡦᡡ᠘ᡚ᠅ᡇ᠆ᠧᠴᢄ᠘᠘ᡡᠾ᠆᠆ᠵᡘ᠄ᢓᡷᡧᡇᠶᡣ᠘ᡘᡔᡡ	999-1-1-4-1
Filtered volume received for Dissolved tests	□Yes □No □MA	11.	مەرىك مەرىكە تەرىپەر تەرىپەر تەرىپەر ئەلىكە ئەرىپەر ئەرىكە ئەلىكە تەرىپەر تەرىكە كەلىكە تەرىپەر تەرىپەر تەرىپەر	
Sample Labels match COC:	. Yes DNO DNA	12.	0)	والمراجع وا
-Includes date/time/ID/Analysis Matrix:	5		•	
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	DYes DNO DNA	13.	, and a subject of the second state	والمراجع
All containers needing preservation are found to be in compliance with EPA recommendation.				
xceptions: VOA,Coliform, TOC, Oll and Grease, WI-DRO (water)		nitial when ompleted	Lot # of added	
amples checked for dechlorination:	DYes DNO DN/A 11	4		
eadspace in VOA Vials ( >6mm):	DYes DNO DNA 15	5.		an far an am that the far and the second state of the second state of the second state of the second state of t
ip Blank Present:	DYes DNo ZINA 16	3		
ip Blank Custody Seals Present	DYes DNO DNA			
ace Trip Blank Lot # (if purchased):				
ient Notification/ Resolution:				
Person Contacted:	Date/Time	e:	neid Data Required?	Y / N
Comments/ Resolution:				
			······	······································
roject Manager Review:	0	· · · · · · · · · · · · · · · · · · ·		

F-ALLC003rev.5 5Aug2008

# Appendix B

Sample Analysis Summary



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

## Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP0 1097 F906 BPG 12.3 10.6 11.0 F905 F906 BLA	1-ZONEN/A 7187001 518A_11 5 9 9 501 518A_01 & NK-20238	-061209 F90618A_15	Matrix Dilution Collected Received Extracted Analyzed	Soil NA 06/12/2009 06/13/2009 06/15/2009 06/18/2009	9 9 9 9 19:06	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.40 2.20		0.24 J 0.24	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C		2.00 2.00 2.00	77 85 70
2,3,7,8-TCDD Total TCDD	ND ND		0.30 0.30	2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C 12C	2.00 2.00 2.00	82 91
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND 0.68 6.60		0.38 0.34 J 0.36	1,2,3,4,7,0-HXCDF- 1,2,3,6,7,8-HXCDF- 2,3,4,6,7,8-HXCDF- 1,2,3,7,8,9-HXCDF- 1,2,3,4,7,8,9-HXCDF-	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	55 71 78 80 88
1,2,3,7,8-PeCDD Total PeCDD	ND 0.50		0.32 0.32 J	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD	-13C F-13C F-13C	2.00 2.00 2.00	77 69 64
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	ND ND ND	 	0.64 0.49 0.66	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 2.00 4.00	73 44
1,2,3,7,8,9-HxCDF Total HxCDF	ND 4.60		0.52 0.58	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND 1.60 ND 2.70	  	0.48 0.81 J 0.74 0.68 J	2,3,7,8-TCDD-37Ck	4	0.20	83
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	9.20 ND 9.20	 	0.59 0.72 0.66	Total 2,3,7,8-TCDE Equivalence: 1.7 no (Using 2005 WHO	) g/Kg Factors - Us	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	52.00 100.00		1.10 1.10				
OCDF OCDD	19.00 760.00		0.67 0.86				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers). EMPC = Estimated Maximum Possible Concentration ND = Not Detected NA = Not Applicable

NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

RL = Reporting Limit.

# **REPORT OF LABORATORY ANALYSIS**

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Report No.....1097187\_8290



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

## Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-20238	Matrix	Solid
Filename	F90619A_02	Dilution	NA
Total Amount Extracted	10.1 g	Extracted	06/15/2009
ICAL ID	F90501	Analyzed	06/19/2009 09:36
CCal Filename(s)	F90618B_12 & F90619A_06	Injected By	SMT

Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND ND		0.150 0.150	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDE-13C	2.00 2.00 2.00	69 79 77
2,3,7,8-TCDD Total TCDD	ND ND		0.170 0.170	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	81 88 77
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND	 	0.086 0.061 0.074	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	69 73 76
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.130 0.130	1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,7,8,9-HpCDF-13C	2.00 2.00 2.00 2.00	81 76 71 68
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	ND ND ND	 	0.094 0.087 0.088	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 4.00	75 49
1,2,3,7,8,9-HxCDF Total HxCDF	ND ND		0.120 0.097	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND	  	0.150 0.160 0.170 0.160	2,3,7,8-TCDD-37Cl4	0.20	79
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND	 	0.120 0.150 0.140	Total 2,3,7,8-TCDD Equivalence: 0.21 ng/Kg (Using 2005 WHO Factors -	Using PRL/	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND ND		0.180 0.180			
OCDF OCDD	ND	0.53	0.380 0.440 l			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures. I = Interference present

# **REPORT OF LABORATORY ANALYSIS**

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Report No.....1097187\_8290



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

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

# Method 8290 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS F90 10.6 F90 F90 BLA	-20239 618A_02 5 g 501 618A_01 & NK-20238	F90618A_15	Matrix Dilution Extracted Analyzed Injected By	Solid NA 06/15/2009 06/18/2009 11: BPG	57
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.20	100	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	2.00 2.00	74 84 79
2,3,7,8-TCDD Total TCDD	0.20	0.18	91	1,2,3,7,8-PeCDF-13C 2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	78 82 93
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.00 1.00	1.00 0.96	100 96	1,2,3,4,7,8-HxCDF-13C 1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	77 70 76 79
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.90	90	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	80 77 76
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	0.95 0.98 0.98	95 98 98	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	86 67
1,2,3,7,8,9-HxCDF Total HxCDF	1.00	0.96	96	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	0.96 0.99 0.99	96 99 99	2,3,7,8-TCDD-37Cl4	0.20	82
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.00 1.00	1.02 1.00	102 100			
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	0.93	93			
OCDF OCDD	2.00 2.00	1.99 2.18	100 109			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

P = Recovery outside of target range

X = Background subtracted value

Y = RF averaging used in calculations

Nn = Value obtained from additional analysis

NA = Not Applicable

\* = See Discussion

# **REPORT OF LABORATORY ANALYSIS**

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Report No.....1097187\_8290

DRAGON Analytical Laboratory       RCRA CHAIN O       USTODY RECORD 2818 Madrona Beach Re. NW, Olympia, WA 98502 Phone: (360) 866-0543       Fax: (360) 866-0556 Email: DragonLab@comcast.net Website: dragonlaboratory.com         Client:       Phone:       Phone:       Project Name:       Project Name:         Address:       Fax:       Project Location:       Co         Email:       Email:       Project Number:       DA															oject P.O.:																		
Address: <u>76-2</u>	.A.	wA WA Arva	58.2 11 Fm	<u>Sviit (F</u> E	ax: mail	. <u>5</u> v	syen Re	16	V59/1	1100	.a.	P	rojec	t Loo	mber	n: :						_	D	AL F	Proje	rson: ct No	 ).:						
Matrix Code: $WW =$ wastewater $GW =$ $SL =$ sludge $V =$ vap	ground por	dwater S O	= soil or so = other	lid					(		(EPA 8081)			(8270SIM)	-		HEM)	A 9050)	5)	Series)	1	tors	(EPA 900)	EPA 900)			- 1	5	Ce	. 11	5.	× 4	
Sample Matrix         Bate Sample Matrix         Date Sample Matrix         Date Sampled         Date Sampled         Date Sampled         Disect (NWTPH-Gx)         MtBE/BTEX (EPA 8021b)         MtBE/BTEX (EPA 8021b)         Disect & Oil (NWTPH-Dx)         Disect (NWTPH-Gx)         Disect (NWTPH-Gx)         Disect & Oil (NWTPH-LDx)         Disect (EPA 8021b)         Organochlorine Pesticides (EP         Organochlorine Pesticides (EP         Disect (NWTPH-Dx)         Disect (NWTPH-Dx)         Disect (EPA 8021b)         Organochlorine Pesticides (EP         Organochlorine Pesticides (EP         PAH's (EPA 8020)         PAH's (EPA 8020)         PAH's (EPA 8020)         PAH's (EPA 8020)         PAH's (EPA 8000 or 8270/82)         POI and Grease (EPA 8020)         PAH's (EPA 9040/9045)																																	
Image: Section of the section of th																																	
Relinquished by (Signature) Relinquished by (Signature) Sample Disposal Instructions:	Relinquished by (Signature)       Date/Time       Turn-Around-Time         Relinquished by (Signature)       Date/Time       Turn-Around-Time         Same Day       Same Day         Ag Al As Ba Be Cd Cr Cr-VI Co Cu Fe Hg Li Mg Mn Mo Ni Pb Sb Se Tl V Zn - Total         Ag Al As Ba Be Cd Cr Cr-VI Co Cu Fe Hg Li Mg Mn Mo Ni Pb Sb Se Tl V Zn - Dissolved         I Date/Time       Date/Time         Sample Disposal Instructions:       DAt Disposal @ \$2.50 per Container																																

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#### Pioneer Technologies Corporation Project: East Bay IA Stockpile

#### DAL Number: 090615-03

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF FUEL IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Diesel Fuel #2 NWTPH-Dx (mg/kg)	Heavy Oil NWTPH-Dx (mg/kg)	Surrogate Recovery 2-FBP (%)	Data Flags
Method Blank	6/19/2009	n/a	nd	nd	85.2	
SP02-Zone 2-061509	6/19/2009	90.2	nd	nd	73.2	
LCS	6/19/2009	n/a	109%	n/a	n/a	
090619-MS	6/19/2009	n/a	105%	n/a	n/a	
090619-MSD	6/19/2009	n/a	108%	n/a	n/a	
Method Reporting Limits			25	100		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

#### Pioneer Technologies Corporation Project: East Bay IA Stockpile

#### DAL Number: 090615-03

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF GASOLINE RANGE ORGANICS IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Benzene EPA 8021B (mg/kg)	Toluene EPA 8021B (mg/kg)	Ethylbenzene EPA 8021B (mg/kg)	m&p-Xylene EPA 8021B (mg/kg)	o-Xylene EPA 8021B (mg/kg)	Gasoline NWTPH-Gx (mg/kg)	Surrogate Recovery BFB (%)	Data Flags
Method Blank	6/17/2009	n/a	nd	nd	nd	nd	nd	nd	97.7	
SP02-Zone 2-061509	6/17/2009	90.9	nd	nd	nd	nd	nd	nd	90.4	
LCS	6/17/2009	n/a	108%	122%	120%	98.9%	105%	94.9%	n/a	
090617-MS	6/17/2009	n/a	104%	101%	95.3%	105%	96.8%	108%	n/a	
Method Reporting Limits			0.05	0.10	0.10	0.10	0.10	5.0		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

#### DAL Number: 090615-03

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF HEAVY METALS IN SOIL BY EPA METHOD 6020 A

Sample Identification	Date Analyzed	Percent Solids	Arsenic (As)	Cadmium (Cd)	Lead (Pb)
Chemical Abstract Number (CAS)			7440-38-2	7440-43-9	7439-92-1
Units		(%)	(mg/kg)	(mg/kg)	(mg/kg)
Method Blank	6/18/2009	n/a	nd	nd	nd
SP02-Zone 2-061509	6/18/2009	90.9	3.8	1.33	14.8
LCS	6/18/2009	n/a	105%	102%	104%
090616-MS	6/18/2009	n/a	MI	99.2%	MI
090616-MSD	6/18/2009	n/a	MI	97.9%	MI
Method Reporting Limits			0.25	0.25	0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference

Sample results based on dry weight.

#### DAL Number: 090615-03

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF SEMI-VOLATILE COMPOUNDS IN SOIL BY EPA METHOD 8270

Sample Identification			Blank	SP02-Zone 2-061509	LCS	090618-MS	090618-MSD
Percent Solids (%)			n/a	90.2	n/a	n/a	n/a
Date Extracted	CAS	MRL	6/15/2009	6/15/2009	6/15/2009	6/15/2009	6/15/2009
Date Anlayzed	Number	(mg/kg)	6/18/2009	6/18/2009	6/18/2009	6/18/2009	SP03-Zone 2-061609
Benzo(a)anthracene	56-55-3	0.01	nd	0.04	96.7%	101%	102%
Benzo(a)pyrene	50-32-8	0.01	nd	0.15	n/a	n/a	n/a
Benzo(b)fluoranthene	205-99-2	0.01	nd	nd	n/a	n/a	n/a
Benzo(k)fluoranthene	207-08-9	0.01	nd	0.04	n/a	n/a	n/a
Chrysene	218-01-9	0.01	nd	0.05	102%	103%	104%
Dibenzo(a,h)anthracene	53-70-3	0.01	nd	0.10	n/a	n/a	n/a
Ideno(1,2,3-cd)pyrene	193-39-5	0.01	nd	0.26	73.3%	72.0%	75.9%
1-Methylnaphthalene	90-12-0	0.01	nd	nd	n/a	n/a	n/a
2-Methylnaphthalene	91-57-6	0.01	nd	nd	n/a	n/a	n/a
Naphthalene	91-20-3	0.01	nd	nd	n/a	n/a	n/a
Surrogate Recovery (%)			_				
2-Fluorophenol			96.8	108	120	102	102
Phenol-d6			107	79	123	124	93.7
Nitrobenzene-d5			85.5	111	92.1	109	109
2-Fluorobiphenol			103	116	73.7	85.5	86.1
2,4,6-Tribromophenol			111	128	122	71.2	130
Terphenyl-d14			118	119	94.5	110	111
Data Flags							

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

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Sample Identification	e Matrix	ampled	Sampled	ner Type	EX (EPA 8021b)	(NWTPH-Gx)	WTPH-Dx)	Oil (NWTPH-Dx)	(NWTPH-HCID)	PA 8021b)	larine Pesticides (F	PA 8082)	(EPA 8260)	PA 8100 or 8270/8	atiles (EPA 8270)	y (EPA 1010)	rease (EPA 1664 H	9040/9045)	onductance (EPA 9	r Test (BPA 9095)	tals* (EPA 7000 S	Jases (EPA 3C)	ttenuation Indicator	ha Radioactivity (È	a Radioactivity (EP	w/Fulla						-		
	Sampl	Date S	Time 5	Contai	M(BE/B1	Gasoline	Diesel (N	Diesel &	Fuel Scan	VOC's (F	Organoch	PCB's (B	Volatiles	PAH's (E	Semi-Vol	Ignitabilit	Oil and G	pH (EPA	Specific C	Paint Filte	Heavy Me	Biogenic (	Natural At	Gross Alp	Gross Bet	DIWC(		_	~					
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Sample Disposal Instructions:	۵	DAL Disposa	1 @ \$2.50 per C	Container	🗆 Reti	urn 	🗆 Pick	цр			□ Othe				Ag	g Al .	As B	a Be	Cd (	Cr Cr	VI C	Co Cu	. Fe	Hg L	i Mg	, Mn	Mo 1	Ni Pb	Sb S	Se Tl	V Zı	1 - T	CLP	



www.pacelabs.com

## **Report Prepared for:**

Troy Bussey Pioneer Technologies Corporation 2612 Yelm Highway S.E. Suite B Olympia WA 98501-4826

# REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

# **Report Prepared Date:**

June 22, 2009

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

## **Report Information:**

Pace Project #: 1097304 Sample Receipt Date: 06/16/2009 Client Project #: East Bay IA Stockpile Client Sub PO #: N/A State Cert #: C218

### **Invoicing & Reporting Options:**

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

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

This report has been reviewed and prepared by:

Ent C. Munge

Scott Unze, Project Manager (612) 607-6383 (612) 607-6444 (fax) scott.unze@pacelabs.com



## **Report of Laboratory Analysis**

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.



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

## **DISCUSSION**

This report presents the results from the analyses performed on one sample submitted by a representative of Pioneer Technologies Corporation. The sample was analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. Reporting limits were based on signal-to-noise calculations. The sample was received outside of the recommended temperature range of 0-6 degrees Celsius.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extract ranged from 47-123%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain trace levels of selected congeners. These were below the calibration range of the method. The levels reported for the affected congeners in the field sample were higher than the corresponding blank levels by one or more orders of magnitude. These results indicate that the sample processing steps did not contribute significantly to the levels reported for the field sample.

Laboratory and matrix spike samples were also prepared with the sample batch using clean sand or sample matrix that had been fortified with native standard materials. The results show that the spiked native compounds were generally recovered at 88-130%, with relative percent differences of 0.1-7.6%. These results indicate generally high degrees of accuracy and precision for these determinations. Somewhat variable background-subtracted values were obtained for HpCDD, OCDF, and OCDD in the matrix spike samples, due to the levels of these compounds in the sample material.

# **REPORT OF LABORATORY ANALYSIS**

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# Appendix A

Sample Management

	Sample Gondition Upon Re	<b>Gelpia</b>
Pace Analytical Client Na	me: Pare-WA	Project # 1697304
Courier: $\Box$ Fed Ex $\Box$ UPS $\Box$ USPS $\Box$ Tracking #: <u>7917</u> <u>3091</u> <u>5</u> 46 (	Client Commercial Pace O	ther
Custody Seal on Cooler/Box Present	yes 🗹 no Seals intact: 🔲	yes 🔲 no 🛛 🔭 Name
Packing Material: 📋 Bubble Wrap 🔤 🗗	bble Bags 🔲 None 🛄 Other	Temp Blank: Yes No
Thermometer Used 80344042 (179425)	Type of ice: Wet Blue None	
Cooler Temperature 6-2 Temp should be above freezing to 6°C	Biological Tissue is Frozen: Yes Comments:	No     Date and Initials of person examining     contents:
Chain of Custody Present:	Elyes DNO DINA 1.	
Chain of Custody Filled Out:	ZYes DNO DN/A 2.	
Chain of Custody Relinquished:	QYes []No []N/A 3.	
Sampler Name & Signature on COC:		***************************************
Samples Arrived within Hold Time:	Ves INO IN/A 5.	
Short Hold Time Analysis (<72hr):	□Yes INO □N/A 6.	
Rush Turn Around Time Requested:	TYes DNO DNA 7.	
Sufficient Volume:	ZYes DNO DN/A 8.	
Correct Containers Used:	QYes DNO DN/A 9.	***************************************
-Pace Containers Used:		
Containers Intact:	AYes DNO DN/A 10.	1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 199
Filtered volume received for Dissolved tests	DYes DNO DNA 11.	
Sample Labels match COC:	Tres DNo DN/A 12.	
-Includes date/time/ID/Analysis Matrix:	SL	
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	DYes Cho DN/A 13.	
All containers needing preservation are found to be in compliance with EPA recommendation.		
Exceptions: VOA,Coliform, TOC, Oil and Grease, WI-DRO (water)	Dyes DNo Initial when completed	Lot # of added preservative
Samples checked for dechlorination:	DYes ONO DN/A 14.	
Headspace in VOA Vials ( >6mm):	□Yes 100, □N/A 15.	
Trip Blank Present:	DYes DNo DN/A 16.	
Trip Blank Custody Seals Present	Dyes DNO DN/A	
Pace Trip Blank Lot # (if purchased):		
Client Notification/ Resolution: Person Contacted: Kevm (pho Comments/ Resolution:	<b>ne)</b> Date/Time: 06/16/0	Field Data Required? Y / N
Wained temp	reg.	
Project Manager Review:	(A)	Date: 06/16/09

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

# Appendix B

Sample Analysis Summary



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

## Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP0 1097 F900 AE 12.6 13.1 11.0 F905 F900 BLA	2-ZONE2-06 7304001 519A_17 9 9 501 519A_06 & NK-20346	61509 F90619A_19	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 06/15/2009 06/16/2009 06/17/2009 06/19/2009	9 9 9 9 22:53	
Native Isomers	<b>Conc</b> ng/Kg	EMPC ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	2.8 53.0		0.82 0.82	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1 2 3 7 8-PeCDE-1	30	2.00 2.00 2.00	79 83 112
2,3,7,8-TCDD Total TCDD	ND 71.0		1.20 1.20	2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C -13C	2.00 2.00 2.00	114 123 77 V
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	2.7 7.7 86.0	 	0.86 J 0.34 0.60	1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,7,8,9-HxCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	77 77 71 Y 82 72
1,2,3,7,8-PeCDD Total PeCDD	4.9 88.0		0.54 0.54	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD 1,2,3,4,6,7,8-HpCD	-13C 0F-13C	2.00 2.00 2.00	89 62 57
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	9.2 6.4 8.8	 	0.69 0.65 0.65	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 4.00	56 47 Y
1,2,3,7,8,9-HxCDF Total HxCDF	2.9 100.0		0.82 J 0.70	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	4.9 16.0 9.9 190.0	  	0.93 0.88 1.00 0.94	2,3,7,8-TCDD-37Cl	4	0.20	90
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	120.0 10.0 290.0	 	1.60 1.80 1.70	Total 2,3,7,8-TCDI Equivalence: 21 ng (Using 2005 WHO	) /Kg Factors - Us	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	420.0 770.0		1.20 1.20				
OCDF OCDD	470.0 4000.0		2.20 2.70				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

ND = Not Detected NA = Not Applicable

NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

RL = Reporting Limit.

Y = Calculated using average of daily RFs

# **REPORT OF LABORATORY ANALYSIS**

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

## Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-20346	Matrix	Solid
Filename	F90621A_09	Dilution	NA
Total Amount Extracted	10.1 g	Extracted	06/17/2009
ICAL ID	F90501	Analyzed	06/21/2009 23:51
CCal Filename(s)	F90621A_02 & F90621A_11	Injected By	BAL

Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.28 0.49		0.110 J 0.110 J	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDF-13C	2.00 2.00 2.00	82 81 88
2,3,7,8-TCDD Total TCDD	ND ND		0.150 0.150	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDF-13C	2.00 2.00 2.00	96 101 92
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND	 	0.084 0.069 0.077	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00	78 86 92
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.110 0.110	1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00 2.00	88 79 80 88
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	ND ND ND	 	0.092 0.092 0.100	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	84 86
1,2,3,7,8,9-HxCDF Total HxCDF	ND ND		0.098 0.096	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND	  	0.110 0.110 0.140 0.120	2,3,7,8-TCDD-37Cl4	0.20	87
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND	 	0.190 0.220 0.200	Total 2,3,7,8-TCDD Equivalence: 0.21 ng/Kg (Using 2005 WHO Factors -	Using PRL/	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND ND		0.120 0.120			
OCDF OCDD	ND 0.78		0.180 0.200 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

# **REPORT OF LABORATORY ANALYSIS**

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

# Method 8290 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS-2 F9062 10.3 g F9050 F9062 BLAN	20347 21A_03 1 21A_02 & 1 K-20346	F90621A_11	Matrix Dilution Extracted Analyzed Injected By	Solid NA 06/17/2009 06/21/2009 19: BAL	06
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.21	105	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	2.00 2.00	78 76
2,3,7,8-TCDD Total TCDD	0.20	0.20	101	1,2,3,7,8-PeCDF-13C 2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	89 90
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.00 1.00	1.07 1.04	107 104	1,2,3,4,7,6-TXCDF-13C 1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	87 79 85 89
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.98	98	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	82 73 80
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	1.01 1.04 1.04	101 104 104	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	77 72
1,2,3,7,8,9-HxCDF Total HxCDF	1.00	1.03	103	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	1.03 1.00 1.05	103 100 105	2,3,7,8-TCDD-37Cl4	0.20	83
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.00 1.00	1.12 1.05	112 105			
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	0.99	99			
OCDF OCDD	2.00 2.00	2.48 2.14	124 107			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

P = Recovery outside of target range

X = Background subtracted value

Y = RF averaging used in calculations

Nn = Value obtained from additional analysis

NA = Not Applicable

\* = See Discussion

# **REPORT OF LABORATORY ANALYSIS**

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

## Method 8290 Spiked Sample Report

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	SP0 1097 F900 11.4 F909 F900 BLA	2-ZONE2-00 7304001-MS 521A_05 9 501 521A_02 & NK-20346	61509-MS 5 F90621A_11	Matrix Dilution Extracted Analyzed Injected By	Solid NA 06/17/2009 06/21/2009 BAL	9 9 20:40	
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.26	132	2,3,7,8-TCDF-1 2,3,7,8-TCDD-	13C 13C	2.00 2.00	84 82
2,3,7,8-TCDD	0.20	0.22	109	1,2,3,7,8-PeCE 2,3,4,7,8-PeCE 1,2,3,7,8-PeCE	0F-13C 0F-13C 0D-13C	2.00 2.00 2.00	86 93 96
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF	1.00 1.00	1.13 1.13	113 113	1,2,3,4,7,8-Hx( 1,2,3,6,7,8-Hx( 2,3,4,6,7,8-Hx( 1,2,3,7,8,9-Hx(	DF-13C DF-13C DF-13C DF-13C DF-13C	2.00 2.00 2.00 2.00	92 79 85 84
1,2,3,7,8-PeCDD	1.00	1.03	103	1,2,3,4,7,8-HX 1,2,3,6,7,8-HX 1,2,3,4,6,7,8-H 1,2,3,4,6,7,8-H	DD-13C DD-13C pCDF-13C	2.00 2.00 2.00 2.00	91 75 74 74
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	0.99 1.10 1.16	99 110 116	1,2,3,4,6,7,8-H OCDD-13C	pCDD-13C	2.00 4.00	74 60
1,2,3,7,8,9-HxCDF	1.00	1.08	108	1,2,3,4-TCDD- 1,2,3,7,8,9-Hx0	13C CDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	1.00 1.00 1.00	1.10 1.25 1.22	110 125 122	2,3,7,8-TCDD-	37Cl4	0.20	96
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF	1.00 1.00	2.49 1.17	249 117				
1,2,3,4,6,7,8-HpCDD	1.00	5.64	564				
OCDF OCDD	2.00 2.00	8.32 50.34	416 2517				

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

# **REPORT OF LABORATORY ANALYSIS**

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

## Method 8290 Spiked Sample Report

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	SP( 109 F9( 11. F9( F9( BL/	02-ZONE2-06 07304001-MS 0621A_06 7 g 0501 0621A_02 & ANK-20346	61509-MSD SD F90621A_11	Matrix Dilution Extracted Analyzed Injected By	Solid NA 06/17/2009 06/21/2009 BAL	9 9 21:27	
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.25	126	2,3,7,8-TCDF- 2,3,7,8-TCDD- 1,2,2,7,8 PoC	13C 13C	2.00 2.00	83 83 82
2,3,7,8-TCDD	0.20	0.23	113	2,3,4,7,8-PeCI 1,2,3,7,8-PeCI 1,2,3,7,8-PeCI	DF-13C DF-13C DD-13C	2.00 2.00 2.00	87 90
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF	1.00 1.00	1.13 1.09	113 109	1,2,3,4,7,8-1 X 1,2,3,6,7,8-Hx 2,3,4,6,7,8-Hx 1,2,3,7,8,9-Hx	CDF-13C CDF-13C CDF-13C CDF-13C	2.00 2.00 2.00 2.00	92 76 88 85 97
1,2,3,7,8-PeCDD	1.00	1.04	104	1,2,3,4,7,8-HX 1,2,3,6,7,8-HX 1,2,3,4,6,7,8-H 1,2,3,4,6,7,8-H	DD-13C DD-13C pCDF-13C	2.00 2.00 2.00 2.00	72 68 61
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	0.97 1.11 1.16	97 111 116	1,2,3,4,6,7,8-H OCDD-13C	pCDD-13C	2.00 4.00	63 53
1,2,3,7,8,9-HxCDF	1.00	1.09	109	1,2,3,4-TCDD- 1,2,3,7,8,9-Hx0	13C CDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	1.00 1.00 1.00	1.11 1.30 1.21	111 130 121	2,3,7,8-TCDD-	37Cl4	0.20	96
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF	1.00 1.00	2.47 1.18	247 118				
1,2,3,4,6,7,8-HpCDD	1.00	6.08	608				
OCDF OCDD	2.00 2.00	8.45 52.79	423 2639				

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

# **REPORT OF LABORATORY ANALYSIS**

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

## Method 8290 Spike Sample Results

Client - Pioneer Technologies Corporation

Client Sample ID	SP02-ZONE2-061509			Dry Weights	
Lab Sample ID	1097304001	Sample Filename	F90619A_17	Sample Amount	11.0 g
MS ID	1097304001-MS	MS Filename	F90621A_05	MS Ámount	9.9 g
MSD ID	1097304001-MSD	MSD Filename	F90621A_06	MSD Amount	10.2 g

	Sample Conc.	MS/MSD Qs	MS Qm	MSD Qm		Background Subtracted								
Analyte	ng/Kg	(ng)	(ng)	(ng)	RPD	MS % Rec.	MSD % Rec.	RPD						
2,3,7,8-TCDF	2.780	0.20	0.26	0.25	4.4	118	112	5.3						
2,3,7,8-TCDD	0.000	0.20	0.22	0.23	3.4	103	107	3.5						
1,2,3,7,8-PeCDF	2.660	1.00	1.13	1.13	0.4	110	111	0.3						
2,3,4,7,8-PeCDF	7.700	1.00	1.13	1.09	4.0	106	101	4.5						
1,2,3,7,8-PeCDD	4.860	1.00	1.03	1.04	1.1	98	99	1.0						
1,2,3,4,7,8-HxCDF	9.200	1.00	0.99	0.97	1.7	90	88	2.1						
1,2,3,6,7,8-HxCDF	6.420	1.00	1.10	1.11	1.0	103	104	0.9						
2,3,4,6,7,8-HxCDF	8.760	1.00	1.16	1.16	0.1	108	107	0.1						
1,2,3,7,8,9-HxCDF	2.860	1.00	1.08	1.09	0.2	106	106	0.1						
1,2,3,4,7,8-HxCDD	4.920	1.00	1.10	1.11	0.6	105	106	0.5						
1,2,3,6,7,8-HxCDD	15.800	1.00	1.25	1.30	4.1	109	114	4.4						
1,2,3,7,8,9-HxCDD	9.920	1.00	1.22	1.21	1.4	112	111	1.7						
1,2,3,4,6,7,8-HpCDF	120.000	1.00	2.49	2.47	0.8	130	125	3.8						
1,2,3,4,7,8,9-HpCDF	10.100	1.00	1.17	1.18	1.3	107	108	1.2						
1,2,3,4,6,7,8-HpCDD	424.000	1.00	5.64	6.08	7.6	143	178	21.8						
OCDF	472.000	2.00	8.32	8.45	1.6	182	183	0.7						
OCDD	4030.000	2.00	50.34	52.79	4.7	517	593	13.8						

#### Definitions

MS = Matrix Spike MSD = Matrix Spike Duplicate Qm = Quantity Measured Qs = Quantity Spiked % Rec. = Percent Recovery RPD = Relative Percent Difference NA = Not Applicable NC = Not Calculated CDD = Chlorinated dibenzo-p-dioxin

CDF = Chlorinated dibenzo-p-furan

T = Tetra

Pe = Penta

Hx = Hexa

Hp = Hepta

O = Octa

DRASO Analytical Laborate	N	- 2		5				<b>RC</b> 281	CRA 8 M Phon	CH adron e: (3 En	IAI na Bo 60) 8 nail:	N C each 366-0 Drag	PF Rd. 0543 gonL	NW F	STO , Oly Sax: (	DY mpia 360) cast.	<b>RE</b> a, W 866 net	CO A 98 -055	<b>RD</b> 8502	2					:	Sample	es Col at Nur	llected	1 By:3(	Pa K	R 57	)-	of	0
Client: <u>PTC</u> Address: <u>2162</u>	Yel	lin 1 NA	horys	P <u>&gt;E</u> sk <sub>F</sub> E	hone ax:	: <u>b</u>	30	no de p	5 O	70 cer	.0	P P P	rojec rojec rojec	et Na et Lo et Nu	ame: ocatio	n:	st E	ry	I	AS	Stox	ily:	<u>sile</u>	P C D	rojec onta OAL	ct P.( ct Pe Proje	D.: erson ect N	: <u> </u>	TO	9	Bo	55	y	
Matrix Code: $WW =$ wastewater $GW = g$ $SL =$ sludge $V =$ vap	ground	dwater S C	= soil or so = other	olid							CPA 8081)			270SIM)			EM)		9050)		eries)		S	3PA 900)	(006 V									
Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Container Type	MtBE/BTEX (EPA 8021b)	Gasoline (NWTPH-Gx)	Diesel (NWTPH-Dx)	Diesel & Oil (NWTPH-Dx)	Fuel Scan (NWTPH-HCID)	VOC's (EPA 8021b)	Organochlorine Pesticides (F	PCB's (EPA 8082)	Volatiles (EPA 8260)	PAH's (EPA 8100 or 8270/8	Semi-Volatiles (EPA 8270)	Ignitability (EPA 1010)	Oil and Grease (EPA 1664 H	pH (EPA 9040/9045)	Specific Conductance (EPA	Paint Filter Test (EPA 9095)	Heavy Metals* (EPA 7000 S	Biogenic Gases (EPA 3C)	Natural Attenuation Indicato	Gross Alpha Radioactivity (I	Gross Beta Radioactivity (El									
5803-20-02-041409	5	Cellerg	1600	2402 3 Prior	X	X		X				100		X							×													
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Relinquished by (Signature) Relinquished by (Signature) Sample Disposal Instructions:	Dat G	te/Time Ro Le/Time Ro DAL Disposal	ecceived by (Sign ecceived by (Sign @ \$2.50 per C	nature) nature)		Da	te/Time te/Time				Turn- 24 Ho 24 Ho 48 Ho 5 Day 10 Do	Arou Day our our y ay r:	nd-Ti	me	* <u>H</u> Ag Ag	Al (	Meta As Ba As Ba As Ba	a Be a Be a Be	lease Cd Cd C	circle Cr Cr Cr Cr Cr Cr	the d -VI C -VI C -VI C	esired Co Cu Co Cu Co Cu	analy Fe Fe Fe	ytes. Hg L Hg L Hg L	i Mg i Mg i Mg	Mn Mn Mn	Mo N Mo N Mo N	Ni Pb Ni Pb Ni Pb	Sb S Sb S Sb S	Se TI Se TI Se TI	V Zr V Zr V Zr	1 - To 1 - D a - To	otal issolv CLP	ed

A CONTRACTOR

#### Pioneer Technologies Corporation Project: East Bay IA Stockpile

#### DAL Number: 090616-08

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF FUEL IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Diesel Fuel #2 NWTPH-Dx (mg/kg)	Heavy Oil NWTPH-Dx (mg/kg)	Surrogate Recovery 2-FBP (%)	Data Flags
Method Blank	6/19/2009	n/a	nd	nd	85.2	
SP03-Zone 2-061609	6/19/2009	90.2	nd	nd	73.2	
LCS	6/19/2009	n/a	109%	n/a	n/a	
090619-MS	6/19/2009	n/a	105%	n/a	n/a	
090619-MSD	6/19/2009	n/a	108%	n/a	n/a	
Method Reporting Limits			25	100		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.
#### Pioneer Technologies Corporation Project: East Bay IA Stockpile

#### DAL Number: 090616-08

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF GASOLINE RANGE ORGANICS IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Benzene EPA 8021B (mg/kg)	Toluene EPA 8021B (mg/kg)	Ethylbenzene EPA 8021B (mg/kg)	m&p-Xylene EPA 8021B (mg/kg)	o-Xylene EPA 8021B (mg/kg)	Gasoline NWTPH-Gx (mg/kg)	Surrogate Recovery BFB (%)	Data Flags
Method Blank	6/17/2009	n/a	nd	nd	nd	nd	nd	nd	85.9	
SP03-Zone 2-061609	6/17/2009	90.2	nd	nd	nd	nd	nd	nd	94.7	
LCS	6/17/2009	n/a	108%	122%	120%	98.9%	105%	94.9%	n/a	
090617-MS	6/17/2009	n/a	104%	101%	95.3%	105%	96.8%	108%	n/a	
Method Reporting Limits			0.05	0.10	0.10	0.10	0.10	5.0		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

### DAL Number: 090616-08

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF HEAVY METALS IN SOIL BY EPA METHOD 6020 A

Sample Identification	Date Analyzed	Percent Solids	Arsenic (As)	Cadmium (Cd)	Lead (Pb)
Chemical Abstract Number (CAS)			7440-38-2	7440-43-9	7439-92-1
Units		(%)	(mg/kg)	(mg/kg)	(mg/kg)
Method Blank	6/18/2009	n/a	nd	nd	nd
SP03-Zone 2-061609	6/18/2009	90.2	2.42	0.40	12.5
LCS	6/18/2009	n/a	105%	102%	104%
090616-MS	6/18/2009	n/a	MI	99.2%	MI
090616-MSD	6/18/2009	n/a	MI	97.9%	MI
Method Reporting Limits			0.25	0.25	0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference

Sample results based on dry weight.

#### DAL Number: 090616-08

### ANALYTICAL RESULTS FOR THE ANALYSIS OF SEMI-VOLATILE COMPOUNDS IN SOIL BY EPA METHOD 8270

Sample Identification			Blank	SP03-Zone 2-061609	LCS	090618-MS	090618-MSD
Percent Solids (%)			n/a	90.2	n/a	n/a	n/a
Date Extracted	CAS	MRL	6/15/2009	6/15/2009	6/15/2009	6/15/2009	6/15/2009
Date Anlayzed	Number	(mg/kg)	6/18/2009	6/18/2009	6/18/2009	6/18/2009	6/18/2009
Benzo(a)anthracene	56-55-3	0.01	nd	0.04	96.7%	101%	102%
Benzo(a)pyrene	50-32-8	0.01	nd	nd	n/a	n/a	n/a
Benzo(b)fluoranthene	205-99-2	0.01	nd	nd	n/a	n/a	n/a
Benzo(k)fluoranthene	207-08-9	0.01	nd	nd	n/a	n/a	n/a
Chrysene	218-01-9	0.01	nd	0.04	102%	103%	104%
Dibenzo(a,h)anthracene	53-70-3	0.01	nd	nd	n/a	n/a	n/a
Ideno(1,2,3-cd)pyrene	193-39-5	0.01	nd	0.25	73.3%	72.0%	75.9%
1-Methylnaphthalene	90-12-0	0.01	nd	0.04	n/a	n/a	n/a
2-Methylnaphthalene	91-57-6	0.01	nd	0.03	n/a	n/a	n/a
Naphthalene	91-20-3	0.01	nd	0.08	n/a	n/a	n/a
Surrogate Recovery (%)							
2-Fluorophenol			96.8	102	120	102	102
Phenol-d6			107	112	123	124	93.7
Nitrobenzene-d5			85.5	93.8	92.1	109	109
2-Fluorobiphenol			103	94.9	73.7	85.5	86.1
2,4,6-Tribromophenol			111	127	122	71.2	130
Terphenyl-d14			118	97.8	94.5	110	111
Data Flags							

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Autority       Chain of Custody Record         1282 Attorna brice, Moscow DD 83843 (200) 883-2839 FAX 882-9246 (200)       Image: State Sprague Ste D, Spokane WA 99202 (500) 883-2839 FAX 882-9246 (200)         Company Name:       FTC       Froject Manage:       True Builds (200) 883-2839 FAX 882-9246 (200)         Company Name:       FTC       Froject Manage:       True Builds (200) 883-2839 FAX 882-9246 (200)         Company Name:       FTC       Froject Manage:       True Builds (200) 883-2839 FAX 882-9246 (200)         Company Name:       FTC       Froject Manage:       True Builds (200) 883-2839 FAX 882-9246 (200)         Company Name:       State Manage:       True Builds (200) 883-2839 FAX 882-9246 (200)       True Around Time & Reporting approximation of the state	LACE Analytical		1097507	
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Corr       Olymp In       State Ind Agenesis       Phone	Address: 2612 Yelm Hirty SF Ste B	Project Name & #: Fost Bay IA Stock Dila	http://www.anateklabs.com/services/guidelines/reporting.asp	
Phone:     Direction     Purchase Applies ()     Corport     Direction       Fax:     Sample stands of the corport     Corport     TAP       Fax:     Sample stands of the corport     TAP       Provide Sample Description     List Analyses Requested     Note Special Instructions/Coroments       Image: Sample description     List Analyses Requested     Note Special Instructions/Coroments       Image: Sample description     List Analyses Requested     Note Special Instructions/Coroments       Image: Sample description     List Analyses Requested     Note Special Instructions/Coroments       Image: Sample description     List Analyses Requested     Note Special Instructions/Coroments       Image: Sample description     List Analyses Requested     Note Special Instructions/Coroments       Image: Sample description     List Analyses     See. RI       Image: Sample descortime	City: Olyman in State: /A Zip: 9850)	Email Address :		
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Provide Sample Description     KK     SLOP-5-CO-1/CO     UP4       Ist Analyses Requested     Note Special Instructions/Comments       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g     g     g       g <td< td=""><td>Fax:</td><td>Sampler Name &amp; phone:</td><td>Zother* 5 day prior approved. ZEmail</td></td<>	Fax:	Sampler Name & phone:	Zother* 5 day prior approved. ZEmail	
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Isto     Sample Identification     Sampling Date/Time     Matrix     Matrix     Sample Identification     Sampling Date/Time     Matrix     Sample Identification     <		Preservative: NA		
Image: Second Stress     Second Stress     Second Stress     Second Stress       Image: Second Stress     Second Stress     Second Stress     Second Stress       Image: Second Stress     Second Stress     Second Stress     Second Stress       Image: Second Stress     Second Stress     Second Stress     Second Stress       Image: Second Stress     Second Stress     Second Stress     Second Stress       Image: Second Stress     Second Stress     Second Stress     Second Stress       Image: Second Stress     Second Stress     Second Stress     Second Stress       Image: Second Stress     Second Stress     Second Stress     Second Stress       Image: Second Stress     Second Stress     Second Stress     Second Stress       Image: Second Stress     Second Stress     Second Stress     Second Stress       Image: Second Stress     Second Stress     Second Stress     Second Stress       Image: Second Stress     Second Stress     Second Stress     Second Stress       Image: Second Stress     Second Stress     Second Stress     Second Stress       Image: Second Stress     Second Stress     Second Stress     Second Stress       Image: Second Stress     Second Stress     Second Stress     Second Stress       Image: Second Stress     Second Stress     Second Stress				
Lab     Sample Identification     Sample Identification     Sample Identification     Sample Identification     Sample Identification       202     SP03-Zan-2-401641     Ciclico/9/     Soil     1     402     X     Sent preurauly       1     1     402     X     Sent preurauly     Sent preurauly       1     1     402     X     Sent preurauly       1     1     402     X     Sent preurauly       1     1     1     1     Sent preurauly       1     1     1     1     1       1     1     1     1     1       1     1     1     1     1       1     1     1     1     1       1     1     1     1     1       1     1     1     1     1       1     1     1     1     1       1     1     1     1     1       1     1     1     1     1       1     1     1     1     1       1     1     1     1     1       1     1     1     1     1       1     1     1     1     1       1     1				
201     SP03-Zan 2-0004     CG1609/     Soil 1     4az     X     Sent preuriously       100     100     100     100     100     Sent preuriously       100     100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100       100     100     100     100 <td>Lab ID Sample Identification Sampling Date/Time Matrix</td> <td></td> <td>See DT contation</td>	Lab ID Sample Identification Sampling Date/Time Matrix		See DT contation	
No     Inspection Checklist       Inspection Checklist     Inspection Checklist       Inspection Checklist     Received intact?       Inspected Space?     Y       Inspected Space?     Y       Received by     PTC       Inspected Space?     Y       Received by     Proceived Intact?       Received Intact?     Proceived Intact? </td <td>00 SP03-Zan 2-061609 061609/ Soil</td> <td>1 402 X</td> <td>Sent premously</td>	00 SP03-Zan 2-061609 061609/ Soil	1 402 X	Sent premously	
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Relinquished by     Kara Roberts     Kara Roberts     PTC     S/10/09     8:00     Temperature (°C):     7.7       Received by     Quickindon-buenn     Hace Min     10/18/09     09:30     Preservative:	Printed Name Signature	Company Date Time	<u></u>	
Received by     Hace Mn     b/18/pi     09:30       Relinquished by     Date & Time       Relinquished by     Inspected By	Relinquished by Kara Roberts Rang	RALES PIC GUILING &	(D) Temperature (C) 7.7	
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Page 4 of 9



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## **Report Prepared for:**

Troy Bussey Pioneer Technologies Corporation 2612 Yelm Highway S.E. Suite B Olympia WA 98501-4826

# REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

**Report Prepared Date:** June 23, 2009

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

## **Report Information:**

Pace Project #: 1097502 Sample Receipt Date: 06/18/2009 Client Project #: East Bay IA Stockpile Client Sub PO #: N/A State Cert #: C218

### **Invoicing & Reporting Options:**

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

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

This report has been reviewed and prepared by:

Ent C. Munge

Scott Unze, Project Manager (612) 607-6383 (612) 607-6444 (fax) scott.unze@pacelabs.com



### **Report of Laboratory Analysis**

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.



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

## **DISCUSSION**

This report presents the results from the analyses performed on one sample submitted by a representative of Pioneer Technologies Corporation. The sample was analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. Reporting limits were based on signal-to-noise calculations. The sample was received outside of the recommended temperature range of 0-6 degrees Celsius.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extract ranged from 56-95%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain trace levels of selected congeners. These were below the calibration range of the method. The levels reported for the affected congeners in the field sample were higher than the corresponding blank levels by two or more orders of magnitude. These results indicate that the sample processing steps did not contribute significantly to the levels reported for the field sample.

A laboratory spike sample was also prepared with the sample batch using clean sand that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 85-104%. These results indicate a high degree of accuracy for these determinations. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

# **REPORT OF LABORATORY ANALYSIS**

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# Appendix A

Sample Management

Contraction of the second s	Sempleconc	Mon Upon Recei	20.00
Pace Analytical Client Na	ime: Pace w	Jachington	Project # //97,507
Courier: Fed Ex UPS USPS Tracking #: <u>8694 3419 3368</u> Custody Seal on Cooler/Box Present: X	Client Comme	rcial	Optional R/øj Due: Date Proj. Name
Packing Material: NR Rubble When			no <u>Ballouring Ballouring</u>
Thermometer Used (8034404) 179425	bble Bags [] Not	ne [] Other	Temp Blank: Yes X No
Cooler Temperature 7.7 Temp should be above freezing to 6°C	Biological Tis	sue is Frozen: Yes No	Date and Initials of person examining contents: <u>ML</u> <u>6-18-09</u>
Chain of Custody Present:	Ves Ting T	Thus I a	
Chain of Custody Filled Out:	Ves Lino L		
Chain of Custody Relinquished:		JN/A 2.	
Sampler Name & Signature on COC		INVA 3.	
Samples Arrived within Hold Time		NVA 4,	
Short Hold Time Analysis (<72br)		N/A [5.	
Rush Turn Around Time Requested		INA 10.	
Sufficient Volume:		VALI- DOQU	
Correct Containers Used		WA  8.	
-Pace Containers Used		VA 9.	
Containers Intact:			
Filtered volume received for Dissolved tests		/A [10.	
Sample Labels match COC:		A [11.	
-Includes date/time/ID/Analysis Motring	SL	A 12.	
All containers needing acid/base preservation have been			
Checked. Noncompliance are noted in 13.	LIYes LINO	13. the is mel	tid
compliance with EPA recommendation.	🛛 Yes 🖾 No 🛛 🕅 🗛		
Exceptions: VOA,Coliform, TOC, Oil and Grease, WI-DRO (water)		Initial when	Lot # of added
Samples checked for dechlorination:	TYPE TING THE	44	preservative
Headspace in VOA Vials ( >6mm):		14. AE	
Trip Blank Present:		15.	
Trip Blank Custody Seals Present		16.	
Pace Trip Blank Lot # (if purchased):			
Client Notification/ Possibility	······································		
Person Contacted: These R	<b>.</b>	at to t	Field Data Regulred? Y / N
Comments/ Resolution	Date/Ti	ime:	
	and a state of the		
Waived teno	reg.		
	t		
Project Manager Review:	$\square \bigcirc$		Date:
	C		
one: vynenever there is a discrepancy affecting North Carol enlification Office (i.e. out of hold, incorrect preservative on	ina compliance sample	s, a copy of this form will be	sent to the North Caroling DEHNR
Report No1097502_8290		NEVIEW	F-ALL COO3 Page 5 of 9

# Appendix B

Sample Analysis Summary



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

## Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP0 1097 F906 AE 10.3 10.0 9.23 F905 F906 BLA	3-ZONE2-06 7502001 522B_13 9 9 501 522A_16 & NK-20301	51609 F90622B_15	Matrix Dilution Collected Received Extracted Analyzed	Soil NA 06/16/200 06/18/200 06/18/200 06/23/200	9 9 9 9 08:37	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF 2,3,7,8-TCDD	1.6 32.0	 	0.16 0.16 0.18	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDF-13 2,3,4,7,8-PeCDF-13	3C 3C	2.00 2.00 2.00 2.00	83 85 82 88
Total TCDD	30.0		0.18	1,2,3,7,8-PeCDD-1 1,2,3,4,7,8-HxCDF	3C -13C	2.00 2.00 2.00	95 90
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	6.0 50.0	1.70 	0.29 T 0.14 0.21	1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,7,8-HxCDD	-13C -13C -13C -13C	2.00 2.00 2.00 2.00	73 79 81 88
1,2,3,7,8-PeCDD Total PeCDD	2.4 42.0		0.38 J 0.38	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD 1,2,3,4,7,8,9-HpCD	-13C )F-13C )F-13C	2.00 2.00 2.00	74 72 67
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	12.0 4.5 6.2	 	0.44 0.19 J 0.27	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 4.00	70 56
1,2,3,7,8,9-HxCDF Total HxCDF	2.6 66.0		0.29 J 0.30	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	2.1 10.0 5.2 150.0	  	0.30 J 0.46 0.47 J 0.41	2,3,7,8-TCDD-37Cl	4	0.20	84
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	65.0 5.2 160.0	 	0.82 0.53 J 0.68	Total 2,3,7,8-TCDI Equivalence: 13 ng (Using 2005 WHO	) /Kg Factors - U	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	270.0 570.0		0.94 0.94				
OCDF OCDD	280.0 3500.0		0.34 0.39				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

ND = Not Detected NA = Not Applicable

NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

I = Interference present

# **REPORT OF LABORATORY ANALYSIS**

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

## Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-20301	Matrix	Solid
Filename	F90622A_09	Dilution	NA
Total Amount Extracted	10.3 g	Extracted	06/18/2009
ICAL ID	F90501	Analyzed	06/22/2009 16:38
CCal Filename(s)	F90622A_02 & F90622A_16	Injected By	AE

Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	 ND	0.14	0.087 I 0.087	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDF-13C	2.00 2.00 2.00	81 85 87
2,3,7,8-TCDD Total TCDD	ND ND		0.140 0.140	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00 2.00	94 101 88
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND	 	0.088 0.049 0.068	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00	76 84 90
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.084 0.084	1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00 2.00	89 85 83 90
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	ND ND ND	 	0.079 0.049 0.062	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 4.00	85 84
1,2,3,7,8,9-HxCDF Total HxCDF	ND ND		0.080 0.067	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND 0.30	  	0.091 0.110 0.091 0.096 J	2,3,7,8-TCDD-37Cl4	0.20	84
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND	 	0.110 0.110 0.110	Total 2,3,7,8-TCDD Equivalence: 0.16 ng/Kg (Using 2005 WHO Factors -	Using PRL/	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	0.41 0.99		0.110 J 0.110 J			
OCDF OCDD	ND 4.40		0.130 0.160 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

I = Interference present

# REPORT OF LABORATORY ANALYSIS

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

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

## Method 8290 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS-2 F9062 10.1 g F9050 F9062 BLANI	0302 2A_04 1 2A_02 & F K-20301	90622A_16	Matrix Dilution Extracted Analyzed Injected By	Solid NA 06/18/2009 06/22/2009 12: AE	41
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.19	93	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	2.00 2.00	81 85
2,3,7,8-TCDD Total TCDD	0.20	0.18	89	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDF-13C	2.00 2.00 2.00	83 90 99
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.00 1.00	0.93 0.88	93 88	1,2,3,4,7,8-HxCDF-13C 1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	88 75 82 87
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.85	85	1,2,3,4,7,6-HXCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	90 83 85
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	0.87 0.93 0.92	87 93 92	1,2,3,4,7,8,9-HPCDF-13C 1,2,3,4,6,7,8-HPCDD-13C OCDD-13C	2.00 2.00 4.00	91 91 85
1,2,3,7,8,9-HxCDF Total HxCDF	1.00	0.90	90	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	0.90 0.91 0.91	90 91 91	2,3,7,8-TCDD-37Cl4	0.20	84
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.00 1.00	0.96 0.94	96 94			
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	0.91	91			
OCDF OCDD	2.00 2.00	2.08 1.93	104 96			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

P = Recovery outside of target range

X = Background subtracted value

Y = RF averaging used in calculations

Nn = Value obtained from additional analysis

NA = Not Applicable

\* = See Discussion

# **REPORT OF LABORATORY ANALYSIS**

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Client: <u>PTC</u> Address: <u>2612</u> <u>Olympi</u>	4	elm WA	Hwy 98	SE,SH	Phon ex: Emai		<u>sec</u> usi	seut	· 70	spi	ione	P P erp Spi	rojec rojec rojec	et Na et Lo et Nu	ame: ocatio ambe	Ea m: r:	st	Bo	y:	It	15	tod	kpi T	e P C D	rojec onta OAL	et P.( et Pe Proje	O.: _ ersoi ect N	n: No.: _	nou	B 6	<u>us</u> 23-	sel	133
$\frac{\text{Matrix Code:}}{\text{WW} = \text{wastewater}}  \text{GW} = \\ \text{SL} = \text{sludge}  \text{V} = \text{vag}$	groun oor	ndwater S O	= soil or so = other	olid							PA 8081)			270SIM)			EM)		050)		sries)		s	PA 900)	(006 V	,							
Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Container Type	Mube/BTEX (EPA 8021b)	Gasoline (NWTPH-Gx)	Diesel (NWTPH-Dx)	Diesel & Oil (NWTPH-Dx)	Fuel Scan (NWTPH-HCID)	VOC's (EPA 8021b)	Drganochlorine Pesticides (E	PCB's (EPA 8082)	Volatiles (EPA 8260)	PAH's (EPA 8100 or 8270/82	Semi-Volatiles (EPA 8270)	gnitability (EPA 1010)	Dil and Grease (EPA 1664 HI	oH (EPA 9040/9045)	Specific Conductance (EPA 9	aint Filter Test (EPA 9095)	Jeavy Metals* (EPA 7000 Se	3iogenic Gases (EPA 3C)	Natural Attenuation Indicator	Gross Alpha Radioactivity (E	Gross Beta Radioactivity (EP	TCLP Lead	1						
SP04_Zone4_062309	S	6/23/09	1540	2402 3Encore	X	X		X						X		-		H		-	X	-	~			×					T	1	
5P05-Zone4-062309	5	6123/09	1600	2 402 3Excore	X	X		X						X						1	X					X							
SP06-Zonez-062300	S	6/23/09	1615	a 402 35ncore	×	X		×						X							X												
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Relinquished by (Signature) Koro Robot Relinquished by (Signature) Sample Disposal Instructions:	Da G Da	tte/Time Re	ceived by (Sig ceived by (Sig @ \$2.50 per (	gnature) the R.S.C. gnature) Container	CH □ Ret	Di 1/23 Di um	ate/Time /A ate/Time	е +10 е	2		Turn- Same 24 H 48 H 5 Day 10 D	Arou Day our our y ay	nd-Tin	me 31	* <u>H</u> Ag Ag Ag	AI ( AI / AI /	Meta As Ba As Ba As Ba	<u>ls</u> : Pl a Be a Be a Be	ease o Ca C Cd C Cd C	circle Cr Cr- Cr Cr- Cr Cr-	the de -VI C -VI C -VI C	esired to Cu to Cu to Cu	analy Fe I Fe I Fe I	tes. Hg Li Hg Li Hg Li	Mg Mg Mg	Mn Mn Mn	Mo 1 Mo 1 Mo 1	vi Pb vi Pb vi Pb	Sb Se Sb Se Sb Se	TI V TI V TI V	Zn - Zn - Zn -	Total Dissol TCLP	lved



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543



Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpile

### DAL Number: 090623-03

### ANALYTICAL RESULTS FOR THE ANALYSIS OF FUEL IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Diesel Fuel #2 NWTPH-Dx (mg/kg)	Heavy Oil NWTPH-Dx (mg/kg)	Surrogate Recovery 2-FBP (%)	Data Flags
Method Blank	6/29/2009	n/a	nd	nd	94.4	
SP04-ZONE4-062309	6/29/2009	94.2	nd	nd	72.7	
SP05-ZONE4-062309	6/29/2009	79.0	nd	nd	102	
SP06-ZONE2-062309	6/29/2009	78.0	nd	nd	99.2	
LCS	6/29/2009	n/a	129%	n/a	n/a	
090629-MS	6/29/2009	n/a	134%	n/a	n/a	
090629-MSD	6/29/2009	n/a	111%	n/a	n/a	
SP04-ZONE4-062309 Dup.	6/29/2009	94.2	nd	nd	76.2	
Method Reporting Limits			25	100		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpile

#### DAL Number: 090623-03

### ANALYTICAL RESULTS FOR THE ANALYSIS OF GASOLINE RANGE ORGANICS IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Benzene EPA 8021B (mg/kg)	Toluene EPA 8021B (mg/kg)	Ethylbenzene EPA 8021B (mg/kg)	m&p-Xylene EPA 8021B (mg/kg)	o-Xylene EPA 8021B (mg/kg)	Gasoline NWTPH-Gx (mg/kg)	Surrogate Recovery BFB (%)	Data Flags
Method Blank	6/29/2009	n/a	nd	nd	nd	nd	nd	nd	109	
SP04-ZONE4-062309	6/29/2009	94.2	nd	nd	nd	nd	nd	nd	116	
SP05-ZONE4-062309	6/29/2009	79.0	nd	nd	nd	nd	nd	nd	110	
SP06-ZONE2-062309	6/29/2009	78.0	nd	nd	nd	nd	nd	nd	98.2	
LCS	6/29/2009	n/a	99%	111%	109%	96.2%	97%	105.0%	n/a	
090629-MS	6/29/2009	n/a	103%	109%	106.0%	98.9%	95.0%	99%	n/a	
SP04-ZONE4-062309 Dup.	6/29/2009	94.2	nd	nd	nd	nd	nd	nd	125%	
Method Reporting Limits			0.05	0.10	0.10	0.10	0.10	5.0		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543



Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpile

### DAL Number: 090623-03

### ANALYTICAL RESULTS FOR THE ANALYSIS OF HEAVY METALS IN SOIL BY EPA METHOD 6020 A

Sample Identification	Date Analyzed	Percent Solids	Arsenic (As)	Cadmium (Cd)	Lead (Pb)
Chemical Abstract Number (CAS)			7440-38-2	7440-43-9	7439-92-1
Units		(%)	(mg/kg)	(mg/kg)	(mg/kg)
Method Blank	6/26/2009	n/a	nd	nd	nd
SP04-ZONE4-062309	6/26/2009	94.2	nd	nd	0.22
SP05-ZONE4-062309	6/26/2009	79.0	0.26	0.34	4.52
SP06-ZONE2-062309	6/26/2009	78.0	nd	nd	0.66
LCS	6/26/2009	n/a	96.3%	98.8%	94.5%
090626-MS	6/26/2009	n/a	132%	103%	MI
090626-MSD	6/26/2009	n/a	MI	100%	MI
SP06-ZONE2-062309 Dup.	6/26/2009	78.0	nd	nd	0.55
Method Reporting Limits			0.25	0.25	0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference

Sample results based on dry weight.



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpile

#### DAL Number: 090623-03

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF SEMI-VOLATILE COMPOUNDS IN SOIL BY EPA METHOD 8270

Sample Identification			Blank	SP04-ZONE4- 062309	SP05-ZONE4- 062309	SP06-ZONE2- 062309	LCS	090627-MS	090627-MSD	SP04-ZONE4- 062309 Dup.
Percent Solids (%)			n/a	94.2	79.0	78.0	n/a	n/a	n/a	94.2
Date Extracted	CAS	MRL	6/15/2009	6/26/2009	6/26/2009	6/26/2009	6/26/2009	6/26/2009	6/26/2009	6/26/2009
Date Anlayzed	Number	(mg/kg)	6/18/2009	6/27/2009	6/27/2009	6/27/2009	6/27/2009	6/27/2009	6/27/2009	6/27/2009
Benzo(a)anthracene	56-55-3	0.01	nd	0.02	0.06	0.04	102%	100%	101%	0.02
Benzo(a)pyrene	50-32-8	0.01	nd	0.12	0.16	0.13	n/a	n/a	n/a	0.11
Benzo(b)fluoranthene	205-99-2	0.01	nd	nd	nd	nd	n/a	n/a	n/a	nd
Benzo(k)fluoranthene	207-08-9	0.01	nd	0.01	0.04	0.01	n/a	n/a	n/a	nd
Chrysene	218-01-9	0.01	nd	0.01	0.07	0.01	106%	104%	105%	nd
Dibenzo(a,h)anthracene	53-70-3	0.01	nd	0.11	0.15	0.12	n/a	n/a	n/a	0.09
Ideno(1,2,3-cd)pyrene	193-39-5	0.01	nd	nd	0.29	0.27	105.0%	102.0%	105.0%	nd
1-Methylnaphthalene	90-12-0	0.01	nd	nd	0.01	nd	n/a	n/a	n/a	nd
2-Methylnaphthalene	91-57-6	0.01	nd	nd	0.01	nd	n/a	n/a	n/a	nd
Naphthalene	91-20-3	0.01	nd	nd	0.01	nd	n/a	n/a	n/a	nd
Surrogate Recovery (%)			_							
2-Fluorophenol			109	118	115	124	112	117	118	118
Phenol-d6			128	105	104	112	103	107	107	105
Nitrobenzene-d5			88.1	79.7	78.3	81.8	89.5	89.7	90.5	80.9
2-Fluorobiphenol			118	110	107	112	106	107	108	109
2,4,6-Tribromophenol			61.0	56.1	61.5	60.2	58.3	60.5	60.6	56.6
Terphenyl-d14			118	106	112	127	98.4	129	99.7	122
Data Flags										

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall Data reviewed by: R Lewis





2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543



Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpile

### DAL Number: 090623-03

# ANALYTICAL RESULTS FOR THE ANALYSIS OF TCLP HEAVY METALS IN SOIL BY EPA METHOD 1311 AND EPA METHOD 6020 A

Sample Identification	Date Analyzed	Lead (Pb)
Chemical Abstract Number (CAS)		7439-92-1
Units		(mg/L)
Method Blank	6/26/2009	nd
SP04-ZONE4-062309	6/26/2009	nd
SP05-ZONE4-062309	6/26/2009	nd
LCS	6/26/2009	96.1%
090626-MS	6/26/2009	108%
090626-MSD	6/26/2009	80.3%
SP04-ZONE4-062309 Dup.	6/26/2009	nd
Method Reporting Limits		0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference

Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall Data reviewed by: R Lewis

page 1 of 1

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www.pacelabs.com

## **Report Prepared for:**

Troy Bussey Pioneer Technologies Corporation 2612 Yelm Highway S.E. Suite B Olympia WA 98501-4826

# REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

# **Report Prepared Date:**

July 2, 2009

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

## **Report Information:**

Pace Project #: 1097953 Sample Receipt Date: 06/25/2009 Client Project #: East Bay IA Stockpiles Client Sub PO #: N/A State Cert #: C218

### **Invoicing & Reporting Options:**

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

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

This report has been reviewed and prepared by:

Ent C. Munge

Scott Unze, Project Manager (612) 607-6383 (612) 607-6444 (fax) scott.unze@pacelabs.com



## **Report of Laboratory Analysis**

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The results relate only to the samples included in this report.



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

## **DISCUSSION**

This report presents the results from the analyses performed on three samples submitted by a representative of Pioneer Technologies Corporation. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. Reporting limits were based on signal-to-noise measurements.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 36-96%. With the exceptions of three low values, which were flagged "P" on the results tables, the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain trace levels of selected congeners. These were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" on the results table and may be, at least partially, attributed to the background. It should be noted that levels less than ten times the background are not generally considered to be statistically different from the background.

A laboratory spike sample was also prepared with the sample batch using clean sand that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 87-101%. These results indicate a high degree of accuracy for these determinations. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

# **REPORT OF LABORATORY ANALYSIS**

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# Appendix A

Sample Management

	second such exercite the	II ON MERCINAL SOCIET	
Pace Analytical Client Na	me: <u>PIONEE</u>	R TECH	Project # /69795-
Courier: XI Fed Ex ロロトSロUSPS ロ Tracking #: アイフラの名と4 タンの	Client Commerc	ial 🗍 Pace Other	Optional. Provinsional
Custody Seal on Cooler/Box Present:	yes 🗌 no Se	eals intact: 🕅 ves	Prof. Name
Packing Material: K Bubble Wrap	ubble Bags 🗔 None	L D Other	Town Black Var
Thermometer Used	Type of ice:	Vet Blue None	
Cooler Temperature     S · Ò       Temp should be above freezing to 6°C	Biological Tiss	ue is Frozen: Yes No Comments:	Date and Initials or person examinin contents: 6/25 [29]
Chain of Custody Present:	XVes DNo DN	VA 1.	<u>1</u>
Chain of Custody Filled Out:	ÆYes □No □N	VA 2.	
Chain of Custody Relinquished:	BYes □No □N	/A 3.	
Sampler Name & Signature on COC:	· Mes DNo DN	/A 4.	
Samples Arrived within Hold Time:	_ 🛛 Yes 🗆 No 🖉 Ny	A 5.	
Short Hold Time Analysis (<72hr): 6 25 09	ANYes KINO DINI	AG SDAM	
Rush Turn Around Time Requested:	Dixes []No []N/	A 7. 12	
Sufficient Volume:		18.	
Correct Containers Used:	KYes INO IN/A	9.	
-Pace Containers Used:	UYes ANO UN/A		
Containers Intact:	XYes DNo DN/A	10.	***************************************
Filtered volume received for Dissolved tests	DYes DNO KNA	11.	
Sample Labels match COC:	Yes No QN/A	12.	
-Includes date/time/ID/Analysis Matrix:	1		
All containers needing acid/base preservation have been shecked. Noncompliance are noted in 13.	🛛 Yes 🗆 No 🙀 N/A	13.	
All containers needing preservation are found to be in compliance with EPA recommendation.		an management of the second	
xceptions: VOA,Coliform, TOC, Oil and Grease, WI-DRO (water	) 🗆 Yes 🖾 No	Initial when completed	Lot # of added preservative
amples checked for dechlorination:		14.	
leadspace in VOA Vlals ( >6mm):		15.	
rip Blank Present:	DYes DNo GN/A	16.	
rip Blank Custody Seals Present	DYes DNo DNA		
ace Trip Blank Lot # (if purchased):	· .		
lient Notification/ Resolution:			
Person Contacted:	Date/Tin	ne.	rielo Data Regulred? Y / N
Comments/ Resolution:			
Comments/ Resolution:			
	<i></i>		1 1

Report No.....1097953\_8290

F-ALLCOORAGE 50011

# Appendix B

Sample Analysis Summary



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

## Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP04 1097 F907 SMT 11.3 4.9 10.7 F905 F907 BLAN	4-ZONE4-06 953001-R ′02A_05 g g 01 ′01A_16 & ∿K-20508	62309 F90702A_09	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 06/23/200 06/25/200 06/30/200 07/02/200	9 9 9 9 11:19	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.28 0.99		0.064 BJ 0.064	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1 2 3 7 8-PeCDE-1	30	2.00 2.00 2.00	77 85 78
2,3,7,8-TCDD Total TCDD	ND 0.47		0.094 0.094 J	2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C -13C	2.00 2.00 2.00	82 92 78
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND 0.13 1.40		0.083 0.077 J 0.080 J	1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,7,8,9-HxCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	76 75 77 76 80
1,2,3,7,8-PeCDD Total PeCDD	ND 0.36		0.074 0.074 J	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD	-13C 0F-13C	2.00 2.00 2.00	83 73 62
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	0.27 ND		0.073 J 0.077 0.066	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 4.00	69 36 P
1,2,3,7,8,9-HxCDF Total HxCDF	ND 1.10		0.087 0.076 J	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND 0.30  1.60	 0.21	0.110 0.094 J 0.110 I 0.100 J	2,3,7,8-TCDD-37Cl	4	0.20	88
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	2.00 ND 2.00	 	0.079 J 0.110 0.094 J	Total 2,3,7,8-TCDI Equivalence: 0.34 ( (Using 2005 WHO)	) ng/Kg Factors - U	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	6.90 14.00		0.180 0.180				
OCDF OCDD	8.30 57.00		0.220 J 0.740				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

ND = Not Detected NA = Not Applicable

NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

B = Less than 10x higher than method blank level

P = Recovery outside target range

I = Interference present

RL = Reporting Limit.

# **REPORT OF LABORATORY ANALYSIS**

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## Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP05 1097 F907 SMT 13.4 21.6 10.5 F905 F907 BLAI	5-ZONE4-00 953002-R 702A_06 9 9 01 701A_16 & NK-20508	62309 F90702A_09	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 06/23/200 06/25/200 06/30/200 07/02/200	9 9 9 9 12:06	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.58 7.90		0.140 J 0.140	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	20	2.00 2.00 2.00	81 83 77
2,3,7,8-TCDD Total TCDD	1.20 37.00		0.095 0.095	1,2,3,7,8-PeCDF-1 2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C	2.00 2.00 2.00	82 89
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.90 29.00	0.44	0.076 I 0.077 J 0.077	1,2,3,4,7,8-HXCDF 1,2,3,6,7,8-HXCDF 2,3,4,6,7,8-HXCDF 1,2,3,7,8,9-HXCDF 1,2,3,4,7,8-HXCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	84 77 82 81 76
1,2,3,7,8-PeCDD Total PeCDD	9.10 110.00		0.110 0.110	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCE	0-13C 0F-13C	2.00 2.00 2.00	89 70 63
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	3.70	2.40	0.160 J 0.180 I 0.170 J	1,2,3,4,6,7,8-HpCE OCDD-13C	D-13C	2.00 2.00 4.00	73 38 P
1,2,3,7,8,9-HxCDF Total HxCDF	1.70 43.00		0.170 J 0.170 J 0.170	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	32.00 22.00 28.00 500.00	  	0.430 0.380 0.410 0.410	2,3,7,8-TCDD-37C	14	0.20	84
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	70.00 5.40 79.00	 	0.560 0.690 0.620	Total 2,3,7,8-TCD Equivalence: 29 no (Using 2005 WHO	D g/Kg Factors - U	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	680.00 1900.00		1.400 1.400				
OCDF OCDD	220.00 3100.00		1.000 4.300				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

P = Recovery outside target range

I = Interference present

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ND = Not Detected NC = Not Calculated

NA = Not Applicable



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## Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP00 1097 F907 SMT 12.3 11.7 10.9 F905 F907 BLAN	G-ZONE2-06 953003-R 02A_07 g 01 01A_16 & NK-20508	52309 F90702A_	_09	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 06/23/200 06/25/200 06/30/200 07/02/200	9 9 9 9 12:54	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg		Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.44 3.90		0.083 E 0.083	ЗJ	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDE-1	30	2.00 2.00 2.00	81 86 81
2,3,7,8-TCDD Total TCDD	2.70	0.11	0.100 I 0.100		2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C 12C	2.00 2.00 2.00	87 96
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	0.19 0.58 6.60		0.064 J 0.050 J 0.057	] J	1,2,3,4,7,6-11XCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,7,8,9-HxCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	80 81 80 80
1,2,3,7,8-PeCDD Total PeCDD	0.53 2.50		0.067 J 0.067 J	J	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD	-13C 0F-13C	2.00 2.00 2.00	89 77 70
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	0.73 0.43 0.67		0.062 J 0.071 J	J J	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 2.00 4.00	77 43
1,2,3,7,8,9-HxCDF Total HxCDF	8.40	0.18	0.079 0 0.100 I 0.079	,	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	0.44 3.00 2.00 19.00	  	0.097 J 0.069 J 0.080 J 0.082	] ] ]	2,3,7,8-TCDD-37CI	4	0.20	88
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	11.00  11.00	0.41	0.180 0.150 I 0.160		Total 2,3,7,8-TCDI Equivalence: 2.5 n (Using 2005 WHO	D g/Kg Factors - U	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	65.00 130.00		0.360 0.360					
OCDF OCDD	30.00 570.00		0.340 1.400					

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

ND = Not Detected NA = Not Applicable

NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

B = Less than 10x higher than method blank level

I = Interference present

RL = Reporting Limit.

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## Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-20508	Matrix	Solid
Filename	F90702A_03	Dilution	NA
Total Amount Extracted	20.1 g	Extracted	06/30/2009
ICAL ID	F90501	Analyzed	07/02/2009 09:43
CCal Filename(s)	F90701A_16 & F90702A_09	Injected By	SMT

Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.049 0.049		0.035 J 0.035 J	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1 2 3 7 8-PeCDF-13C	2.00 2.00 2.00	71 77 74
2,3,7,8-TCDD Total TCDD	ND ND		0.037 0.037	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDF-13C	2.00 2.00 2.00	80 90 74
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND	 	0.024 0.023 0.023	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00	72 74 71
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.025 0.025	1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00 2.00	74 80 69 62
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	ND ND ND		0.018 0.016 0.019	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	68 39 P
1,2,3,7,8,9-HxCDF Total HxCDF	ND ND		0.025 0.019	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND	  	0.022 0.029 0.032 0.028	2,3,7,8-TCDD-37Cl4	0.20	82
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND	 	0.021 0.031 0.026	Total 2,3,7,8-TCDD Equivalence: 0.048 ng/Kg (Using 2005 WHO Factors -	Using PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND	0.054	0.040 I 0.040			
OCDF OCDD	0.180 0.590		0.082 J 0.140 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

P = Recovery outside target range

I = Interference present

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## Method 8290 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS-2 F9070 20.4 g F9050 F9070 BLANI	0509 2A_01 1 1A_16 & F K-20508	90702A_09	Matrix Dilution Extracted Analyzed Injected By	Solid NA 06/30/2009 07/02/2009 08: SMT	09
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.20	98	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	2.00 2.00	89 96
2,3,7,8-TCDD Total TCDD	0.20	0.19	94	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDF-13C	2.00 2.00 2.00	99 110
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.00 1.00	0.99 0.93	99 93	1,2,3,4,7,8-HxCDF-13C 1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	92 86 92 88
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.87	87	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	90 94 86 81
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	0.92 0.97 0.95	92 97 95	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	88 52
1,2,3,7,8,9-HxCDF Total HxCDF	1.00	0.95	95	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	0.93 0.95 0.94	93 95 94	2,3,7,8-TCDD-37Cl4	0.20	96
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.00 1.00	1.01 0.98	101 98			
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	0.92	92			
OCDF OCDD	2.00 2.00	2.02 2.02	101 101			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

P = Recovery outside of target range

X = Background subtracted value

Y = RF averaging used in calculations

Nn = Value obtained from additional analysis

NA = Not Applicable

\* = See Discussion

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RCRA CHAIN O USTODY RECORD														-																				
DRAGO Analytical Laborate	Nory	- 3	A Contraction	2818 Madrona Beach Rd. NW, O Phone: (360) 866-0543 Fax Email: DragonLab@co Website: dragonlabora										, Oly ax: ( com	DY mpia 360) cast. ory.co	RE a, W 866 net om	CO A 98 -055	8502 6			•			s	ample	es Col t Nun	llected	By:	Ki	2 70	)	of		
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a <u>Olympi</u>	Olympia, WA 98501 Email: robertska Project Number:											_	D	AL	Proje	ect N	 io.:						_											
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2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543



Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090721-02

### ANALYTICAL RESULTS FOR THE ANALYSIS OF FUEL IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Diesel Fuel #2 NWTPH-Dx (mg/kg)	Heavy Oil NWTPH-Dx (mg/kg)	Surrogate Recovery 2-FBP (%)	Data Flags
Method Blank	7/22/2009	n/a	nd	nd	72.5	
SP07-ZONE2-072109	7/22/2009	85.6	nd	nd	124	
SP08-ZONE4-072109-1	7/22/2009	92.4	nd	nd	104	
SP08-ZONE4-072109-2	7/22/2009	94.6	nd	nd	97.4	
LCS	7/22/2009	n/a	103%	n/a	n/a	
090612-MS	7/22/2009	n/a	111%	n/a	n/a	
090612-MSD	7/22/2009	n/a	117%	n/a	n/a	
SP07-ZONE2-072109 Dup.	7/22/2009	85.6	nd	n	120	
Method Reporting Limits			25	100		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall Data reviewed by: R Lewis

page 1 of 1



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090721-02

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF GASOLINE RANGE ORGANICS IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Benzene EPA 8021B (mg/kg)	Toluene EPA 8021B (mg/kg)	Ethylbenzene EPA 8021B (mg/kg)	m&p-Xylene EPA 8021B (mg/kg)	o-Xylene EPA 8021B (mg/kg)	Gasoline NWTPH-Gx (mg/kg)	Surrogate Recovery BFB (%)	Data Flags
Method Blank	7/22/2009	n/a	nd	nd	nd	nd	nd	nd	67.5	
SP07-ZONE2-072109	7/22/2009	85.6	nd	nd	nd	nd	nd	nd	98.0	
SP08-ZONE4-072109-1	7/22/2009	92.4	nd	nd	nd	nd	nd	nd	89.7	
SP08-ZONE4-072109-2	7/22/2009	94.6	nd	nd	nd	nd	nd	nd	111	
LCS	7/22/2009	n/a	95.6%	95.2%	86.3%	73.9%	85.2%	100%	n/a	
090612-MS	7/22/2009	n/a	104%	111%	95.1%	80.4%	103%	96.5%	n/a	
090612-MSD	7/22/2009	n/a	110%	110%	83.1%	77.6%	100%	100%	n/a	
SP07-ZONE2-072109 Dup.	7/22/2009	85.6	nd	nd	nd	nd	nd	nd	75.6	
Method Reporting Limits			0.05	0.10	0.10	0.10	0.10	5.0		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090721-02

### ANALYTICAL RESULTS FOR THE ANALYSIS OF HEAVY METALS IN SOIL BY EPA METHOD 6020 A

Sample Identification	Date Analyzed	Percent Solids	Arsenic (As)	Cadmium (Cd)	Lead (Pb)
Chemical Abstract Number (CAS)			7440-38-2	7440-43-9	7439-92-1
Units		(%)	(mg/kg)	(mg/kg)	(mg/kg)
Method Blank	7/29/2009	n/a	nd	nd	nd
SP07-ZONE2-072109	7/29/2009	85.6	7.38	1.07	188
SP08-ZONE4-072109-1	7/29/2009	92.4	2.52	0.49	5.30
SP08-ZONE4-072109-2	7/29/2009	94.6	3.81	0.43	6.66
LCS	7/29/2009	n/a	101%	107%	104%
090729-MS	7/29/2009	n/a	124%	150%	135%
090729-MSD	7/29/2009	n/a	111%	133%	116%
SP08-ZONE4-072109 Dup.	7/29/2009	94.6	3.57	0.41	6.02
Method Reporting Limits			0.25	0.25	0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference

Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall Data reviewed by: R Lewis Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090721-02

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF SEMI-VOLATILE COMPOUNDS IN SOIL BY EPA METHOD 8270

Sample Identification			Blank	SP07-ZONE2- 072109	SP08-ZONE4- 072109-1	SP08-ZONE4- 072109-2	SP07-ZONE2- 072109 Dup.	LCS	090723-MS	090723-MSD
Percent Solids (%)			n/a	85.6	92.4	94.6	85.6	n/a	n/a	n/a
Date Extracted	CAS	MRL	7/23/2009	7/23/2009	7/23/2009	7/23/2009	7/23/2009	7/23/2009	7/23/2009	7/23/2009
Date Anlayzed	Number	(mg/kg)	7/23/2009	7/23/2009	7/23/2009	7/23/2009	7/23/2009	7/23/2009	7/23/2009	7/23/2009
Benzo(a)anthracene	56-55-3	0.01	nd	nd	nd	nd	nd	95.7%	88.2%	89.2%
Benzo(a)pyrene	50-32-8	0.01	nd	nd	nd	nd	nd	n/a	n/a	n/a
Benzo(b)fluoranthene	205-99-2	0.01	nd	nd	nd	nd	nd	n/a	n/a	n/a
Benzo(k)fluoranthene	207-08-9	0.01	nd	nd	nd	nd	nd	n/a	n/a	n/a
Chrysene	218-01-9	0.01	nd	nd	nd	nd	nd	94.2%	88.2%	97.9%
Dibenzo(a,h)anthracene	53-70-3	0.01	nd	nd	nd	nd	nd	n/a	n/a	n/a
Ideno(1,2,3-cd)pyrene	193-39-5	0.01	nd	nd	nd	nd	nd	108%	104%	104%
1-Methylnaphthalene	90-12-0	0.01	nd	nd	nd	nd	nd	n/a	n/a	n/a
2-Methylnaphthalene	91-57-6	0.01	nd	nd	nd	nd	nd	n/a	n/a	n/a
Naphthalene	91-20-3	0.01	nd	nd	nd	nd	nd	n/a	n/a	n/a
Surrogate Recovery (%)										
2-Fluorophenol			69.7	66.6	101	79.5	66.8	90.5	100	98.9
Phenol-d6			75.4	72.1	108	85.3	73	92.6	101	101
Nitrobenzene-d5			84.5	97.9	77.0	82.7	97.9	108	95.3	96.3
2-Fluorobiphenol			97.3	109	90.4	96.2	109	113	98.6	99.5
2,4,6-Tribromophenol			79.4	79.5	120	95.0	82.2	101	114	112
Terphenyl-d14			96.9	109	88.6	95.8	108	118	108	106
Data Flags										

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall Data reviewed by: R Lewis Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090721-02

### ANALYTICAL RESULTS FOR THE ANALYSIS OF TCLP HEAVY METALS IN SOIL BY EPA METHOD 6020 A

Sample Identification	Date Analyzed	Lead D (Pb)	ata Flags
Chemical Abstract Number (CAS)		7439-92-1	
Analytical Method		EPA 6020 A	
Units		(mg/L)	
Method Blank	7/29/2009	nd	
SP08-ZONE4-072109-comp	7/29/2009	nd	
LCS	7/29/2009	100%	
090729-MS	7/29/2009	103%	
090729-MSD	7/29/2009	68.0%	
SP08-ZONE4-072109-comp Dup.	7/29/2009	nd	
Method Detection Limit (MDL)		0.25	

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit. "n/a" indicates not applicable

Comments and Explanations: None

Analyst: T. McCall Data reviewed by: R. Lewis

page 1 of 2



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090721-02

#### QUALITY CONTROL RESULTS FOR THE ANALYSIS OF TCLP HEAVY METALS IN SOIL BY EPA METHOD 6020 A

# Sample Preparation Information for TCLP by EPA Method 1311

Sample Identification	Method Blank				
Percent Solids	100				
No. of Extractions	1				
Type of Extraction	Rotary				
Extraction Fluid	#1				
Date Extracted	7/21/2009				
Sample Preparation Information for					
TCLP by EPA Method 1311					
Sample Identification	LCS				
Percent Solids	100				
No. of Extractions	1				
Type of Extraction	Rotary				
Extraction Fluid	#1				
Date Extracted	7/21/2009				
Comments and Explanations: None					

Analyst: T. McCall Data reviewed by: R. Lewis

# Sample Preparation Information for TCLP by EPA Method 1311

Sample Identification	SP08-ZONE4-072109-comp
Percent Solids	93.7
No. of Extractions	1
Type of Extraction	Rotary
Extraction Fluid	#1
Date Extracted	7/21/2009
Sample Preparation Info	ormation for
TCLP by EPA Method 13	311
Sample Identification	090729-MS

Campio laonanoaton	0001201110
Percent Solids	100
No. of Extractions	1
Type of Extraction	Rotary
Extraction Fluid	#1
Date Extracted	7/21/2009

# Sample Preparation Information for TCLP by EPA Method 1311

Sample Identification	SP08-ZONE4-072109-comp Dup.
Percent Solids	93.7
No. of Extractions	1
Type of Extraction	Rotary
Extraction Fluid	#1
Date Extracted	7/21/2009
Sample Preparation TCLP by EPA Metho	Information for d 1311
Sample Identification	090729-MSD

Sample identification	090729-1030
Percent Solids	100
No. of Extractions	1
Type of Extraction	Rotary
Extraction Fluid	#1
Date Extracted	7/21/2009

page 2 of 2
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www.pacelabs.com

### **Report Prepared for:**

Troy Bussey Pioneer Technologies Corporation 2612 Yelm Highway S.E. Suite B Olympia WA 98501-4826

# REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

### **Report Prepared Date:**

July 30, 2009

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

#### **Report Information:**

Pace Project #: 1099878 Sample Receipt Date: 07/23/2009 Client Project #: East Bay IA Stockpile Client Sub PO #: N/A State Cert #: C218

#### **Invoicing & Reporting Options:**

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

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

This report has been reviewed and prepared by:

Ent C. Munge

Scott Unze, Project Manager (612) 607-6383 (612) 607-6444 (fax) scott.unze@pacelabs.com



### **Report of Laboratory Analysis**

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.



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

### **DISCUSSION**

This report presents the results from the analyses performed on three samples submitted by a representative of Pioneer Technologies Corporation. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. Reporting limits were based on signal-to-noise measurements.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 47-102%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of native or labeled PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained, or "E" where polychlorinated diphenyl ethers were present.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain trace levels of selected congeners. These were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" on the results tables and may be, at least partially, attributed to the background. It should be noted that levels less than ten times the background are not generally considered to be statistically different from the background.

A laboratory spike sample was also prepared with the sample batch using clean sand that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 97-112%. These results indicate a high degree of accuracy for these determinations. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

# **REPORT OF LABORATORY ANALYSIS**

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# Appendix A

Sample Management

Client N	ame: <u>PTC</u>	Project #	1099378
Courier: Fed Ex UPS USPS Tracking #: <u>8683 2775 9920</u> Custody Seal on Cooler/Box Present:	] Client 🗌 Commercial 🔲 Pa	ace Other	<u>(oha)</u> Elue: Dato: Datue:
Packing Material: Bubble Wrap			
Thermometer Used 80344042 179425	Type of Ice Wet Plus	er Temp Blank: `	Yes X No_
Cooler Temperature 5.6°	Biological Tissue is Froze	None Samples on ice, n: Yes No Date and Ini contents:	cooling process has beg itals of person examini 1 1 23 109 ML
Chain of Custody Present:			1 0
Chain of Custody Filled Out:	ZYes DNo DN/A 2	₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩	
Chain of Custody Relinguished:	DYes DNo FINIA 3		
Sampler Name & Signature on COC:	DYes DNO DNA A	- Cangaran yang mang mang mang mang mang mang mang m	
Samples Arrived within Hold Time:	DYes DNO FINIA 5		10
Short Hold Time Analysis (<72hr):	DYes DNo DN/A 6	، مریک میں اور	
Rush Turn Around Time Requested:	EYes DNO DINA 7	' <b>)</b>	
Sufficient Volume:	Ves DNo DN/A 8	aay	MARGELEN MARGELEN ALS AND
Correct Containers Used:	Zives DNO DN/A 9		
-Pace Containers Used:	ZYes DNO DNA		
ontainers Intact:	PYes DNO DN/A 10	ĨŎŎŎĸŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎŎ	ang na kana na kana na kana na kana kana
iltered volume received for Dissolved tests	DYes DNo DNA 11		
ample Labels match COC:	Ves DNO DN/A 12	، ««المار» بالإربار المالية»، ««المالية»، «المالية»، «المالية»، «المالية»، «المالية»، «المالية»، «المالية»، «ا المالية المالية»، «المالية»، «المالية»، «المالية»، «المالية»، «المالية»، «المالية»، «المالية»، «المالية»، «الم	
-Includes date/time/ID/Analysis Matrix: containers needing acid/base preservation have been acked. Noncompliance are noted in 13. containers needing preservation are found to be in poliance with EPA recommendation	Dyes DNo DN/A 13.		
aplions: VOA,Coliform, TOC, Oil and Grease, WI-DRO (water)		Lot # of added	
nples checked for dechlorination:		Ipreservative	
dspace in VOA Vials ( >6mm):		₩ <sup>₩</sup> ₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩₩	
Blank Present:	Dyes DN0 DN/A 16		
Blank Custody Seals Present	Dyes DNO DNA		
Trip Blank Lot # (if purchased):		e e la companya de la	
t Notification/ Resolution:			
Person Contacted:	Date/Timer	Field Data Required?	Y / N
nments/ Resolution:		·	
dspace in VOA Vials ( >6mm): Blank Present: Blank Custody Seals Present Trip Blank Lot # (if purchased): t Notification/ Resolution: Person Contacted: ments/ Resolution:	□Yes □No QNVA 15. □Yes ℓINo □N/A 16. □Yes □No ፬N/A Date/Time:	Field Data Required?	Y / N

# Appendix B

Sample Analysis Summary



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

### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP0 1099 R90 SMT 11.2 15.7 9.48 R90 R90 BLA	7-ZONE2-03 9878001 728A_08 9 9 512GC2 727B_15 & NK-20735	72209 R90728A_13	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 07/22/2009 07/23/2009 07/24/2009 07/28/2009	9 10:00 9 09:31 9 14:15 9 09:18	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	300.00	4.80	0.47 E 0.47	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDE-12	30	2.00 2.00 2.00	73 84 85
2,3,7,8-TCDD Total TCDD	1.00 47.00		0.12 J 0.12	2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C -13C	2.00 2.00 2.00	85 99 74
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	2.60 53.00 540.00	 	1.20 J 0.64 0.94	1,2,3,4,7,0-HXCDF 1,2,3,6,7,8-HXCDF 2,3,4,6,7,8-HXCDF 1,2,3,7,8,9-HXCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	74 71 72 77 80
1,2,3,7,8-PeCDD Total PeCDD	2.60 52.00		0.24 J 0.24	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD	-13C 0F-13C	2.00 2.00 2.00 2.00	75 69 71
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2 3 4 6 7 8-HxCDF	5.60 12.00 26.00		1.40 1.50 0.32	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 4.00	81 65
1,2,3,7,8,9-HxCDF Total HxCDF	350.00	0.65	0.32 0.22 I 0.87	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	3.40 14.00 7.20 160.00	  	0.41 J 0.26 0.50 0.39	2,3,7,8-TCDD-37Ck	4	0.20	87
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	73.00 4.00 230.00	 	0.15 0.25 J 0.20	Total 2,3,7,8-TCDE Equivalence: 35 ng (Using 2005 WHO	) /Kg Factors - Us	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	600.00 1900.00		0.17 0.17				
OCDF OCDD	210.00 6600.00		0.25 0.31				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

E = PCDE Interference

I = Interference present

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ND = Not Detected NA = Not Applicable

NC = Not Calculated



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### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP0 1099 R90 SMT 11.3 3.1 10.9 R90 R90 BLA	8-ZONE4-0 9878002 728A_09 5 9 9 9 512GC2 727B_15 & NK-20735	72209-1 R90728A_13	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 07/22/2009 07/23/2009 07/24/2009 07/28/2009	9 10:15 9 09:31 9 14:15 9 10:11	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND 0.31		0.21 0.21 J	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	20	2.00 2.00 2.00	71 82
2,3,7,8-TCDD Total TCDD	ND ND		0.26 0.26	2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDF-1	3C 3C 3C	2.00 2.00 2.00	86 102 72
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND 1.20	0.30	0.30 0.26 I 0.28 BJ	1,2,3,4,7,8-HXCDF 1,2,3,6,7,8-HXCDF 2,3,4,6,7,8-HXCDF 1,2,3,7,8,9-HXCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	73 68 71 74 76
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.30 0.30	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD	-13C -13C 9F-13C	2.00 2.00 2.00	70 72 67 70
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	 	0.40 0.55 0.53	0.25   0.27   0.20	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 2.00 4.00	70 79 61
1,2,3,7,8,9-HxCDF Total HxCDF	6.20	0.29	0.24 I 0.24 B	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.10  7.40	0.40  0.85 	0.33   0.26 J 0.53   0.38	2,3,7,8-TCDD-37Ck	4	0.20	88
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	4.20  13.00	0.52	0.31 J 0.35 I 0.33	Total 2,3,7,8-TCDE Equivalence: 0.88 r (Using 2005 WHO	) ng/Kg Factors - Us	sing PRL/2	where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	24.00 46.00		0.33 0.33				
OCDF OCDD	13.00 200.00		0.67 0.80				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

ND = Not Detected NA = Not Applicable

NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

B = Less than 10x higher than method blank level

I = Interference present

RL = Reporting Limit.

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#### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP0 1099 R90 SMT 11.2 4.3 10.7 R90 R90 BLA	8-ZONE4-0 9878003 728A_10 9 512GC2 727B_15 & NK-20735	72209-2 R90728A_13	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 07/22/2009 07/23/2009 07/24/2009 07/28/2009	9 10:30 9 09:31 9 14:15 9 11:04	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.31 1.00		0.25 J 0.25	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	20	2.00 2.00 2.00	70 82 70
2,3,7,8-TCDD Total TCDD	ND ND		0.23 0.23	1,2,3,7,8-PeCDF-1 2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C 3C	2.00 2.00 2.00	79 82 97 75
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND 0.36 2.10	 	0.43 0.28 J 0.36 BJ	1,2,3,4,7,6-HXCDF 1,2,3,6,7,8-HXCDF 2,3,4,6,7,8-HXCDF 1,2,3,7,8,9-HXCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	75 71 71 75 79
1,2,3,7,8-PeCDD Total PeCDD	 ND	0.41	0.37 l 0.37	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD	-13C 9F-13C	2.00 2.00 2.00	74 63
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	0.74 0.66 0.73		0.30 BJ 0.36 BJ 0.38 BJ	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 2.00 4.00	74 47
1,2,3,7,8,9-HxCDF Total HxCDF	ND 7.90		0.43 0.37	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND 1.20  6.50	 0.84 	0.51 0.45 J 0.60 I 0.52	2,3,7,8-TCDD-37Cl	4	0.20	88
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	4.50 1.00 16.00	 	0.33 J 0.46 J 0.39	Total 2,3,7,8-TCDI Equivalence: 1.2 n (Using 2005 WHO	) g/Kg Factors - Us	sing PRL/2	where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	24.00 53.00		0.39 0.39				
OCDF OCDD	14.00 230.00		1.50 1.30				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

ND = Not Detected NA = Not Applicable

NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

B = Less than 10x higher than method blank level

I = Interference present

RL = Reporting Limit.

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### Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-20735	Matrix	Solid
Filename	R90728A_07	Dilution	NA
Total Amount Extracted	10.1 g	Extracted	07/24/2009 14:15
ICAL ID	R90512GC2	Analyzed	07/28/2009 08:25
CCal Filename(s)	R90727B_15 & R90728A_13	Injected By	SMT

Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	 ND	0.17	0.150 I 0.150	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1 2 3 7 8-PeCDF-13C	2.00 2.00 2.00	59 71 72
2,3,7,8-TCDD Total TCDD	ND 0.81		0.230 0.230 J	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	74 90 68
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND 0.64	 	0.170 0.200 0.180 J	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	68 66 64
1,2,3,7,8-PeCDD Total PeCDD	0.14 0.14		0.120 J 0.120 J	1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	75 73 68
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	0.18 0.23 0.18		0.130 J 0.110 J 0.089 J	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	58 74 53
1,2,3,7,8,9-HxCDF Total HxCDF	ND 0.74		0.120 0.110 J	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND	0.12	0.110 I 0.120 0.120 0.110	2,3,7,8-TCDD-37Cl4	0.20	80
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	0.28 ND 0.28	 	0.130 J 0.180 0.160 J	Total 2,3,7,8-TCDD Equivalence: 0.40 ng/Kg (Using 2005 WHO Factors -	Using PRL/	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	0.98 1.70		0.240 J 0.240 J			
OCDF OCDD	0.79 8.40		0.440 J 0.910 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

I = Interference present

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## Method 8290 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS-2 R9072 10.1 g R9051 R9072 BLANI	0736 29B_12 2GC2 29A_07 & R K-20735	90729B_13	Matrix Dilution Extracted Analyzed Injected By	Solid NA 07/24/2009 14: 07/29/2009 23: SMT	15 40
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.22	108	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	2.00 2.00	61 74
2,3,7,8-TCDD Total TCDD	0.20	0.20	98	1,2,3,7,8-PeCDF-13C 2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	74 75 90
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.00 1.00	1.06 1.01	106 101	1,2,3,4,7,8-HxCDF-13C 1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	69 68 71 68 77
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.99	99	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	78 71
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	1.03 1.08 1.07	103 108 107	1,2,3,4,7,6,7,8-HpCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	62 79 52
1,2,3,7,8,9-HxCDF Total HxCDF	1.00	1.06	106	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	1.00 1.02 1.07	100 102 107	2,3,7,8-TCDD-37Cl4	0.20	78
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.00 1.00	1.07 1.05	107 105			
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	0.98	98			
OCDF OCDD	2.00 2.00	1.95 2.23	97 112			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

P = Recovery outside of target range

X = Background subtracted value

Y = RF averaging used in calculations

Nn = Value obtained from additional analysis

NA = Not Applicable

\* = See Discussion

# **REPORT OF LABORATORY ANALYSIS**

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Report No.....1099878\_8290

Page 11 of 11

DRAGO Analytical Laborat	DN ory	_ >		\$				<u>R(</u> 28]	CRA 8 M Phon	adro ae: (3 E1 V	HAI ona B 360) nail: Vebsi	IN ( Beach 866- Dra ite: d	<b>)F (</b> n Rd. 0543 gonI trago	CUS NW F Lab@ nlab	, Oly ax: ( )com	DY /mpi (360) icast ory.co	<b>RE</b> a, W 866 .net om	2 <b>CO</b> A 98 -055	9 <b>RD</b> 3502 56						s	Sampl	es Co ct Nur	llected	н Ву:_ ЗС	P       	age_ L 70	` 	of	
Client: <u>PTC</u> Address: <u>2612</u> Olympic	Yeli	n Hu 1A 9	<u>n SE</u> 8501	P F E	Phone `ax: Email	:: <u>3</u> 	GO. Spi	-5- ts	70 K @	-17 0 Ca	00 	P P P	rojec rojec rojec	xt Na xt Lo xt Nu	me: catio mbe	<i>Eo</i> n: r:	ist	Ba	y ·	ĪA	St	~\$		2. Pr C D	rojec onta AL	ct P. ct Po Proj	O.: _ ersor ect N	<u>C</u> v 1: 10.: <b>_</b>	2d 09(	1)† 372	<u>Co</u> 9-1	<u>rd</u> 04		-
Matrix Code: $WW =$ wastewater $GW =$ $SL =$ sludge $V =$ va	groun por	dwater S O	= soil or so = other	olid					_		EPA 8081)			8270SIM)			HEM)		9050)	)	Series)		ors	(EPA 900)	PA 900)	į								
Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Container Type	MtBE/BTEX (EPA 8021b)	Gasoline (NWTPH-Gx)	Diesel (NWTPH-Dx)	Diesel & Oil (NWTPH-Dx)	Fuel Scan (NWTPH-HCID)	VOC's (EPA 8021b)	Organochlorine Pesticides (	PCB's (EPA 8082)	Volatiles (EPA 8260)	PAH's (EPA 8100 or 8270/	Semi-Volatiles (EPA 8270)	Ignitability (EPA 1010)	Oil and Grease (EPA 1664 ]	pH (EPA 9040/9045)	Specific Conductance (EPA	Paint Filter Test (EPA 9095	Heavy Metals* (EPA 7000	Biogenic Gases (EPA 3C)	Natural Attenuation Indicat	Gross Alpha Radioactivity (	Gross Beta Radioactivity (F		L							
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Sample Disposal Instructions:		DAL Disposa	l @ \$2.50 per (	Container	🗆 Ret	urn	Pick	up			□ Oth	er:																						

2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090729-04

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF FUEL IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Diesel Fuel #2 NWTPH-Dx (mg/kg)	Heavy Oil NWTPH-Dx (mg/kg)	Surrogate Recovery 2-FBP (%)	Data Flags
Method Blank	8/2/2009	n/a	nd	nd	72.5	
SP09-ZONE1-072909	8/2/2009	88.0	nd	nd	105	
SP10-ZONE2-072909	8/2/2009	83.9	nd	349	112	
LCS	8/2/2009	n/a	107%	n/a	n/a	
090802-MS	8/2/2009	n/a	110%	n/a	n/a	
090802-MSD	8/2/2009	n/a	100%	n/a	n/a	
SP09-ZONE1-072909 Dup.	8/2/2009	88.0	nd	nd	115	
Method Reporting Limits			25	100		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall Data reviewed by: R Lewis



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090729-04

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF GASOLINE RANGE ORGANICS IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Benzene EPA 8021B (mg/kg)	Toluene EPA 8021B (mg/kg)	Ethylbenzene EPA 8021B (mg/kg)	m&p-Xylene EPA 8021B (mg/kg)	o-Xylene EPA 8021B (mg/kg)	Gasoline NWTPH-Gx (mg/kg)	Surrogate Recovery BFB (%)	Data Flags
Method Blank	8/2/2009	n/a	nd	nd	nd	nd	nd	nd	92.9	
SP09-ZONE1-072909	8/2/2009	88.0	nd	nd	nd	nd	nd	nd	85.8	
SP10-ZONE2-072909	8/2/2009	83.9	nd	nd	nd	nd	nd	nd	71.0	
LCS	8/2/2009	n/a	96.2%	95.7%	112.0%	87.5%	83.7%	94.5%	n/a	
090802-MS	8/2/2009	n/a	93.2%	108%	78.8%	71.2%	81.8%	84.8%	n/a	
090802-MSD	8/2/2009	n/a	95.0%	94.8%	83.3%	82.0%	107%	86.0%	n/a	
SP10-ZONE2-072909 Dup.	8/2/2009	88.0	nd	nd	nd	nd	nd	nd	91.1	
Method Reporting Limits			0.05	0.10	0.10	0.10	0.10	5.0		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090729-04

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF HEAVY METALS IN SOIL BY EPA METHOD 6020 A

Sample Identification	Date Analyzed	Percent Solids	Arsenic (As)	Cadmium (Cd)	Lead (Pb)
Chemical Abstract Number (CAS)			7440-38-2	7440-43-9	7439-92-1
Units		(%)	(mg/kg)	(mg/kg)	(mg/kg)
Method Blank	8/3/2009	n/a	nd	nd	nd
SP09-ZONE1-072909	8/3/2009	88.0	5.60	nd	7.65
SP10-ZONE2-072909	8/3/2009	83.9	14.4	0.75	119
LCS	8/3/2009	n/a	101%	94.0%	89.7%
090803-MS	8/3/2009	n/a	127%	100%	78%
090803-MSD	8/3/2009	n/a	100%	82%	48%
SP10-ZONE2-072909 Dup.	8/3/2009	83.9	12.3	0.66	102
Method Reporting Limits			0.25	0.25	0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference

Sample results based on dry weight.

Comments and Explanations: None



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090729-04

ANALYTICAL RESULTS FOR THE ANALYSIS OF SEMI-VOLATILE COMPOUNDS IN SOIL BY EPA METHOD 827(											
Sample Identification			Blank	SP09-ZONE1- 072109	SP10-ZONE2- 072109	SP09-ZONE1- 072109 Dup.	LCS	090803-MS	090803-MSD		
Percent Solids (%)			n/a	88.0	83.9	88	n/a	n/a	n/a		
Date Extracted	CAS	MRL	8/3/2009	8/3/2009	8/3/2009	8/3/2009	8/3/2009	8/3/2009	8/3/2009		
Date Anlayzed	Number	(mg/kg)	8/3/2009	8/3/2009	8/3/2009	8/3/2009	8/3/2009	8/3/2009	8/3/2009		
Benzo(a)anthracene	56-55-3	0.01	nd	0.02	0.32	0.02	97.2%	49.0%	49.2%		
Benzo(a)pyrene	50-32-8	0.01	nd	nd	0.97	nd	n/a	n/a	n/a		
Benzo(b)fluoranthene	205-99-2	0.01	nd	nd	1.03	nd	n/a	n/a	n/a		
Benzo(k)fluoranthene	207-08-9	0.01	nd	nd	0.29	nd	n/a	n/a	n/a		
Chrysene	218-01-9	0.01	nd	nd	0.85	nd	97.1%	48.1%	48.3%		
Dibenzo(a,h)anthracene	53-70-3	0.01	nd	nd	0.32	nd	n/a	n/a	n/a		
Ideno(1,2,3-cd)pyrene	193-39-5	0.01	nd	nd	0.58	nd	107%	51.7%	52.0%		
1-Methylnaphthalene	90-12-0	0.01	nd	nd	0.02	nd	n/a	n/a	n/a		
2-Methylnaphthalene	91-57-6	0.01	nd	nd	0.02	nd	n/a	n/a	n/a		
Naphthalene	91-20-3	0.01	nd	nd	0.04	nd	n/a	n/a	n/a		
Surrogate Recovery (%)											
2-Fluorophenol			54.4	49.6	48.3	50.0	98.9	41.6	41.7		
Phenol-d6			57.5	52.5	53.4	53.1	99.6	42.3	42.4		
Nitrobenzene-d5			57.5	55.6	50.9	56.1	78.1	57.5	57.5		
2-Fluorobiphenol			68.9	126	118	124	82.6	122	121		
2,4,6-Tribromophenol			46.5	46.4	54.5	47.2	104	42.7	42.4		
Terphenyl-d14			61.5	65.9	62.3	65.4	85.4	61.9	61.5		

Data Flags

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall Data reviewed by: R Lewis

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### **Report Prepared for:**

Troy Bussey Pioneer Technologies Corporation 2612 Yelm Highway S.E. Suite B Olympia WA 98501-4826

# REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

**Report Prepared Date:** 

August 4, 2009

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

#### **Report Information:**

Pace Project #: 10100330 Sample Receipt Date: 07/30/2009 Client Project #: East Bay IA Stockpile Client Sub PO #: N/A State Cert #: C218

#### **Invoicing & Reporting Options:**

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

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

This report has been reviewed and prepared by:

Ent C. Hunge

Scott Unze, Project Manager (612) 607-6383 (612) 607-6444 (fax) scott.unze@pacelabs.com



### **Report of Laboratory Analysis**

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.



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

### **DISCUSSION**

This report presents the results from the analyses performed on two samples submitted by a representative of Pioneer Technologies Corporation. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. Reporting limits were based on signal-to-noise calculations. The samples were received within the recommended temperature range of 0-6 degrees Celsius.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 65-119%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Since the quantification of the native 2,3,7,8-substituted isomers was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF isomers. The affected values were flagged "I" where incorrect isotope ratios were obtained, or "E" where polychlorinated diphenyl ethers were present.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain trace levels of selected isomers. These levels were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" on the results tables and may be, at least partially, attributed to the background. It should be noted that levels less than ten times the background are not generally considered to be statistically different from the background.

A laboratory spike sample was also prepared with the sample batch using clean reference matrix that had been fortified with native standards. The results show that the spiked native compounds were recovered at 89-108%. These results indicate a high degree of accuracy for these determinations. Matrix spikes were prepared using a different sample in this extraction batch. Results are available upon request.

# **REPORT OF LABORATORY ANALYSIS**

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# Appendix A

Sample Management

Client N	lame: <u></u>	6	Project #	10100330
Courier: Fed Ex UPS USPS [ Tracking #: 7966 1/49 2	Client Comm	nercial 🗌 Pace	Other	nional
Custody Seal on Cooler/Box Present:	Types [] no	On all the state		9 Due Date:
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Sampler Name & Signature on COC:	Yes DNO D	]N/A 4.		an a
Samples Arrived within Hold Time:	Ves DNo	IN/A 5.	******	
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All containers needing preservation are found to be in compliance with EPA recommendation.	DYes DNO ZINIA			
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# Appendix B

Sample Analysis Summary



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

#### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP09 1010 R908 SMT 12.5 11.1 11.1 R905 R908 BLAN	9-ZONE1-0 0330001 304A_03 9 9 512GC2 303B_12 & NK-20800	72909 R90804A_07	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 07/29/200 07/30/200 07/30/200 08/04/200	9 10:00 9 11:11 9 20:30 9 10:31	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	4.80	0.46	0.30 I 0.30	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	20	2.00 2.00	75 90
2,3,7,8-TCDD Total TCDD	ND 2.10		0.17 0.17	1,2,3,7,8-PeCDF-1 2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C 3C	2.00 2.00 2.00	90 104
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	0.33 0.68 3.40	 	0.33 BJ 0.16 J 0.25 J	1,2,3,4,7,8-HXCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,7,8-HxCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	78 75 76 78 82
1,2,3,7,8-PeCDD Total PeCDD	ND 2.50		0.21 0.21 J	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD	-13C )F-13C	2.00 2.00 2.00	81 73 76
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF	0.59 	1.00	0.10 J 0.11 E	1,2,3,4,7,6,9-HPCD 1,2,3,4,6,7,8-HPCD OCDD-13C	)D-13C	2.00 2.00 4.00	86 72
2,3,4,6,7,8-HXCDF 1,2,3,7,8,9-HxCDF Total HxCDF	  10.00	0.56 0.26	0.15 I 0.12	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	0.42 0.56 5.30	0.67 	0.13 J 0.15 I 0.12 J 0.13	2,3,7,8-TCDD-37Cl	4	0.20	92
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	6.30  26.00	0.62	0.18 0.18 I 0.18	Total 2,3,7,8-TCDI Equivalence: 0.98 (Using 2005 WHO	D ng/Kg Factors - U	sing PRL/2	where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	23.00 64.00		0.11 0.11				
OCDF OCDD	23.00 280.00		0.25 0.41				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

B = Less than 10x higher than method blank level

E = PCDE Interference

I = Interference present

# **REPORT OF LABORATORY ANALYSIS**

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Report No.....10100330\_8290

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



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

#### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP10 1010 R908 SMT 16.9 12.0 14.9 R908 R908 BLA	D-ZONE2-03 00330002 304A_05 g 512GC2 303B_12 & NK-20800	72909 R90804A_07	Matrix Dilution Collected Received Extracted Analyzed	Solid 5 07/29/2009 07/30/2009 07/30/2009 08/04/2009	9 10:30 9 11:11 9 20:30 9 13:10	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND 190.0		3.60 3.60	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDE-1	30	2.00 2.00 2.00	75 93 92
2,3,7,8-TCDD Total TCDD	ND ND		3.90 3.90	2,3,4,7,8-PeCDF-13 1,2,3,7,8-PeCDD-1	3C 3C 12C	2.00 2.00 2.00	90 119 74
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND 36.0 410.0	 	1.80 1.80 1.80	1,2,3,4,7,0-HXCDF 1,2,3,6,7,8-HXCDF 2,3,4,6,7,8-HXCDF 1,2,3,7,8,9-HXCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	74 70 71 65 81
1,2,3,7,8-PeCDD Total PeCDD	2.0 7.5		0.93 J 0.93 J	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD	-13C 0F-13C	2.00 2.00 2.00	81 71 79
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	5.5 9.1 9.0		0.80 J 0.82 J 0.74 J	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 2.00 4.00	82 74
1,2,3,7,8,9-HxCDF Total HxCDF	 180.0	2.0	0.55 I 0.73	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	10.0 4.6 68.0	1.5  	0.67 I 0.46 J 0.94 J 0.69	2,3,7,8-TCDD-37Cl	4	0.20	98
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	99.0 3.6 280.0		0.69 0.60 BJ 0.64	Total 2,3,7,8-TCDI Equivalence: 22 ng (Using 2005 WHO	) /Kg Factors - U	sing PRL/2	where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	200.0 430.0		0.50 0.50				
OCDF OCDD	240.0 2000.0		1.20 1.60				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

ND = Not Detected NA = Not Applicable

NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

B = Less than 10x higher than method blank level

I = Interference present

RL = Reporting Limit.

# **REPORT OF LABORATORY ANALYSIS**

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Report No.....10100330\_8290



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

### Method 8290 Blank Analysis Results

Lab Sample Name	DFBLKBC		
Lab Sample ID	BLANK-20800	Matrix	Solid
Filename	R90804A_02	Dilution	NA
Total Amount Extracted	10.3 g	Extracted	07/30/2009 20:30
ICAL ID	R90512GC2	Analyzed	08/04/2009 09:38
CCal Filename(s)	R90803B_12	Injected By	SMT

Native Isomers	<b>Conc</b> ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND 0.25		0.150 0.150 J	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PoCDF-13C	2.00 2.00 2.00	68 79 78
2,3,7,8-TCDD Total TCDD	ND ND		0.230 0.230	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	84 97 77
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	0.27  0.27	0.22	0.130 J 0.090 I 0.110 J	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	76 74 65
1,2,3,7,8-PeCDD Total PeCDD	 ND	0.37	0.160 I 0.160	1,2,3,4,7,8-HXCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00 2.00	78 79 68 57
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF		0.23 0.29 0.13	0.160   0.170   0.110	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	57 73 50
1,2,3,7,8,9-HxCDF Total HxCDF	ND	0.34 	0.210 I 0.160	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	0.43	0.26  0.34	0.180 I 0.110 J 0.200 I 0.160 J	2,3,7,8-TCDD-37Cl4	0.20	85
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	0.59 0.69 1.30	 	0.160 J 0.350 J 0.250 J	Total 2,3,7,8-TCDD Equivalence: 0.34 ng/Kg (Using 2005 WHO Factors -	Using PRL/	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	 ND	0.77	0.220 I 0.220			
OCDF OCDD	1.50 7.80		0.470 J 1.100 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

I = Interference present

# REPORT OF LABORATORY ANALYSIS

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Report No.....10100330\_8290



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

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

## Method 8290 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS-2 R9080 10.1 g R9051 R9080 BLANI	0801 04A_06 2GC2 03B_12 K-20800		Matrix Dilution Extracted Analyzed Injected By	Solid NA 07/30/2009 20: 08/04/2009 14: SMT	30 01
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.20	99	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	2.00 2.00	71 86
2,3,7,8-TCDD Total TCDD	0.20	0.18	92	1,2,3,7,8-PeCDF-13C 2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	88 105
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.00 1.00	1.02 0.96	102 96	1,2,3,4,7,8-HxCDF-13C 1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	76 73 73 71
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.89	89	1,2,3,6,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	63 79 69
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	1.00 1.02 1.04	100 102 104	1,2,3,4,6,7,8-HpCDD-130 0CDD-13C	2.00 C 2.00 4.00	81 66
1,2,3,7,8,9-HxCDF Total HxCDF	1.00	1.05	105	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	0.94 0.99 0.96	94 99 96	2,3,7,8-TCDD-37Cl4	0.20	92
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.00 1.00	1.05 1.02	105 102			
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	0.96	96			
OCDF OCDD	2.00 2.00	1.85 2.16	93 108			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

P = Recovery outside of target range

X = Background subtracted value

Y = RF averaging used in calculations

Nn = Value obtained from additional analysis

NA = Not Applicable

\* = See Discussion

# **REPORT OF LABORATORY ANALYSIS**

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Report No.....10100330\_8290

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Client: <u>PTC</u> Address: <u>2612 Yer</u> <u>014mpra</u>	<u>lm</u> ., v	<u>Hwy</u> NA 99	<u>5</u> 5501	] ]	Phone Fax: Emai	e: <u>36</u> 1: <u>YI</u> L	;0 · >be \$\$P	<u>57</u> <u>rts</u> ;•n.	5-1 ka uri	(7) ) (co	<u>&gt;0</u> m	F F F	Projec Projec Projec	ct Na ct Lc ct Ni	ame: ocatio	Ea	st	Ba	<u>ч</u>	Ľ4	Ste	sck <sub>p</sub>	<u>, l</u>	- P C D	rojec 'onta )AL	ct P.0 act Po Proj	O.: ersor ect N	<u>Cr</u> 1: No.:	ed, 09	1+ 08	<u>Ca</u> .	/d	> >	
Matrix Code: $WW =$ wastewater $GW =$ $SL =$ sludge $V = va$ :	ground por	dwater S	b = soil or solution = other	olid							EPA 8081)			8270SIM)			HEM)		9050)		eries)		LS	3PA 900)	(006 Y									
Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Container Type	MtBE/BTEX (EPA 8021b)	Gasoline (NWTPH-Gx)	Diesel (NWTPH-Dx)	Diesel & Oil (NWTPH-Dx)	Fuel Scan (NWTPH-HCID)	VOC's (EPA 8021b)	Organochlorine Pesticides (	PCB's (EPA 8082)	Volatiles (EPA 8260)	PAH's (EPA 8100 or 8270/5	Semi-Volatiles (EPA 8270)	ignitability (EPA 1010)	Oil and Grease (EPA 1664 E	bH (EPA 9040/9045)	specific Conductance (EPA	aint Filter Test (EPA 9095)	leavy Metals* (EPA 7000 S	liogenic Gases (EPA 3C)	latural Attenuation Indicator	iross Alpha Radioactivity (F	iross Beta Radioactivity (EP									
SPII-Zone 2-080509		080509	1130	2462	X	X								X							X													
Relinquished by (Signature) MUOUY Relinquished by (Signature) Sample Disposal Instructions:	Date/ Date/	Time Reco 5/09 Time Reco AL Disposal (	eived by (Sign eived by (Sign @ \$2.50 per Cc	ature)		Date	2/Time 2/Time 2/Time	12	31		Turn-A ] Same ] 24 Ho ] 48 Ho ] 48 Ho ] 5 Day ] 10 Da	Aroun Day ur ur y	Id-Tin	ne	* <u>He</u> Ag Ag Ag	Al A Al A Al A	Metal S Ba Is Ba Is Ba	ls: Ple Be ( Be ( Be (	ease ci CC Cr Cd Cr Cd Cr	ircle tl Cr-V Cr-V Cr-V	ne des /I Co /I Co /I Co	ired an Cu I Cu I Cu I	nalyte Fe H Fe H	es. g Li g Li g Li	Mg 1 Mg 1 Mg 1	Mn N Mn N Mn N	10 Ni 10 Ni 10 Ni	i (Pp i Pb i Pb	Sb Se Sb Se Sb Se	e T1 ' e T1 ' e T1 '	V Zn V Zn V Zn V Zn	- Tot: - Dis: - TCI	al solved LP	

2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090805-10

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF FUEL IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Diesel Fuel #2 NWTPH-Dx (mg/kg)	Heavy Oil NWTPH-Dx (mg/kg)	Surrogate Recovery 2-FBP (%)	Data Flags
Method Blank	8/8/2009	n/a	nd	nd	123	
SP11-ZONE2-080509	8/8/2009	93.7	nd	nd	115	
LCS	8/8/2009	n/a	111%	n/a	n/a	
090808-MS	8/8/2009	n/a	112%	n/a	n/a	
090808-MSD	8/8/2009	n/a	97.4%	n/a	n/a	
SP11-ZONE2-080509 Dup.	8/8/2009	93.4	nd	nd	112	
Method Reporting Limits			25	100		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall Data reviewed by:



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090805-10

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF GASOLINE RANGE ORGANICS IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Benzene EPA 8021B (mg/kg)	Toluene EPA 8021B (mg/kg)	Ethylbenzene EPA 8021B (mg/kg)	m&p-Xylene EPA 8021B (mg/kg)	o-Xylene EPA 8021B (mg/kg)	Gasoline NWTPH-Gx (mg/kg)	Surrogate Recovery BFB (%)	Data Flags
Method Blank	8/8/2009	n/a	nd	nd	nd	nd	nd	nd	82.8	
SP11-Zone2-080509	8/8/2009	93.7	nd	nd	nd	nd	nd	nd	114	
LCS	8/8/2009	n/a	96.0%	98.0%	85.0%	80.9%	91.1%	99.0%	n/a	
090802-MS	8/8/2009	n/a	95.0%	86.5%	72.1%	87.5%	80.0%	81.1%	n/a	
090802-MSD	8/8/2009	n/a	96.0%	98.0%	66.1%	74.5%	87.5%	92.9%	n/a	
SP11-Zone2-080509	8/8/2009	93.4	nd	nd	nd	nd	nd	nd	96.8	
Method Reporting Limits			0.05	0.10	0.10	0.10	0.10	5.0		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090805-10

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF HEAVY METALS IN SOIL BY EPA METHOD 6020 A

Sample Identification	Date Analyzed	Percent Solids	Arsenic (As)	Cadmium (Cd)	Lead (Pb)
Chemical Abstract Number (CAS)			7440-38-2	7440-43-9	7439-92-1
Units		(%)	(mg/kg)	(mg/kg)	(mg/kg)
Method Blank	8/6/2009	n/a	nd	nd	nd
SP11-Zone2-080509	8/6/2009	93.7	6.35	0.34	7.13
LCS	8/6/2009	n/a	101%	94.0%	89.7%
090803-MS	8/6/2009	n/a	127%	100%	78%
090803-MSD	8/6/2009	n/a	100%	82%	48%
SP11-Zone2-080509 Dup.	8/6/2009	93.4	4.31	nd	4.42
Method Reporting Limits			0.25	0.25	0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference

Sample results based on dry weight.

Comments and Explanations: None



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090805-10

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF SEMI-VOLATILE COMPOUNDS IN SOIL BY EPA METHOD 8270

Sample Identification			Blank	SP11-Zone2- 080509	SP11-Zone2- 080509 Dup.	LCS	090805-MS	090805-MSD
Percent Solids (%)			n/a	93.7	93.4	n/a	n/a	n/a
Date Extracted	CAS	MRL	8/5/2009	8/5/2009	8/5/2009	8/5/2009	8/5/2009	8/5/2009
Date Anlayzed	Number	(mg/kg)	8/5/2009	8/5/2009	8/5/2009	8/5/2009	8/5/2009	8/5/2009
Benzo(a)anthracene	56-55-3	0.01	nd	0.03	0.02	102%	101%	102%
Benzo(a)pyrene	50-32-8	0.01	nd	0.01	nd	n/a	n/a	n/a
Benzo(b)fluoranthene	205-99-2	0.01	nd	nd	nd	n/a	n/a	n/a
Benzo(k)fluoranthene	207-08-9	0.01	nd	nd	nd	n/a	n/a	n/a
Chrysene	218-01-9	0.01	nd	nd	nd	101%	101%	99.8%
Dibenzo(a,h)anthracene	53-70-3	0.01	nd	0.20	0.20	n/a	n/a	n/a
Ideno(1,2,3-cd)pyrene	193-39-5	0.01	nd	nd	nd	120%	125%	130%
1-Methylnaphthalene	90-12-0	0.01	nd	nd	nd	n/a	n/a	n/a
2-Methylnaphthalene	91-57-6	0.01	nd	nd	nd	n/a	n/a	n/a
Naphthalene	91-20-3	0.01	nd	nd	nd	n/a	n/a	n/a
Surrogate Recovery (%)			_					
2-Fluorophenol			52.8	45.8	46.5	62.5	59.3	59.2
Phenol-d6			56.7	49.1	50.3	64.3	61.0	60.2
Nitrobenzene-d5			54.0	52.5	53.3	62.4	61.5	61.8
2-Fluorobiphenol			65.4	63.3	63.6	63.4	63.4	63.0
2,4,6-Tribromophenol			49.6	47.1	50.0	64.4	62.7	63.3
Terphenyl-d14			65.0	57.8	56.6	61.5	61.5	61.6
Data Flags								

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall Data reviewed by:

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\*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007



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### **Report Prepared for:**

Troy Bussey Pioneer Technologies Corporation 2612 Yelm Highway S.E. Suite B Olympia WA 98501-4826

# REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

# **Report Prepared Date:**

August 13, 2009

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

#### **Report Information:**

Pace Project #: 10100839 Sample Receipt Date: 08/06/2009 Client Project #: East Bay IA Stockpile Client Sub PO #: N/A State Cert #: C218

#### **Invoicing & Reporting Options:**

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

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

This report has been reviewed and prepared by:

Ent C. Hunge

Scott Unze, Project Manager (612) 607-6383 (612) 607-6444 (fax) scott.unze@pacelabs.com



### **Report of Laboratory Analysis**

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.



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

### **DISCUSSION**

This report presents the results from the analysis performed on one sample submitted by a representative of Pioneer Technologies Corporation. The sample was analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. Reporting limits were based on signal-to-noise calculations.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 60-92%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Since the quantification of the native 2,3,7,8-substituted isomers was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain trace levels of selected congeners. These levels were below the calibration range of the method. The levels reported for the affected congeners in the field sample were higher than the levels in the blank by an order of magnitude or more. These results indicate that the sample processing steps did not contribute significantly to the levels reported for the field sample.

A laboratory spike sample was also prepared with the sample batch using clean sand that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 91-114%. These results indicate a high degree of accuracy for these determinations. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

# **REPORT OF LABORATORY ANALYSIS**

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# Appendix A

Sample Management

Sa	mple (	Con	ditio	n Upon Receip	t	
Pace Analytical Client Name	:?	1011	eer	tech	Project #	10100839
Courier: DFed Ex D UPS D USPS D Clie Tracking #: 796836781221 Custody Seal on Cooler/Box Present: D yes		Comn no	nercial Seal	I □ Pace Other s intact: □ yes	Option Proj. ( Proj. )	ial Due Date Jame:
Packing Material: 🔲 Bubble Wrap 🛛 🕅 Bubble	Bags		None	Other	Temp Blank: Ye	»s 🞾 No
Thermometer Used	Туре о	of Ice:	(Ne	h Blue None	Samples on ice, c	coling process has begun
Cooler Temperature 3.2. Temp should be above freezing to 6°C	Biolog	jical '	Tissu	e is Frozen: Yes No Comments:	Date and mill contents:(	16 of Person examining
Chain of Custody Present:	Ples	[]No	[]N/A	1.		-v <sub>(</sub>
Chain of Custody Filled Out:	Pres	[]No		2.		
Chain of Custody Relinquished:	Ves 1	□No	[ĴN/A	3.		
Sampler Name & Signature on COC:		ΠNo	⊡n/A	4.		
Samples Arrived within Hold Time:	Ales 1			5.		
Short Hold Time Analysis (<72hr):	[]Yes [	<b>136</b> 6		6.		
Rush Turn Around Time Requested:	□Yes 9			7.		
Sufficient Volume:		⊡No	⊡n/a	8.		
Correct Containers Used:	Ares 1	⊡No	⊡n/a	9.		
-Pace Containers Used:	⊡Yes [	ЭЖÇ	□n/a			
Containers Intact:	ØYes [	□No.	DN/A	10.		
Filtered volume received for Dissolved tests	🛛 Yes [	⊡No		11.		
Sample Labels match COC:	Yes [	⊡No	[]N/A	12.		
-Includes date/time/ID/Analysis Matrix;	<u>s c</u>	~	<b></b>			
All containers needing acid/base preservation have been checked. Noncompliance are holed in 13.	□Yes [			13. 🗆 <sup>HNO3</sup>	H2SO4	🗆 NaOH
All containers needing preservation are found to be in compliance with EPA recommendation.	🛛 Yes [	]No _	( DINA	Samp #		
Exceptions: VOA,Coliform, TOC, Oll and Grease, WI-DRO (water		No		Initial when completed	Lot # of added preservative	
Samples checked for dechlorination:	CiYes C	JNO Y	ZIN/A	14.	-	
Headspace in VOA Vials ( >6mm):	CIYes C		AVA	15.		····
Trip Blank Present:	🖾 Yes [	JNo	ØN/A	16.		
Trip Blank Custody Seals Present	🗆 Yes 🛙	No	E <b>N</b> VA			
Pace Trip Blank Lot # (if purchased):	<u></u>					
Client Notification/ Resolution:					Field Data Required	1? Y / N
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Note: Whenever there is a discrepancy affecting North Ca F-L213Rev.00, 05Aug2009	trolina con	mpliar	nce sar	nples, a copy of this for 1700 E	m will be sent to the Red Im Street SE, Suite 200	<b>th Caludinal DeiMines</b> , Inc. , Minneapolis, MN 55414

Report No.....10100839\_8290

Page 5 of 9
# Appendix B

Sample Analysis Summary



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

#### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP1 <sup>7</sup> 1010 R908 CVS 12.5 6.8 11.7 R908 R908 BLAI	1-Zone 2-0 0839001 312A_03 g g 512GC2 311B_15 & NK-20860	80509 R90812A_06	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 08/05/2009 08/06/2009 08/07/2009 08/12/2009	9 11:30 9 11:13 9 19:20 9 13:50	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND 3.30		0.240 0.240	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	20	2.00 2.00 2.00	68 81 79
2,3,7,8-TCDD Total TCDD	ND ND		0.084 0.084	2,3,4,7,8-PeCDF-13 1,2,3,7,8-PeCDF-13	3C 3C 3C	2.00 2.00 2.00	78 79 92 70
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND  1.40	0.33	0.240 0.180 I 0.210 J	1,2,3,4,7,0-HXCDF 1,2,3,6,7,8-HXCDF 2,3,4,6,7,8-HXCDF 1,2,3,7,8,9-HXCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	70 69 70 71 74
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.120 0.120	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD	-13C 0F-13C	2.00 2.00 2.00	74 65 66
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	  0.45	0.42 0.34	0.210 I 0.180 I 0.090 J	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 2.00 4.00	79 60
1,2,3,7,8,9-HxCDF Total HxCDF	4.10	0.13	0.091 I 0.140 J	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	0.20  3.10	0.39 0.28 	0.170 J 0.200 l 0.220 l 0.200 J	2,3,7,8-TCDD-37Cl	4	0.20	80
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	2.70  8.00	0.32	0.150 J 0.220 I 0.180	Total 2,3,7,8-TCDI Equivalence: 0.45 r (Using 2005 WHO	) ng/Kg Factors - Us	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	12.00 30.00		0.310 0.310				
OCDF OCDD	8.70 140.00		0.520 0.440				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

ND = Not Detected NA = Not Applicable

NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

I = Interference present

# **REPORT OF LABORATORY ANALYSIS**

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Report No.....10100839\_8290



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

#### Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-20860	Matrix	Solid
Filename	U90812B_08	Dilution	NA
Total Amount Extracted	10.5 g	Extracted	08/07/2009 19:20
ICAL ID	U90807	Analyzed	08/12/2009 17:45
CCal Filename(s)	U90812B_01 & U90812B_15	Injected By	AE

Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND ND		0.21 0.21	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDF-13C	2.00 2.00 2.00	82 69 70 Y
2,3,7,8-TCDD Total TCDD	ND ND		0.33 0.33	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDF-13C	2.00 2.00 2.00	74 Y 92 77
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND	 	0.18 0.22 0.20	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00	68 74 79
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.28 0.28	1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00 2.00	75 65 53
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	ND ND ND	 	0.16 0.19 0.15	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	57 48
1,2,3,7,8,9-HxCDF Total HxCDF	ND ND		0.15 0.16	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND	  	0.20 0.25 0.22 0.22	2,3,7,8-TCDD-37Cl4	0.20	78
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND		0.19 0.22 0.21	Total 2,3,7,8-TCDD Equivalence: 0.42 ng/Kg (Using 2005 WHO Factors -	Using PRL/	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND 0.43		0.30 0.30 J			
OCDF OCDD	3.20	0.45	0.40 IY 0.70 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

I = Interference present

Y = Calculated using average of daily RFs

## REPORT OF LABORATORY ANALYSIS

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Report No.....10100839\_8290



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

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

### Method 8290 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS-2 R9081 10.3 g R9051 R9081 BLANI	0861 1B_01 2GC2 0B_13 & R9 <-20860	90811B_15	Matrix Dilution Extracted Analyzed Injected By	Solid NA 08/07/2009 19: 08/11/2009 16: CVS	20 36
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.21	104	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,2,7,8 Poc DF 13C	2.00 2.00	57 71
2,3,7,8-TCDD Total TCDD	0.20	0.19	97	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDF-13C	2.00 2.00 2.00	70 80
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.00 1.00	1.04 0.98	104 98	1,2,3,4,7,8-HXCDF-13C 1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	69 67 61
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.91	91	1,2,3,4,7,6-HXCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	70 75 62
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	1.04 1.03 1.03	104 103 103	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	54 68 48
1,2,3,7,8,9-HxCDF Total HxCDF	1.00	1.03	103	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	0.99 1.04 1.04	99 104 104	2,3,7,8-TCDD-37Cl4	0.20	73
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.00 1.00	1.10 1.05	110 105			
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	1.01	101			
OCDF OCDD	2.00 2.00	2.07 2.28	103 114			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

P = Recovery outside of target range

X = Background subtracted value

Y = RF averaging used in calculations

Nn = Value obtained from additional analysis

NA = Not Applicable

\* = See Discussion

## **REPORT OF LABORATORY ANALYSIS**

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Report No.....10100839\_8290

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2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090812-02

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF FUEL IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Diesel Fuel #2 NWTPH-Dx (mg/kg)	Heavy Oil NWTPH-Dx (mg/kg)	Surrogate Recovery 2-FBP (%)	Data Flags
Method Blank	8/20/2009	n/a	nd	nd	118	
SP12-ZONE1-081209	8/20/2009	91.8	nd	nd	126	
LCS	8/20/2009	n/a	112%	n/a	n/a	
090820-MS	8/20/2009	n/a	108%	n/a	n/a	
090820-MSD	8/20/2009	n/a	112%	n/a	n/a	
Method Reporting Limits			25	100		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090812-02

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF GASOLINE RANGE ORGANICS IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Benzene EPA 8021B (mg/kg)	Toluene EPA 8021B (mg/kg)	Ethylbenzene EPA 8021B (mg/kg)	m&p-Xylene EPA 8021B (mg/kg)	o-Xylene EPA 8021B (mg/kg)	Gasoline NWTPH-Gx (mg/kg)	Surrogate Recovery BFB (%)	Data Flags
Method Blank	8/20/2009	n/a	nd	nd	nd	nd	nd	nd	74.4	
SP12-ZONE1-081209	8/20/2009	91.8	nd	nd	nd	nd	nd	nd	69.6	
LCS	8/20/2009	n/a	101%	102%	97.6%	92.4%	105%	82.1%	n/a	
090820-MS	8/20/2009	n/a	99.6%	103.0%	95.7%	85.2%	99.5%	82.3%	n/a	
090820-MSD	8/20/2009	n/a	103%	104%	96.3%	94.8%	100%	85.3%	n/a	
SP12-ZONE1-081209 Dup.	8/20/2009	91.8	nd	nd	nd	nd	nd	nd	72.5	
Method Reporting Limits			0.05	0.10	0.10	0.10	0.10	5.0		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090812-02

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF HEAVY METALS IN SOIL BY EPA METHOD 6020 A

Sample Identification	Date Analyzed	Percent Solids	Arsenic (As)	Cadmium (Cd)	Lead (Pb)
Chemical Abstract Number (CAS)			7440-38-2	7440-43-9	7439-92-1
Units		(%)	(mg/kg)	(mg/kg)	(mg/kg)
Method Blank	8/17/2009	n/a	nd	nd	nd
SP12-ZONE1-081209	8/17/2009	91.8	nd	nd	0.45
LCS	8/17/2009	n/a	110%	101.0%	104.0%
090817-MS	8/17/2009	n/a	106%	98.9%	90.8%
090817-MSD	8/17/2009	n/a	109%	99.6%	91%
Method Reporting Limits			0.25	0.25	0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference

Sample results based on dry weight.



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090812-02

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF SEMI-VOLATILE COMPOUNDS IN SOIL BY EPA METHOD 8270

Sample Identification			Blank	SP12-Zone1- 081209	SP12-Zone1- 081209	LCS	090814-MS	090814-MSD
Percent Solids (%)			n/a	91.8	91.8	n/a	n/a	n/a
Date Extracted	CAS	MRL	8/14/2009	8/14/2009	8/14/2009	8/14/2009	8/14/2009	8/14/2009
Date Anlayzed	Number	(mg/kg)	8/14/2009	8/14/2009	8/14/2009	8/14/2009	8/14/2009	8/14/2009
Benzo(a)anthracene	56-55-3	0.01	nd	0.13	0.13	109%	103%	103%
Benzo(a)pyrene	50-32-8	0.01	nd	0.12	0.12	n/a	n/a	n/a
Benzo(b)fluoranthene	205-99-2	0.01	nd	0.19	0.19	n/a	n/a	n/a
Benzo(k)fluoranthene	207-08-9	0.01	nd	0.07	0.05	n/a	n/a	n/a
Chrysene	218-01-9	0.01	nd	0.13	0.14	109%	98.9%	101.0%
Dibenzo(a,h)anthracene	53-70-3	0.01	nd	0.22	0.22	n/a	n/a	n/a
Ideno(1,2,3-cd)pyrene	193-39-5	0.01	nd	nd	0.01	103%	109%	118%
1-Methylnaphthalene	90-12-0	0.01	nd	nd	nd	n/a	n/a	n/a
2-Methylnaphthalene	91-57-6	0.01	nd	0.01	nd	n/a	n/a	n/a
Naphthalene	91-20-3	0.01	nd	0.01	0.01	n/a	n/a	n/a
Surrogate Recovery (%)								
2-Fluorophenol			54.7	54.5	55.4	64.8	57.1	57.2
Phenol-d6			61.1	60.2	62.0	69.9	61.3	61.7
Nitrobenzene-d5			58.3	62.1	60.9	69.9	63.5	64.8
2-Fluorobiphenol			67.1	70.7	68.7	66.8	63.1	64.3
2,4,6-Tribromophenol			37.4	41	42.1	47.3	47.6	46.1
Terphenyl-d14			70.4	69.9	70.8	64.6	64.4	63.2
Data Flags								

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

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### **Report Prepared for:**

Troy Bussey Pioneer Technologies Corporation 2612 Yelm Highway S.E. Suite B Olympia WA 98501-4826

# REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

## **Report Prepared Date:**

August 31, 2009

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

#### **Report Information:**

Pace Project #: 10110254 Sample Receipt Date: 08/13/2009 Client Project #: East Bay IA Stockpile Client Sub PO #: N/A State Cert #: C218

#### **Invoicing & Reporting Options:**

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

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

This report has been reviewed and prepared by:

Ent C. Hunge

Scott Unze, Project Manager (612) 607-6383 (612) 607-6444 (fax) scott.unze@pacelabs.com



#### **Report of Laboratory Analysis**

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The results relate only to the samples included in this report.



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

### **DISCUSSION**

This report presents the results from the analysis performed on one sample submitted by a representative of Pioneer Technologies Corporation. The sample was analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. Reporting limits were based on signal-to-noise calculations.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extract ranged from 51-97%. With the exception of one low value, which was flagged "P" on the results table, the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Since the quantification of the native 2,3,7,8-substituted isomers was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing steps did not contribute significantly to the levels reported for the field sample.

A laboratory spike sample was also prepared with the sample batch using clean sand that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 93-114%. These results indicate a high degree of accuracy for these determinations. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

# **REPORT OF LABORATORY ANALYSIS**

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# Appendix A

Sample Management

Sa	mple Conditi	on Upon Receip		
Face Analytical Client Name	»: <u>PTC</u>		Project #/(	110254
Courier: 2 Fed Ex 2 UPS 2 USPS 2 Cile Tracking #: 1978 3811 495 6	ent 🛛 Commerci	al D Pace Other	Optional Proj. Due I Proj. Nem	)ate:
Custody Seal on Cooler/Box Present: 🔲 yes	з 🛛 по Sea	als intact: 🔲 yes	no no	
Packing Material: D Bubble Wrap DBubble	e Bags 🔲 None	Dother	Temp Blank: Yes	No
Thermometer Used 80344042 or 179425	Type of Ice: (W	let Blue None	Samples on ice, cooling	process has begun
Cooler Temperature 3:7 Temp should be above freezing to 6°C	Biological Tiss	ue is Frozen: Yes No Comments:	Date and Initiate of contents: 4.	person examining $\frac{3}{12}$
Chain of Custody Present:	DYes DNO DN	VA 1.		······
Chain of Custody Filled Out:		VA 2.		
Chain of Custody Relinquished:		I/A 3.		
Sampler Name & Signature on COC:		VA 4.		
Samples Arrived within Hold Time:		VA 5.		
Short Hold Time Analysis (<72hr):	DYes DNo DN	/A 6.		
Rush Turn Around Time Requested:	EYes DNO DN	/A 7.		
Sufficient Volume:		/A 8.		
Correct Containers Used:	RIYes DNO DN	/A 9.	······	······
-Pace Containers Used:		/A		
Containers Intact:		/A 10.		<u> </u>
Filtered volume received for Dissolved tests	□Yes □No □N	A 11.		
Sample Labels match COC:		/A 12.		
-Includes date/time/ID/Analysis Matrix:	SL			
All containers needing acid/base preservation have been		A 13. HNO3	H2SO4	NaOH
All containers needing preservation are found to be in compliance with EPA recommendation.	⊡Yes ⊡No 1/21Ñ	A Samp #		
Eventions: VOA Coliform TOC, Oll and Grease, WI-DBO (wate		Initial when completed	Lot # of added	·
Samples checked for dechlorination:				
		A 15		h
Trip Plank Bracent:		A 16		
Thip Blank Custody Scale Propert				
Pace Trip Blank Lot # (if purchased):				
Tabe The blank Lot # (in purchased).				
Client Notification/ Resolution:			Field Data Required?	Y / N
Persorr Contacted:	Date	9/Time:	<del></del>	
Comments/ Resolution:				
Project Manager Review		*****	Date: 08	3/09
Note: Whenever there is a discrepancy affecting North C	arolina compliance s	amples, a copy of this for	m will be sent to the <b>RepetrAd</b>	and the SEMINES, Inc.

# Appendix B

Sample Analysis Summary



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

#### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP12 1011 F908 AE 11.0 8.0 10.1 F908 F908 BLA	2-Zone1-08 0254001-R 328B_09 g g 317 328B_01 & NK-20961	1209 F90828B_16	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 08/12/200 08/13/200 08/25/200 08/28/200	9 13:00 9 09:34 9 19:40 9 21:15	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	2.4 36.0		0.24 0.24	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C		2.00 2.00 2.00	83 73
2,3,7,8-TCDD Total TCDD	2.4 36.0		0.51 0.51	2,3,4,7,8-PeCDF-13 1,2,3,7,8-PeCDD-13	3C 3C	2.00 2.00 2.00	90 97 92
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.8 5.4 53.0		0.97 J 0.48 0.72	1,2,3,6,7,8-HxCDF- 2,3,4,6,7,8-HxCDF- 1,2,3,7,8,9-HxCDF- 1,2,3,7,8,9-HxCDF-	13C 13C 13C 13C	2.00 2.00 2.00 2.00	92 85 78 79 86
1,2,3,7,8-PeCDD Total PeCDD	3.3 42.0		0.88 J 0.88	1,2,3,6,7,8-HxCDD- 1,2,3,4,6,7,8-HxCDD- 1,2,3,4,6,7,8-HpCD	-13C F-13C F-13C	2.00 2.00 2.00	75 64 63
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	6.2 3.8 2.9		0.52 0.62 J 0.51 J	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 2.00 4.00	75 51
1,2,3,7,8,9-HxCDF Total HxCDF	1.8 170.0		0.57 J 0.55	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	5.5 24.0 10.0 370.0	  	0.67 0.64 0.80 0.70	2,3,7,8-TCDD-37Cl4	4	0.20	84
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	100.0 6.3 400.0	 	1.30 1.80 1.50	Total 2,3,7,8-TCDD Equivalence: 29 ng/ (Using 2005 WHO I	) /Kg Factors - U	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	1200.0 3900.0		5.70 5.70				
OCDF OCDD	440.0 11000.0		1.30 1.00				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration RL = Reporting Limit. ND = Not Detected NA = Not Applicable

NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

# **REPORT OF LABORATORY ANALYSIS**

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

#### Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-20961	Matrix	Solid
Filename	F90828B_07	Dilution	NA
Total Amount Extracted	20.0 g	Extracted	08/25/2009 19:40
ICAL ID	F90817	Analyzed	08/28/2009 19:42
CCal Filename(s)	F90828B_01 & F90828B_16	Injected By	AE

Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND ND		0.067 0.067	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDF-13C	2.00 2.00 2.00	78 69 82
2,3,7,8-TCDD Total TCDD	ND ND		0.090 0.090	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7.8-HxCDF-13C	2.00 2.00 2.00	78 86 90
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND	 	0.110 0.095 0.100	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00	73 75 67
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.120 0.120	1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00 2.00	81 76 55 45
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	ND ND ND	 	0.089 0.110 0.120	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	54 36 P
1,2,3,7,8,9-HxCDF Total HxCDF	ND ND		0.200 0.130	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND	  	0.260 0.260 0.230 0.250	2,3,7,8-TCDD-37Cl4	0.20	76
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND	 	0.230 0.370 0.300	Total 2,3,7,8-TCDD Equivalence: 0.19 ng/Kg (Using 2005 WHO Factors -	Using PRL/	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND ND		0.290 0.290			
OCDF OCDD	ND ND		0.550 0.920			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures. P = Recovery outside target range

## **REPORT OF LABORATORY ANALYSIS**

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

### Method 8290 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS- F908 20.0 F908 F908 BLAN	20962 28B_02 g 17 28B_01 & NK-20961	F90828B_16	Matrix Dilution Extracted Analyzed Injected By	Solid NA 08/25/2009 19: 08/28/2009 15:	40 53
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.22	108	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,2,7,8-DCDF, 13C	2.00 2.00	82 77
2,3,7,8-TCDD Total TCDD	0.20	0.21	105	1,2,3,7,8-PeCDF-13C 2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	93 85 100
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.00 1.00	1.02 1.00	102 100	1,2,3,4,7,8-HxCDF-13C 1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	89 75 77 76
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.93	93	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	83 66
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	0.97 1.05 1.02	97 105 102	1,2,3,4,7,6,7,8-HpCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	60 68 51
1,2,3,7,8,9-HxCDF Total HxCDF	1.00	1.00	100	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	0.96 1.00 0.97	96 100 97	2,3,7,8-TCDD-37Cl4	0.20	84
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.00 1.00	1.05 1.02	105 102			
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	0.93	93			
OCDF OCDD	2.00 2.00	2.27 2.26	114 113			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

P = Recovery outside of target range

X = Background subtracted value

Y = RF averaging used in calculations

Nn = Value obtained from additional analysis

NA = Not Applicable

\* = See Discussion

## **REPORT OF LABORATORY ANALYSIS**

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DRAG Analytical Labo	<b>O</b> rato	N ry	×.	Tu Tu				<u>C</u> 28	WA 18 M Phor	CE ladro ne: (3 E1 W	IAI ona E 360) nail: Vebs	NO Beach 866- Draj ite: d	<b>F</b> Rd 054 gonI lrage	CUS NW 3 I Lab@ onlab	TO 7, Ol 7ax: 0con	DY ymp (360 ncast	<b>RE</b> ia, W ) 866 net	CO /A 9 5-05:	<b>RD</b> 8502 56						s	Sampl Contac	es Co ct Nui	llected	1 By:, 36		Page - K 577	)	of	0	
Client: <u>PTC</u> Address: <u>26</u> <u>0</u>  91	2 ' 1pi	Yelm a, 11/4	Hwy 1 922	SE 225	Phone: <u>360 570 1700</u> Project Name: <u>East Bay IA Stockpile</u> Project P.O.: <u>Credit Ca</u> Fax: Project Location: Contact Person: Email: <u>vobertsk@</u> Project Number: DAL Project No.: <u>090819-0</u> USPioneer. con										10 13		SIM)																		
$\frac{Matrix Code:}{WW = wastewater} G$ $SL = sludge V$	W = g = vap	roundwater or	S = soil O = oth	or solid er				coD)				Bre													,	,						(q  208	$+-6\tilde{X}$	VIII-IIII	0/8270
Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Container Type	Alkalinity	BOD or cBOD	Chloride	Chemical Oxygen Demand (	Fecal Coliforn	Total Coliforn	Hardness, Total	Metals <sup>1,2</sup> EPA 70005	Nitrogen, Ammonia	Nitrogen, Nitrate	Nitrogen, Nitrite	Nitrogen, Nitrate-Nitrite	Nitrogen, Total Kjeldahl	Dil and Grease	Ηά	Phosphorus, Ortho	Phosphorus, Total	Specific Conductance	šolids, Total	Solids, Total Dissolved	Solids, Total Suspended	solids, Total Volatile	l'urbidity	cBs	esticides	semi-Volatile Compounds	Volatile Organic Compounds	MABE IBTEX (189	Gasoline (NWTP)	Dresel and Oil (NM	PAHS (EPA 810
<u>5913 - 2012 - 081909</u>	15	<i>0</i> 81909	730	2 402 3Ehcore								X																			York	S 1845 Yall	$\times$	X	X
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Relinquished by (Signature)	C DAI	Date/Tin Disposal @ \$2	ac Receive	ed by (Signature)	Return		ickup	Date/Tim	ne		<ul> <li>□ 5am</li> <li>□ 24 H</li> <li>□ 48 H</li> <li>□ 48 H</li> <li>□ 55 Da</li> <li>□ 10 D</li> <li>□ 10 D</li> <li>□ 0 the</li> </ul>	c Day lour lour y <b>6</b> ay (App r:	Mai <sup>s</sup>	[	Ag <u>Co</u> (1	g AI ( omme hu	Að Bi <u>nts:</u> NG	a Be eZ	Ca C	igCr i∽	Cr-V J Z		Fe H	lg K	Mg N	Mn N	10 Νε	∙ Ni(l	py si	o Se	Sn T	l Zn			



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543



Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

**Pioneer Technologies Corporation** Project: East Bay IA Stockpiles

#### DAL Number: 090819-03

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF FUEL IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Diesel Fuel #2 NWTPH-Dx (mg/kg)	Heavy Oil NWTPH-Dx (mg/kg)	Surrogate Recovery 2-FBP (%)	Data Flags
Method Blank	8/20/2009	n/a	nd	nd	102	
SP13-ZONE2-081909	8/20/2009	92.6	nd	nd	98.5	
LCS	8/20/2009	n/a	112%	n/a	n/a	
090820-MS	8/20/2009	n/a	112%	n/a	n/a	
090820-MSD	8/20/2009	n/a	108%	n/a	n/a	
Method Reporting Limits			25	100		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090819-03

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF GASOLINE RANGE ORGANICS IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Benzene EPA 8021B (mg/kg)	Toluene EPA 8021B (mg/kg)	Ethylbenzene EPA 8021B (mg/kg)	m&p-Xylene EPA 8021B (mg/kg)	o-Xylene EPA 8021B (mg/kg)	Gasoline NWTPH-Gx (mg/kg)	Surrogate Recovery BFB (%)	Data Flags
Method Blank	8/20/2009	n/a	nd	nd	nd	nd	nd	nd	74.4	
SP13-ZONE2-081909	8/20/2009	92.6	nd	nd	nd	nd	nd	nd	70.7	
LCS	8/20/2009	n/a	101%	102%	97.6%	92.4%	105%	82.1%	n/a	
090820-MS	8/20/2009	n/a	99.6%	103%	95.7%	85.2%	99.5%	82.3%	n/a	
090820-MSD	8/20/2009	n/a	103%	104%	96.3%	94.8%	100%	85.3%	n/a	
Method Reporting Limits			0.05	0.10	0.10	0.10	0.10	5.0		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543



Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090819-03

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF HEAVY METALS IN SOIL BY EPA METHOD 6020 A

Sample Identification	Date Analyzed	Percent Solids	Arsenic (As)	Cadmium (Cd)	Lead (Pb)
Chemical Abstract Number (CAS)			7440-38-2	7440-43-9	7439-92-1
Units		(%)	(mg/kg)	(mg/kg)	(mg/kg)
Method Blank	8/24/2009	n/a	nd	nd	nd
SP13-ZONE2-081909	8/24/2009	92.6	3.23	nd	10.2
LCS	8/24/2009	n/a	100%	100%	104%
090824-MS	8/24/2009	n/a	99.3%	97.6%	123%
090824-MSD	8/24/2009	n/a	99.6%	97.1%	122%
Method Reporting Limits			0.25	0.25	0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference

Sample results based on dry weight.



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090819-03

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF SEMI-VOLATILE COMPOUNDS IN SOIL BY EPA METHOD 8270

Sample Identification			Blank	SP13-Zone2- 081209	LCS	090821-MS	090821-MSD
Percent Solids (%)			n/a	92.6	n/a	n/a	n/a
Date Extracted	CAS	MRL	8/21/2009	8/21/2009	8/21/2009	8/21/2009	8/21/2009
Date Anlayzed	Number	(mg/kg)	8/21/2009	8/21/2009	8/21/2009	8/21/2009	8/21/2009
Benzo(a)anthracene	56-55-3	0.01	nd	0.04	106%	105%	105%
Benzo(a)pyrene	50-32-8	0.01	nd	0.01	n/a	n/a	n/a
Benzo(b)fluoranthene	205-99-2	0.01	nd	nd	n/a	n/a	n/a
Benzo(k)fluoranthene	207-08-9	0.01	nd	0.02	n/a	n/a	n/a
Chrysene	218-01-9	0.01	nd	0.03	104%	102%	104%
Dibenzo(a,h)anthracene	53-70-3	0.01	nd	nd	n/a	n/a	n/a
Ideno(1,2,3-cd)pyrene	193-39-5	0.01	nd	nd	97%	80.1%	82.0%
1-Methylnaphthalene	90-12-0	0.01	nd	0.51	n/a	n/a	n/a
2-Methylnaphthalene	91-57-6	0.01	nd	0.45	n/a	n/a	n/a
Naphthalene	91-20-3	0.01	nd	0.04	n/a	n/a	n/a
Surrogate Recovery (%)			_				
2-Fluorophenol			90.6	83.5	97.8	103	103
Phenol-d6			101	92.1	104	110	101
Nitrobenzene-d5			108	108	86.4	111	105
2-Fluorobiphenol			129	120	82	110	113.0
2,4,6-Tribromophenol			58.0	63.1	78.3	83.1	82.9
Terphenyl-d14			139	139	89.3	121	120
Data Flags							

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

DRAGON       Analytical Laboratory         Analytical Laboratory       Image: Contact Number: 360         RCRA CHAIN OF CUSTODY RECORD       2818 Madrona Beach Rd. NW, Olympia, WA 98502         Phone: (360) 866-0543       Fax: (360) 866-0556         Email: DragonLab@comcast.net       Contact Number: 360         Website: dragonlaboratory.com       Contact Number: 360													P } 2 5	age_ {R 70		of																		
Client: <u>PTC</u> Address: <u>2612 Ye</u> <u>Olympia</u>	elm W	Huy A 9	<u>SE 2</u> 1850	P Xuite Br )F	Phone Fax: Email	: <u>·</u>  1: <u>^</u> (	360 Obe	) 5 15	70 ske	0 v. (	<u>10</u> 0 	) P P P	rojec rojec rojec	et Na et Lo et Nu	me: _ catio mbe:	<u>Ea</u> n: r:	(3†	Ba	'y]		Sta	ock	рів —	ty Pı C D	rojec onta AL	ct P.( ct Po Proj	O.: _ ersor ect N	<u>C</u> x n: No.:	rc/ 09	08 08	<u>C</u> e :20	- (	× ×7	
Matrix Code: $WW =$ wastewater $GW = g$ $SL =$ sludge $V = var$	ground oor	lwater S O	= soil or so = other	əlid							EPA 8081)			8270SIM)			HEM)		9050)	(	Series)		ors	(EPA 900)	PA 900)	<i>.</i> ,								
Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Container Type	HEREY (EPA 8021b)	Gasoline (NWTPH-Gx)	Diesel (NWTPH-Dx)	Diesel & Oil (NWTPH-Dx)	Fuel Scan (NWTPH-HCID)	VOC's (EPA 8021b)	Organochlorine Pesticides (I	PCB's (EPA 8082)	Volatiles (EPA 8260)	PAH's (EPA 8100 or 8270/	Semi-Volatiles (EPA 8270)	lgnitability (EPA 1010)	Oil and Grease (EPA 1664 I	pH (EPA 9040/9045)	Specific Conductance (EPA	Paint Filter Test (EPA 9095	Heavy Metals* (EPA 7000 :	Biogenic Gases (EPA 3C)	Natural Attenuation Indicate	Gross Alpha Radioactivity (	Gross Beta Radioactivity (E									
SP14_Zone1_082009	ზ	082009	1100	3 Encore 2402	Х	X		Х						Х							Х													
SP15-Zone3_082009	S	982009	1130	3Encore 2402	X	X		Х						Х							Х													
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Sample Disposal Instructions:									B	AAA	₩	Ag	; Al .	As B	a Be	Cd (	Cr Cr	-VI (	Co Cu	Fel	Hg L	i Mg	Mn	Mo	Ni Pb	Sb S	Se Tl	V Zr	1 - T	CLP				

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090820-07

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF FUEL IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Diesel Fuel #2 NWTPH-Dx (mg/kg)	Heavy Oil NWTPH-Dx (mg/kg)	Surrogate Recovery 2-FBP (%)	Data Flags
Method Blank	8/20/2009	n/a	nd	nd	118	
SP14-Zone1-082009	8/20/2009	95.5	nd	nd	118	
SP15-Zone3-082009	8/20/2009	93.2	nd	nd	127	
LCS	8/20/2009	n/a	112%	n/a	n/a	
090820-MS	8/20/2009	n/a	108%	n/a	n/a	
090820-MSD	8/20/2009	n/a	112%	n/a	n/a	
Method Reporting Limits			25	100		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090820-07

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF GASOLINE RANGE ORGANICS IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Benzene EPA 8021B (mg/kg)	Toluene EPA 8021B (mg/kg)	Ethylbenzene EPA 8021B (mg/kg)	m&p-Xylene EPA 8021B (mg/kg)	o-Xylene EPA 8021B (mg/kg)	Gasoline NWTPH-Gx (mg/kg)	Surrogate Recovery BFB (%)	Data Flags
Method Blank	8/20/2009	n/a	nd	nd	nd	nd	nd	nd	74.4	
SP14-Zone1-082009	8/20/2009	95.5	nd	nd	nd	nd	nd	nd	83.5	
SP15-Zone3-082009	8/20/2009	93.2	nd	nd	nd	nd	nd	nd	67.4	
LCS	8/20/2009	n/a	101%	102%	97.6%	92.4%	105%	82.1%	n/a	
090820-MS	8/20/2009	n/a	99.6%	103%	95.7%	85.2%	99.5%	82.3%	n/a	
090820-MSD	8/20/2009	n/a	103%	104%	96.3%	94.8%	100%	85.3%	n/a	
Method Reporting Limits			0.05	0.10	0.10	0.10	0.10	5.0		

WA-DOE-Laboratory Certification No.: C2013

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"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543



Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090820-07

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF HEAVY METALS IN SOIL BY EPA METHOD 6020 A

Sample Identification	Date Analyzed	Percent Solids	Arsenic (As)	Cadmium (Cd)	Lead (Pb)
Chemical Abstract Number (CAS)			7440-38-2	7440-43-9	7439-92-1
Units		(%)	(mg/kg)	(mg/kg)	(mg/kg)
Method Blank	8/24/2009	n/a	nd	nd	nd
SP14-Zone1-082009	8/24/2009	95.5	3.06	nd	6.15
SP15-Zone3-082009	8/24/2009	93.2	2.01	nd	2.83
LCS	8/24/2009	n/a	100%	100%	104%
090824-MS	8/24/2009	n/a	99.3%	97.6%	123%
090824-MSD	8/24/2009	n/a	100%	97.1%	122%
SP15-Zone3-082009 Dup.	8/24/2009	93.2	2.01	nd	2.81
Method Reporting Limits			0.25	0.25	0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference

Sample results based on dry weight.



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090820-07

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF SEMI-VOLATILE COMPOUNDS IN SOIL BY EPA METHOD 8270

Sample Identification			Blank	SP14-Zone1-082009	SP15-Zone3- 082009	LCS	090821-MS	090821-MSD	SP15-Zone3- 082009 Dup.
Percent Solids (%)			n/a	95.5	93.2	n/a	n/a	n/a	93.2
Date Extracted	CAS	MRL	8/21/2009	8/21/2009	8/21/2009	8/21/2009	8/21/2009	8/21/2009	8/21/2009
Date Anlayzed	Number	(mg/kg)	8/21/2009	8/21/2009	8/21/2009	8/21/2009	8/21/2009	8/21/2009	8/21/2009
Benzo(a)anthracene	56-55-3	0.01	nd	0.03	0.02	106%	105%	105%	0.01
Benzo(a)pyrene	50-32-8	0.01	nd	0.01	nd	n/a	n/a	n/a	nd
Benzo(b)fluoranthene	205-99-2	0.01	nd	nd	nd	n/a	n/a	n/a	nd
Benzo(k)fluoranthene	207-08-9	0.01	nd	0.01	nd	n/a	n/a	n/a	nd
Chrysene	218-01-9	0.01	nd	0.02	0.01	104%	102%	104%	nd
Dibenzo(a,h)anthracene	53-70-3	0.01	nd	0.19	nd	n/a	n/a	n/a	nd
Ideno(1,2,3-cd)pyrene	193-39-5	0.01	nd	nd	nd	96.9%	80.1%	82.0%	nd
1-Methylnaphthalene	90-12-0	0.01	nd	nd	nd	n/a	n/a	n/a	nd
2-Methylnaphthalene	91-57-6	0.01	nd	nd	nd	n/a	n/a	n/a	nd
Naphthalene	91-20-3	0.01	nd	nd	0.01	n/a	n/a	n/a	nd
Surrogate Recovery (%)			_						
2-Fluorophenol			90.6	94	88.0	97.8	103	103	88.0
Phenol-d6			101	104.0	97.0	104	110	101	98.2
Nitrobenzene-d5			108	101	107	86.4	111	105	107
2-Fluorobiphenol			129	115	122	82	110	113.0	113
2,4,6-Tribromophenol			58.0	63.3	62.7	78.3	83.1	82.9	63.7
Terphenyl-d14			139	128	132	89.3	121	120	131

Data Flags

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall

Data reviewed by:

Pace Analytical <sup>®</sup>	CHAIN-OF-CU The Chain-of-Custody is a Expect of	STODY / Analytical Request Do LEGAL DOCUMENT All relevant fields must be complet ion 8 Sent Free io	ocument and another weight	1010806		
Section A Required Client Information:		Section C	Page:	of		
Sompany: PTC Report To:		Invoice Information:	1 <sup></sup>	1304774		
Address: 2012 Yelm Hulling SE Copy To:		Company Name:				
Olympia LIA 98501		Address:				
Email To: Purchase Order No.	· · · · · · · · · · · · · · · · · · ·	Pace Quote				
Phone: 360,570,1700 Fax: Project Name:	adit Cand	Reference:	Site Location	Site Location		
Requested Due Date/TAT: 3 days TAT Project Number	t Caru	Manager: Pace Profile #:	STATE 1/A			
		Requested	Analysis Filtered (Y/N)			
D Section D Matrix Codes				-		
Kequired Client Information     MATRIX / CODE     9       Drinking Water     DW     9		Preservatives				
Water     WT     0     U       Water     WT     0     U       Waste Water     WW     0     V       Product     P     V     V       Sail/Solid     SL     0     U       SAMPLE ID     Oil     OL     0	COMPOSITE COMPOSITE	et 1				
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	SAMPLER NAME AND SIGNATUR					
- ORIGINA	AL PRINT Name of SAMPLER:	Van Patricts	ender stadio in die gest	th °C (N)) °C (V)) °C (V) (V)		
	SIGNATURE of SAMPLER:	Nava Holer 15 DATE Signed (MM/DD/YY):	8/20/09	Temp Receiv Lost Cust (Y) (Y) (Y) (Y)		

\*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any involces not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007



www.pacelabs.com

### **Report Prepared for:**

Kara Roberts Pioneer Technologies Corporation 2612 Yelm Highway SE Olympia WA 98501

# REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

**Report Prepared Date:** 

September 3, 2009

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

#### **Report Information:**

Pace Project #: 10110806 Sample Receipt Date: 08/21/2009 Client Project #: East Bay IA Stockpile Client Sub PO #: N/A State Cert #: C218

#### **Invoicing & Reporting Options:**

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

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

This report has been reviewed and prepared by:

pri C. Munga

Scott Unze, Project Manager (612) 607-6383 (612) 607-6444 (fax) scott.unze@pacelabs.com



#### **Report of Laboratory Analysis**

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.



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

### **DISCUSSION**

This report presents the results from the analyses performed on three samples submitted by a representative of Pioneer Technologies Corporation. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. Reporting limits were based on signal-to-noise calculations. The samples were received within the recommended temperature range of 0-6 degrees Celsius.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 34-114%. With the exception of one low value, which was flagged "P" on the results table, the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Since the quantification of the native 2,3,7,8-substituted isomers was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained, or "E" where polychlorinated diphenyl ethers were present.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing steps did not contribute significantly to the levels reported for the field samples.

A laboratory spike sample was also prepared with the sample batch using clean sand that had been fortified with native standards. The results show that the spiked native compounds were recovered at 87-104%. These results indicate a high degree of accuracy for these determinations. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

# **REPORT OF LABORATORY ANALYSIS**

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# Appendix A

Sample Management

Sar	nple	Con	ditio	n Upon Receipt	
Pace Analytical Client Name	:_ <u>/</u>	T	Ć		Project # / UDVES
Courier: Fed Ex UPS USPS Client Tracking #: <u>1978</u> 6131 968 Custody Seal on Cooler/Box Present: Tyes		Comi A21 no	mercia /098 Seal	□ Pace Other 仏 s intact: □ yes □	Rioj Namei
Packing Material: Bubble Wrap	Bage		None	Other	Temp Blank: Yes No
Cooler Temperature     80344042 or (79425)       Temp should be above freezing to 6°C	Type Biolo	of ice gical	: We Tissu	t Blue None L s is Frozen: Yes No Commente:	Samples on ice, cooling process has begun Date and Initials of person exemining contents: 8/ 1/0.7.85
Chain of Custody Present:	∠ Yes	[]No	[]N/A	1.	
Chain of Custody Filled Out:		⊡No	ΩN/A	2.	
Chain of Custody Relinguished:	12 Yes		CIN/A	3.	
Sampler Name & Signature on COC:	ETYes		CIN/A	4.	<u></u>
Samples Arrived within Hold Time:	ElYes			5.	
Short Hold Time Analysis (<72hr):	⊡Yes	L]NO	′ ⊡n/A	6.	
Rush Turn Around Time Requested:	0/169			1 <sub>7.</sub>	
Sufficient Volume:	TYes	ШNo		8.	
Correct Containers Used:	<b>AYes</b>	□No		9.	
-Pace Containers Used:	⊡Yes	C2No			
Containers Intact:	12 Yes	□No		10.	
Filtered volume received for Dissolved tests	⊡Yes			11.	
Sample Labels match COC:	[]Yés		C]N/A	12.	
-includes date/time/iD/Analysis Matrix:	N				
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	□Yes	ΠNο	12N/A	13. D HNO	3 H2804 NaOH HOI
All containers needing preservation are found to be in compliance with EPA recommendation.	[]Yes	□No	DINA	Samp #	
Exceptions: VOA,Coliform, TOC, Oli and Grease, WI-DRO (water	⊡Yes	⊡No		initial when completed	Lot # of added preservative
Samples checked for dechlorination:	[]Yes	DNo	<b>LANIA</b>	14.	
Headepace in VOA Vials ( >6mm):	C)Yes	[]No	ZINA	15.	
Trip Blank Present:	⊡Yes	⊡No	C2N/A	16.	
Trip Blank Custody Seals Present	∏Yes	[]No	<b>Π</b> ΜΛΑ		
Pace Trip Blank Lot # (if purchased):	<u>.</u>				
Client Notification/ Resolution: Person Contacted: Comments/ Resolution:			Date/	Fime:	Field Data Required? Y / N
		)			Deter acturize
Note: Whenever there is a discrepancy affecting North Ca	irolina c	omplia	nce sa	nples, a copy of this form v	vare: vy j 2 ( ( 0.")

Report No.....10110806\_8290

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# Appendix B

Sample Analysis Summary



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

#### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP14 1011 F909 SMT 11.0 9.2 9.95 F908 F909 BLAN	4_ZONE1_( 0806001 02C_11 g g 117 002C_06 & NK-21083	582009 F90902C_22	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 08/20/2009 08/21/2009 08/27/2009 09/02/2009	9 11:00 9 10:00 9 18:30 9 23:14	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.83 12.00		0.081 J 0.081	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PoCDE-1	30	2.00 2.00 2.00	81 72 92
2,3,7,8-TCDD Total TCDD	0.41 9.50		0.075 J 0.075	2,3,4,7,8-PeCDF-13 1,2,3,7,8-PeCDF-13	3C 3C 3C	2.00 2.00 2.00	92 92 111
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	0.62 1.30 15.00	 	0.130 J 0.100 J 0.110	1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,7,8,9-HxCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	97 61 66 76 92
1,2,3,7,8-PeCDD Total PeCDD	1.10 17.00		0.160 J 0.160	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD	-13C 0F-13C	2.00 2.00 2.00	73 64 59
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 0.94 1.30	 	0.110 J 0.130 J 0.150 J	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 2.00 4.00	61 59
1,2,3,7,8,9-HxCDF Total HxCDF	0.45 16.00		0.110 J 0.120	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.40 3.10 1.80 37.00	  	0.170 J 0.180 J 0.170 J 0.170	2,3,7,8-TCDD-37Cl	4	0.20	86
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	19.00 1.50 56.00	 	0.270 0.340 J 0.310	Total 2,3,7,8-TCDI Equivalence: 4.4 no (Using 2005 WHO	) g/Kg Factors - Us	sing PRL/2	where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	91.00 200.00		0.510 0.510				
OCDF OCDD	66.00 940.00		0.400 0.370				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers). EMPC = Estimated Maximum Possible Concentration ND = Not DetectedNA = Not Applicable

NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

RL = Reporting Limit.

# **REPORT OF LABORATORY ANALYSIS**

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Report No.....10110806\_8290



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

#### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP1 1011 F909 SMT 10.9 5.9 10.2 F908 F909 BLA	5_ZONE3_ 0806002 002C_12 9 9 9 9 9 9 902C_06 & NK-21083	082009 F90902C_22	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 08/20/2009 08/21/2009 08/27/2009 09/03/2009	9 11:30 9 10:00 9 18:30 9 00:00	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	3.20	0.33	0.15 I 0.15	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	20	2.00 2.00 2.00	83 84
2,3,7,8-TCDD Total TCDD	0.29 5.50		0.16 J 0.16	2,3,4,7,8-PeCDF-13 1,2,3,7,8-PeCDF-13	3C 3C 3C	2.00 2.00 2.00	95 95 114 78
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.10 4.30 40.00	 	0.19 J 0.19 J 0.19	1,2,3,4,7,0-HXCDF 1,2,3,6,7,8-HXCDF 2,3,4,6,7,8-HXCDF 1,2,3,7,8,9-HXCDF 1,2,3,4,7,8,9-HXCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	78 69 71 72 96
1,2,3,7,8-PeCDD Total PeCDD	0.47 9.80		0.14 J 0.14	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD	-13C 0F-13C	2.00 2.00 2.00	50 74 62 59
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2 3 4 6 7 8-HxCDF	3.00 4 30	16.00	0.17 E 0.30 J 0.17 J	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 4.00	61 57
1,2,3,7,8,9-HxCDF Total HxCDF	2.80 61.00		0.28 J 0.23	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	0.73 7.00 1.70 47.00	  	0.26 J 0.25 0.18 J 0.23	2,3,7,8-TCDD-37Cl	4	0.20	97
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	110.00 8.70 390.00	 	0.99 0.80 0.89	Total 2,3,7,8-TCDI Equivalence: 8.3 no (Using 2005 WHO	) g/Kg Factors - ปร	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	230.00 400.00		0.18 0.18				
OCDF OCDD	390.00 2200.00		0.34 0.41				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

E = PCDE Interference

I = Interference present

## **REPORT OF LABORATORY ANALYSIS**

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

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#### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP13 1011 F909 SMT 11.2 8.0 10.3 F908 F909 BLAI	3_ZONE2_( 0806003 002C_13 g g 317 002C_06 & NK-21083	590902C_22	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 08/20/2009 08/21/2009 08/27/2009 09/03/2009	9 12:00 9 10:00 9 18:30 9 00:47	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.60 9.60		0.39 J 0.39	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C		2.00 2.00 2.00	83 84
2,3,7,8-TCDD Total TCDD	ND 8.10		0.32 0.32	2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDF-1	3C 3C	2.00 2.00 2.00	85 99
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND 1.10 7.40	 	0.48 0.40 J 0.44	1,2,3,4,7,8-HXCDF 1,2,3,6,7,8-HXCDF 2,3,4,6,7,8-HXCDF 1,2,3,7,8,9-HXCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	97 72 71 76 99
1,2,3,7,8-PeCDD Total PeCDD	0.86 14.00		0.39 J 0.39	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD	-13C F-13C	2.00 2.00 2.00	85 50
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,2,4,6,7,8-HxCDF	0.59 0.61		0.34 J 0.47 J	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 2.00 4.00	45 34 P
1,2,3,7,8,9-HxCDF Total HxCDF	ND 12.00		0.48 J 0.54 0.46	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.30 0.97 18.00	0.41  	0.40 l 0.48 J 0.40 J 0.42	2,3,7,8-TCDD-37Ck	4	0.20	91
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	7.70 ND 20.00	 	0.66 0.64 0.65	Total 2,3,7,8-TCDE Equivalence: 2.2 no (Using 2005 WHO	) g/Kg Factors - U	sing PRL/2	where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	20.00 41.00		0.73 0.73				
OCDF OCDD	18.00 170.00		1.40 2.00				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

P = Recovery outside target range

I = Interference present

# **REPORT OF LABORATORY ANALYSIS**

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Report No.....10110806\_8290

ND = Not DetectedNA = Not ApplicableNC = Not Calculated



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

#### Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-21083	Matrix	Solid
Filename	F90901A_11	Dilution	NA
Total Amount Extracted	20.2 g	Extracted	08/27/2009 18:30
ICAL ID	F90817	Analyzed	09/01/2009 16:35
CCal Filename(s)	F90831B_25 & F90901A_15	Injected By	SMT

Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND ND		0.095 0.095	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PoCDE-13C	2.00 2.00 2.00	78 83 87
2,3,7,8-TCDD Total TCDD	ND ND		0.150 0.150	1,2,3,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	86 97 84
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND	 	0.190 0.092 0.140	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	75 76 72
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.150 0.150	1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	82 84 69
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	ND ND ND	 	0.100 0.075 0.096	1,2,3,4,7,6,9-110CD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	73 46
1,2,3,7,8,9-HxCDF Total HxCDF	ND ND		0.140 0.100	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND	  	0.160 0.100 0.120 0.130	2,3,7,8-TCDD-37Cl4	0.20	85
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND	 	0.120 0.170 0.140	Total 2,3,7,8-TCDD Equivalence: 0.21 ng/Kg (Using 2005 WHO Factors -	Using PRL/	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND ND		0.130 0.130			
OCDF OCDD	ND	0.61	0.390 0.430 l			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures. I = Interference present

# **REPORT OF LABORATORY ANALYSIS**

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

## Method 8290 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS-2 F9090 22.3 g F9081 F9083 BLAN	1084 1A_14 7 1B_25 & F K-21083	90901A_15	Matrix Dilution Extracted Analyzed Injected By	Solid NA 08/27/2009 18: 09/01/2009 18: SMT	30 52
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.20	102	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	2.00 2.00	82 88
2,3,7,8-TCDD Total TCDD	0.20	0.19	96	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDF-13C	2.00 2.00 2.00	91 91 104
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.00 1.00	0.99 0.95	99 95	1,2,3,4,7,8-HxCDF-13C 1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	84 78 77 74
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.87	87	1,2,3,4,7,6-HXCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	65 83 69
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	0.94 1.00 0.97	94 100 97	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	59 73 46
1,2,3,7,8,9-HxCDF Total HxCDF	1.00	0.97	97	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	0.87 1.00 0.95	87 100 95	2,3,7,8-TCDD-37Cl4	0.20	91
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.00 1.00	1.01 0.94	101 94			
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	0.91	91			
OCDF OCDD	2.00 2.00	2.00 2.08	100 104			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

P = Recovery outside of target range

X = Background subtracted value

Y = RF averaging used in calculations

Nn = Value obtained from additional analysis

NA = Not Applicable

\* = See Discussion

## **REPORT OF LABORATORY ANALYSIS**

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Client: <u>PTC</u> Address: <u>2612 Ye</u> <u>Olympic</u>	lin a li	Hucy AJ9	<u>SE Su</u> 8501	H LeBr H	Phone Fax: Email	e: <u>3</u> 	60 Obe NPI	57	01 K E	70 2 r. (	0 	P: P: P:	rojec rojec rojec	et Na et Lo et Nu	me: _ catio mber	<u>Eors</u> n: r:	st £	ay	IA	<u>- S</u>		Kpi	le= 	יא לא לא C D	roje onta OAL	ct P. act P Proj	O.: <u>⟨</u> ersor ect N	1: 10.: <u>(</u>	070	+ ( 282	a- 6-	-01		_ _
Matrix Code: $WW =$ wastewater $GW =$ $SL =$ sludge $V =$ val	Matrix Code: WW = wastewaterGW = groundwaterS = soil or solid SL = sludge $(1)$ $(2)$ $(3)$ $(1)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3)$ $(3$																																	
Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Container Type	MtBE/BTEX (EPA 8021b)	Gasoline (NWTPH-Gx)	Diesel (NWTPH-Dx)	Diesel & Oil (NWTPH-Dx)	Fuel Scan (NWTPH-HCID)	VOC's (EPA 8021b)	Organochlorine Pesticides (	PCB's (EPA 8082)	Volatiles (EPA 8260)	PAH's (EPA 8100 or 8270/	Semi-Volatiles (EPA 8270)	Ignitability (EPA 1010)	Oil and Grease (EPA 1664 I	pH (EPA 9040/9045)	Specific Conductance (EPA	Paint Filter Test (EPA 9095	Heavy Metals* (EPA 7000	Biogenic Gases (EPA 3C)	Natural Attenuation Indicate	Gross Alpha Radioactivity (	Gross Beta Radioactivity (E									
SP16-20ne2-082109-1	S	082109	800	3 Ericone 2 407	X	Х		Х						X							Х													Γ
SP16-Zone2082109-2	8	682109	900	3Encore 2 407	×	×		Х						Х		-					X													
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Relinquished by (Signature)     Date/Time     Received by (Signature)     Date/Time     Date/Time       Relinquished by (Signature)     Date/Time     082109     082100       Relinquished by (Signature)     Date/Time     082100       Sample Disposal Instructions:     El DAL Disposal @ \$2.50 per Container     El Return     El Poly						Turn-Around-Time				me :/	<ul> <li>*Heavy Metals: Please circle the desired analytes.</li> <li>Ag Al As Ba Be Cd Cr Cr-VI Co Cu Fe Hg Li Mg Mn Mo Ni Pb Sb Se Tl V Zn - Total</li> <li>Ag Al As Ba Be Cd Cr Cr-VI Co Cu Fe Hg Li Mg Mn Mo Ni Pb Sb Se Tl V Zn - Dissolved</li> <li>Ag Al As Ba Be Cd Cr Cr-VI Co Cu Fe Hg Li Mg Mn Mo Ni Pb Sb Se Tl V Zn - TCLP</li> </ul>						>d																	
Sample Disposal Instructions:		DAL Disposa	@ \$2.50 per (	Container	🗆 Ret	turn	□ Pick	up			⊡ Othe	r:					0	<u> </u>																

2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090821-01

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF FUEL IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Diesel Fuel #2 NWTPH-Dx (mg/kg)	Heavy Oil NWTPH-Dx (mg/kg)	Surrogate Recovery 2-FBP (%)	Data Flags
Method Blank	8/24/2009	n/a	nd	nd	100	
SP16-Zone2-082109-1	8/24/2009	91.1	nd	nd	134	
SP16-Zone2-082109-2	8/24/2009	91.5	nd	nd	133	
LCS	8/24/2009	n/a	132%	n/a	n/a	
090824-MS	8/24/2009	n/a	83.8%	n/a	n/a	
090824-MSD	8/24/2009	n/a	101%	n/a	n/a	
SP16-Zone2-082109-1 Dup.	8/24/2009	91.1	nd	nd	122	
Method Reporting Limits			25	100		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090821-01

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF GASOLINE RANGE ORGANICS IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Benzene EPA 8021B (mg/kg)	Toluene EPA 8021B (mg/kg)	Ethylbenzene EPA 8021B (mg/kg)	m&p-Xylene EPA 8021B (mg/kg)	o-Xylene EPA 8021B (mg/kg)	Gasoline NWTPH-Gx (mg/kg)	Surrogate Recovery BFB (%)	Data Flags
Method Blank	8/24/2009	n/a	nd	nd	nd	nd	nd	nd	71.1	
SP16-Zone2-082109-1	8/24/2009	91.1	nd	nd	nd	nd	nd	nd	80.0	
SP16-Zone2-082109-2	8/24/2009	91.5	nd	nd	nd	nd	nd	nd	65.3	
LCS	8/24/2009	n/a	104%	116%	98.9%	91.1%	110%	97.2%	n/a	
090824-MS	8/24/2009	n/a	106%	106%	95.5%	80.6%	96.8%	79.5%	n/a	
090824-MSD	8/24/2009	n/a	107%	104%	90.4%	83.9%	97.0%	108.0%	n/a	
SP16-Zone2-082109-1 Dup.	8/24/2009	91.1	nd	nd	nd	nd	nd	nd	76.1	
Method Reporting Limits			0.05	0.10	0.10	0.10	0.10	5.0		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543



Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090821-01

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF HEAVY METALS IN SOIL BY EPA METHOD 6020 A

Sample Identification	Date Analyzed	Percent Solids	Arsenic (As)	Cadmium (Cd)	Lead (Pb)
Chemical Abstract Number (CAS)			7440-38-2	7440-43-9	7439-92-1
Units		(%)	(mg/kg)	(mg/kg)	(mg/kg)
Method Blank	8/24/2009	n/a	nd	nd	nd
SP16-Zone2-082109-1	8/24/2009	91.1	3.49	nd	12.4
SP16-Zone2-082109-2	8/24/2009	91.5	3.01	0.29	40.0
LCS	8/24/2009	n/a	100%	100%	104%
090824-MS	8/24/2009	n/a	99.3%	97.6%	123%
090824-MSD	8/24/2009	n/a	100%	97.1%	122%
Method Reporting Limits			0.25	0.25	0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference

Sample results based on dry weight.



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090821-01

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF SEMI-VOLATILE COMPOUNDS IN SOIL BY EPA METHOD 8270

Sample Identification			Blank	SP16-Zone2- 082109-1	SP16-Zone2- 082109-2	LCS	090823-MS	090823-MSD	SP16-Zone2- 082109-2
Percent Solids (%)			n/a	91.1	91.5	n/a	n/a	n/a	91.5
Date Extracted	CAS	MRL	8/21/2009	8/23/2009	8/23/2009	8/23/2009	8/23/2009	8/23/2009	8/23/2009
Date Anlayzed	Number	(mg/kg)	8/21/2009	8/23/2009	8/23/2009	8/23/2009	8/23/2009	8/23/2009	8/23/2009
Benzo(a)anthracene	56-55-3	0.01	nd	0.05	0.14	106%	107%	108%	0.14
Benzo(a)pyrene	50-32-8	0.01	nd	0.03	0.12	108%	109%	109%	0.13
Benzo(b)fluoranthene	205-99-2	0.01	nd	0.04	0.19	107%	108%	108%	0.19
Benzo(k)fluoranthene	207-08-9	0.01	nd	0.01	0.14	103%	104%	104%	0.05
Chrysene	218-01-9	0.01	nd	0.04	0.19	108%	110%	108%	0.19
Dibenzo(a,h)anthracene	53-70-3	0.01	nd	nd	nd	100%	100%	97.6%	nd
Ideno(1,2,3-cd)pyrene	193-39-5	0.01	nd	nd	nd	79.3%	108%	104%	nd
1-Methylnaphthalene	90-12-0	0.01	nd	0.02	0.03	101%	102%	104%	0.07
2-Methylnaphthalene	91-57-6	0.01	nd	0.03	0.06	109%	110%	112%	0.03
Naphthalene	91-20-3	0.01	nd	0.04	0.10	94.3%	95.4%	97.7%	0.10
Surrogate Recovery (%)			_						
2-Fluorophenol			81.7	82.9	98.8	95.6	105	105	99.5
Phenol-d6			88.2	92.2	106.0	89.3	108	107	107
Nitrobenzene-d5			104	103	112	113	107	105	113
2-Fluorobiphenol			111	106	121	109	103	119.0	121
2,4,6-Tribromophenol			50.1	60.6	75.9	83.5	77.8	80.1	77.5
Terphenyl-d14			131	119	130	123	117	113	125

Data Flags

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall

Data reviewed by:

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www.pacelabs.com

#### **Report Prepared for:**

Kara Roberts Pioneer Technologies Corporation 2612 Yelm Highway SE Olympia WA 98501

# REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

**Report Prepared Date:** 

September 3, 2009

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

#### **Report Information:**

Pace Project #: 10110956 Sample Receipt Date: 08/24/2009 Client Project #: East Bay IA Stockpiles Client Sub PO #: N/A State Cert #: C218

#### **Invoicing & Reporting Options:**

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

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

This report has been reviewed and prepared by:

pri C. Munga

Scott Unze, Project Manager (612) 607-6383 (612) 607-6444 (fax) scott.unze@pacelabs.com



#### **Report of Laboratory Analysis**

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The results relate only to the samples included in this report.



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### **DISCUSSION**

This report presents the results from the analyses performed on two samples submitted by a representative of Pioneer Technologies Corporation. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. Reporting limits were based on signal-to-noise calculations. The samples were received above the recommended temperature range of 0-6 degrees Celsius.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 46-113%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Since the quantification of the native 2,3,7,8-substituted isomers was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits. These results indicate that the sample processing steps did not contribute significantly to the levels reported for the field samples.

A laboratory spike sample was also prepared with the sample batch using clean sand that had been fortified with native standards. The results show that the spiked native compounds were recovered at 87-104%. These results indicate a high degree of accuracy for these determinations. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

# **REPORT OF LABORATORY ANALYSIS**

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# Appendix A

Sample Management

	Sai	nple	Cor	nditic	n Upon Receipt		
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Trac	king #: <u>[1468_80[7_</u> 855]	)			eim	Plai	Dua Date
Cus	tody Seal on Cooler/Box Present: 🔲 yes		no	Seal	sintact: 🗋 yes [	no Proj	Name
Pac	king Material: 🔲 Bubble Wrap 🛛 Bubble	Bags		None	Other	Temp Blank: Y	'es No
The	mometer Used 80344042 or (79425)	Туре	of loe	: We	Blue None [	Samples on ice, o	cooling process has begun
Coo	ler Temperature <u>15.3</u>	Biolo	gical	Tiseu	<b>is Frozen:</b> Yes No	Date and init	lais of person examining
Chal	should be above freezing to 6°C				Comments:	<b>I</b>	7 11
Chall	not Custody Present:	KIYes			1.		······································
Chai	not Custody Palled Out.	1/1Y65	LIN0		2.		
Sam	der Name & Signature on COC:				3.	·	
Sam	hes Arrived within Hold Time:	121163			5 F		
Shor	thold Time Analysis (<72hr):		RINA		6		
Rust	Turn Around Time Requested:	121Yes			7		
Suffic	ient Volume:	1 IYes			8		·····
Corre	t Containers Used:	<b>VYes</b>			9.		
_p	ace Containers Used:		[]No	⊡n/A			
Conte	uners Intact:	12 Yes		[]]N/A	10.	·····	**************************************
Filter	d volume received for Dissolved tests	□ Yes	[Z]No		11.		
Samp	e Labels match COC:	(CTYes	ΠNo	[]N/A	12.		
-in	l cludes date/time/ID/Analysis Matrix:	3					
All con checke	tainers needing acid/base preservation have been d. Noncompliance are noted in 13.	□Yes	[]No	,₽₩A	13. D <sup>HNO</sup>	D <sup>3</sup> H26O4	
All cor	tainers needing preservation are found to be in	[]Yes	ΠNo	P.IN/A	Samp #		
compil	ance with EPA recommendation.				Initial when	I of # of added	
Except	ons: VOA,Coliform, TOC, Oll and Grease, WI-DRO (water	□Yes	DNo		completed	preservative	
Samp	es checked for dechlorination:	[]Yes	DNo		14.		
Head	pace in VOA Vials ( >6mm):	[]Yes	CINo	EINA	15.		
Trip B	ank Present:	⊡Yés	⊡No		16.		
Trip B	ank Custody Seals Present	⊡Yes	ΩNo	EIN/A			
Pace	Trip Blank Lot # (if purchased):		••••••				
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# Appendix B

Sample Analysis Summary



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

#### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP1 1011 F909 SMT 11.1 9.3 10.0 F908 F909 BLA	6-Zone2-08 0956001 902C_14 9 9 317 902C_06 & NK-21083	2109-1 F90902C_22	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 08/21/200 08/24/200 08/27/200 09/03/200	9 08:00 9 09:18 9 18:30 9 01:33	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.89 20.00		0.19 J 0.19	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1 2 3 7 8-PeCDE-1	30	2.00 2.00 2.00	86 87 96
2,3,7,8-TCDD Total TCDD	0.41 7.80		0.18 J 0.18	2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C -13C	2.00 2.00 2.00	94 113 84
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	3.30 40.00	0.61 	0.22 I 0.18 J 0.20	1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,7,8,9-HxCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	67 73 74 91
1,2,3,7,8-PeCDD Total PeCDD	0.93 14.00		0.29 J 0.29	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD	-13C 0F-13C 0F-13C	2.00 2.00 2.00	77 55
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.50 1.70 2.40		0.22 J 0.21 J 0.22 J	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 2.00 4.00	52 46
1,2,3,7,8,9-HxCDF Total HxCDF	26.00	0.69	0.32 I 0.24	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	0.90 5.30 2.10 73.00	  	0.29 J 0.33 0.31 J 0.31	2,3,7,8-TCDD-37Cl	4	0.20	95
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	31.00 2.10 33.00	 	0.48 0.75 J 0.61	Total 2,3,7,8-TCDI Equivalence: 9.5 n (Using 2005 WHO	D g/Kg Factors - U	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	380.00 1400.00		1.40 1.40				
OCDF OCDD	150.00 4900.00		0.78 0.60				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

ND = Not Detected NA = Not Applicable

NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

I = Interference present

RL = Reporting Limit.

# **REPORT OF LABORATORY ANALYSIS**

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#### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP10 1011 F909 SMT 11.0 9.5 9.96 F908 F909 BLA	6-Zone2-08 0956002 003A_06 9 9 9 317 002C_22 & NK-21083	2109-2 F90903A_09	Matrix Dilution Collected Received Extracted Analyzed	Solid 20 08/21/2009 08/24/2009 08/27/2009 09/03/2009	09:00 09:18 18:30 12:29	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	3.2 83.0		1.5 1.5	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDF-13	C	2.00 2.00 2.00	87 92 90
2,3,7,8-TCDD Total TCDD	ND 48.0		1.5 1.5	2,3,4,7,8-PeCDF-13 1,2,3,7,8-PeCDD-13 1,2,3,4,7,8-PeCDD-13	C IC 13C	2.00 2.00 2.00	90 103 83
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND 18.0 230.0	 	1.8 1.2 1.5	1,2,3,6,7,8-HxCDF-1 2,3,4,6,7,8-HxCDF-1 1,2,3,7,8,9-HxCDF-1	13C 13C 13C	2.00 2.00 2.00	73 72 82
1,2,3,7,8-PeCDD Total PeCDD	42.0	4.7	1.5 I 1.5	1,2,3,4,7,8-HxCDD- 1,2,3,6,7,8-HxCDD- 1,2,3,4,6,7,8-HpCDF 1,2,3,4,6,7,8-HpCDF	13C 13C 13C	2.00 2.00 2.00	89 81 61
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	  7.2	6.0 5.7	1.6   1.3   2.1	1,2,3,4,6,7,8-HpCDE 0CDD-13C	D-13C	2.00 2.00 4.00	65 62
1,2,3,7,8,9-HxCDF Total HxCDF	3.0 230.0		1.6 J 1.6	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-1	13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	5.1 34.0 14.0 470.0	  	2.6 2.2 2.5 2.4	2,3,7,8-TCDD-37Cl4		0.20	96
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	160.0 9.2 550.0	 	4.2 2.8 3.5	Total 2,3,7,8-TCDD Equivalence: 51 ng/l (Using 2005 WHO F	Kg Factors - Us	ing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	2600.0 9100.0		1.8 1.8				
OCDF OCDD	900.0 32000.0		4.0 3.2				

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

omers). ND = Not Detected NA = Not Applicabl

NA = Not Applicable NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

I = Interference present

RL = Reporting Limit.

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#### Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-21083	Matrix	Solid
Filename	F90901A_11	Dilution	NA
Total Amount Extracted	20.2 g	Extracted	08/27/2009 18:30
ICAL ID	F90817	Analyzed	09/01/2009 16:35
CCal Filename(s)	F90831B_25 & F90901A_15	Injected By	SMT

Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND ND		0.095 0.095	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PoCDE-13C	2.00 2.00 2.00	78 83 87
2,3,7,8-TCDD Total TCDD	ND ND		0.150 0.150	1,2,3,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	86 97 84
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND	 	0.190 0.092 0.140	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	75 76 72
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.150 0.150	1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	82 84 69
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	ND ND ND	 	0.100 0.075 0.096	1,2,3,4,7,6,9-110CD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	73 46
1,2,3,7,8,9-HxCDF Total HxCDF	ND ND		0.140 0.100	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND	  	0.160 0.100 0.120 0.130	2,3,7,8-TCDD-37Cl4	0.20	85
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND	 	0.120 0.170 0.140	Total 2,3,7,8-TCDD Equivalence: 0.21 ng/Kg (Using 2005 WHO Factors -	Using PRL/	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND ND		0.130 0.130			
OCDF OCDD	ND	0.61	0.390 0.430 l			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures. I = Interference present

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## Method 8290 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS-2 F9090 22.3 g F9081 F9083 BLAN	1084 1A_14 7 1B_25 & F K-21083	90901A_15	Matrix Dilution Extracted Analyzed Injected By	Solid NA 08/27/2009 18: 09/01/2009 18: SMT	30 52
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.20	102	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	2.00 2.00	82 88
2,3,7,8-TCDD Total TCDD	0.20	0.19	96	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDF-13C	2.00 2.00 2.00	91 91 104
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.00 1.00	0.99 0.95	99 95	1,2,3,4,7,8-HxCDF-13C 1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	84 78 77 74
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.87	87	1,2,3,4,7,6-HXCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	65 83 69
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	0.94 1.00 0.97	94 100 97	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	59 73 46
1,2,3,7,8,9-HxCDF Total HxCDF	1.00	0.97	97	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	0.87 1.00 0.95	87 100 95	2,3,7,8-TCDD-37Cl4	0.20	91
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.00 1.00	1.01 0.94	101 94			
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	0.91	91			
OCDF OCDD	2.00 2.00	2.00 2.08	100 104			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

P = Recovery outside of target range

X = Background subtracted value

Y = RF averaging used in calculations

Nn = Value obtained from additional analysis

NA = Not Applicable

\* = See Discussion

## **REPORT OF LABORATORY ANALYSIS**

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Matrix Code: $WW =$ wastewater $GW =$ $SL =$ sludge $V =$ value	groun por	dwater S O	= soil or so = other	olid							EPA 8081)			8270SIM)			HEM)		. 9050)	)	Series)		ors	(EPA 900)	EPA 900)	wiy							
Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Container Type	MIDE (BTEX) PA 8021b)	Gasoline (NWTPH-Gx)	Diesel (NWTPH-Dx)	Diesel & Oil (NWTPH-Dx)	Fuel Scan (NWTPH-HCID)	VOC's (EPA 8021b)	Organochlorine Pesticides (	PCB's (EPA 8082)	Volatiles (EPA 8260)	PAH's (EPA 8100 ( 8270)	Semi-Volatiles (EPA 8270)	Ignitability (EPA 1010)	Oil and Grease (EPA 1664 1	pH (EPA 9040/9045)	Specific Conductance (EPA	Paint Filter Test (EPA 9095	Heavy Metals* (EPA 7000	Biogenic Gases (EPA 3C)	Natural Attenuation Indicat	Gross Alpha Radioactivity (	Gross Beta Radioactivity (E	TLLP LEND O							
5P17_ZONEY_D82709	S	8/27/29	1645	3 5 mm	Х	Х		Х						Χ							X												
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SR 19 - ZONE 4 -082709			1715	1402																						X							
SPIT-ZONE 4-LOMPOSITE	5	8/17/09	1720	1402																						$\times$							
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2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543



Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090828-01

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF FUEL IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Diesel Fuel #2 NWTPH-Dx (mg/kg)	Heavy Oil NWTPH-Dx (mg/kg)	Surrogate Recovery 2-FBP (%)	Data Flags
Method Blank	9/2/2009	n/a	nd	nd	111	
SP17-Zone4-082709	9/2/2009	93.1	nd	nd	96.8	
SP18-Zone2-082709	9/2/2009	88.5	nd	nd	134	
LCS	9/2/2009	n/a	112%	n/a	n/a	
090902-MS	9/2/2009	n/a	101%	n/a	n/a	
090902-MSD	9/2/2009	n/a	97.5%	n/a	n/a	
SP17-Zone4-082709 Dup.	9/2/2009	93.1	nd	nd	72.7	
Method Reporting Limits			25	100		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090828-01

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF GASOLINE RANGE ORGANICS IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Benzene EPA 8021B (mg/kg)	Toluene EPA 8021B (mg/kg)	Ethylbenzene EPA 8021B (mg/kg)	m&p-Xylene EPA 8021B (mg/kg)	o-Xylene EPA 8021B (mg/kg)	Gasoline NWTPH-Gx (mg/kg)	Surrogate Recovery BFB (%)	Data Flags
Method Blank	9/2/2009	n/a	nd	nd	nd	nd	nd	nd	74.6	
SP17-Zone4-082709	9/2/2009	93.1	nd	nd	nd	nd	nd	nd	67.7	
SP18-Zone2-082709	9/2/2009	88.5	nd	nd	nd	nd	nd	nd	87.1	
LCS	9/2/2009	n/a	104%	90.9%	96.2%	86.8%	97.1%	95.4%	n/a	
090902-MS	9/2/2009	n/a	91%	98%	80.3%	72.0%	84.0%	105%	n/a	
090902-MSD	9/2/2009	n/a	89.8%	89.5%	87.2%	86.1%	121.0%	93.7%	n/a	
SP17-Zone4-082709 Dup	9/2/2009	93.1	nd	nd	nd	nd	nd	nd		
Method Reporting Limits			0.05	0.10	0.10	0.10	0.10	5.0	109	

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090828-01

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF HEAVY METALS IN SOIL BY EPA METHOD 6020 A

Sample Identification	Date Analyzed	Percent Solids	Arsenic (As)	Cadmium (Cd)	Lead (Pb)
Chemical Abstract Number (CAS)			7440-38-2	7440-43-9	7439-92-1
Units		(%)	(mg/kg)	(mg/kg)	(mg/kg)
Method Blank	9/4/2009	n/a	nd	nd	nd
SP17-Zone4-082709	9/4/2009	93.1	2.56	nd	10.1
SP18-Zone2-082709	9/4/2009	88.5	2.45	nd	14.20
LCS	9/4/2009	n/a	96.8%	93.0%	96.5%
090904-MS	9/4/2009	n/a	MI	101%	MI
090904-MSD	9/4/2009	n/a	MI	99.0%	MI
SP18-Zone2-082709 Dup.	9/4/2009	88.5	2.50	nd	14.20
Method Reporting Limits			0.25	0.25	0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference

Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall Data reviewed by:



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090828-01

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF SEMI-VOLATILE COMPOUNDS IN SOIL BY EPA METHOD 8270

Sample Identification			Blank	SP17-Zone4-082709	SP18-Zone2- 082709	LCS	090904-MS	090904-MSD	SP17-Zone4- 082709 Dup.
Percent Solids (%)			n/a	93.1	88.5	n/a	n/a	n/a	93.1
Date Extracted	CAS	MRL	9/4/2009	9/4/2009	9/4/2009	9/4/2009	9/4/2009	9/4/2009	9/4/2009
Date Anlayzed	Number	(mg/kg)	9/4/2009	9/4/2009	9/4/2009	9/4/2009	9/4/2009	9/4/2009	9/4/2009
Benzo(a)anthracene	56-55-3	0.01	nd	0.02	0.52	137%	117%	118%	0.02
Benzo(a)pyrene	50-32-8	0.01	nd	nd	0.31	n/a	n/a	n/a	nd
Benzo(b)fluoranthene	205-99-2	0.01	nd	nd	0.34	n/a	n/a	n/a	nd
Benzo(k)fluoranthene	207-08-9	0.01	nd	nd	0.16	n/a	n/a	n/a	nd
Chrysene	218-01-9	0.01	nd	0.01	0.57	130%	113%	111%	0.01
Dibenzo(a,h)anthracene	53-70-3	0.01	nd	nd	nd	n/a	n/a	n/a	nd
Ideno(1,2,3-cd)pyrene	193-39-5	0.01	nd	nd	0.02	71.4%	67.1%	66.5%	nd
1-Methylnaphthalene	90-12-0	0.01	nd	nd	0.28	n/a	n/a	n/a	nd
2-Methylnaphthalene	91-57-6	0.01	nd	nd	0.2	n/a	n/a	n/a	nd
Naphthalene	91-20-3	0.01	nd	0.01	0.16	n/a	n/a	n/a	nd
Surrogate Recovery (%)									
2-Fluorophenol			98.8	39.4	45.3	53.0	81.0	81.1	40.7
Phenol-d6			93.6	59.4	77.9	89.3	104	105	59.6
Nitrobenzene-d5			111	106	112	113	104	103	106
2-Fluorobiphenol			114	96.7	130	117	117	110	103
2,4,6-Tribromophenol			51.7	53.2	78.2	93.1	89.1	88.1	56.3
Terphenyl-d14			128	124	150	151	135	133	126

Data Flags

WA-DOE-Laboratory Certification No.: C2013

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"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall

Data reviewed by:



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpile

#### DAL Number: 090828-01

#### QUALITY CONTROL RESULTS FOR THE ANALYSIS OF TCLP HEAVY METALS IN SOIL BY EPA METHOD 1311 AND EPA METHOD 6020 A

# Sample Preparation Information for TCLP by EPA Method 1311

Sample Identification	Method Blank	
Percent Solids		n/a
No. of Extractions		1
Type of Extraction		Rotary
Extraction Fluid		#1
Date Extracted		9/2/2009

#### Sample Preparation Information for

TCLP by EPA Method 1311

Sample Identification	SP17-ZONE4-Composite
Percent Solids	93.7
No. of Extractions	1
Type of Extraction	Rotary
Extraction Fluid	#1
Date Extracted	9/2/2009

#### Comments and Explanations: None

Analyst: T. McCall Data reviewed by: R. Lewis

Sample Preparation Information for
TCLP by EPA Method 1311

Sample Identification	LCS	
Percent Solids		n/a
No. of Extractions		1
Type of Extraction		Rotary
Extraction Fluid		#1
Date Extracted		9/2/2009

#### Sample Preparation Information for TCLP by EPA Method 1311

Sample Identification SP17-ZONE4-Composite D					
Percent Solids	93.7				
No. of Extractions	1				
Type of Extraction	Rotary				
Extraction Fluid	#1				
Date Extracted	9/2/2009				

# Sample Preparation Information for TCLP by EPA Method 1311

Sample Identification	SP17-ZONE4-Composite MS
Percent Solids	n/a
No. of Extractions	1
Type of Extraction	Rotary
Extraction Fluid	#1
Date Extracted	9/2/2009

#### Sample Preparation Information for TCLP by EPA Method 1311

Sample Identification	SP17-ZONE4-Composite MSD
Percent Solids	n/a
No. of Extractions	1
Type of Extraction	Rotary
Extraction Fluid	#1
Date Extracted	9/2/2009

#### Sample Preparation Information for

Sample Identification	SP19-ZONE4-082709	
Percent Solids		87.9
No. of Extractions		1
Type of Extraction		Rotary
Extraction Fluid		#1
Date Extracted		9/2/2009



DRAGON ANALYTICAL LABORATORY 2818 Madrona Beach Rd NW, Olympia WA 98502

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Pioneer Technologies Corporation Project: East Bay IA Stockpile

#### DAL Number: 090828-01

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF TCLP HEAVY METALS IN SOIL BY EPA METHOD 1311 AND EPA METHOD 6020 A

Sample Identification	Date Analyzed	Lead (Pb)
Chemical Abstract Number (CAS)		7439-92-1
Units		(mg/L)
Method Blank	9/4/2009	nd
SP17-ZONE4-Composite	9/4/2009	nd
SP19-ZONE4-082709	9/4/2009	nd
LCS	9/4/2009	110.0%
090904-MS	9/4/2009	122%
090904-MSD	9/4/2009	118.0%
SP17-ZONE4-082709 Dup.	9/4/2009	nd
Method Reporting Limits		0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall Data reviewed by:

page 1 of 2

Face Analytical\*

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S. DAY TAT 5, 6m41L     Two     DATE     Time     ACCEPTED BY / AFFILIATION     DATE     TIME     SAMPLE CONDITIONS       P     0     0/29/54     1/23.0     0/29/54     1/23.0     0/29/54     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0     0/29.0 <td>ADDITIONAL COMMENTS</td> <td>Res Res</td> <td></td> <td></td> <td></td> <td></td> <td>n Natific Satures, 179</td> <td></td> <td>Notes Carlo</td> <td></td> <td>╞╼┠</td> <td></td> <td>1</td> <td><u>.</u></td> <td></td>	ADDITIONAL COMMENTS	Res Res					n Natific Satures, 179		Notes Carlo												╞╼┠		1	<u>.</u>	
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www.pacelabs.com

#### **Report Prepared for:**

Kara Roberts Pioneer Technologies Corporation 2612 Yelm Highway SE Olympia WA 98501

# REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

**Report Prepared Date:** 

September 8, 2009

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

#### **Report Information:**

Pace Project #: 10111483 Sample Receipt Date: 08/31/2009 Client Project #: East Bay IA Stockpiles Client Sub PO #: N/A State Cert #: C218

#### **Invoicing & Reporting Options:**

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

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

This report has been reviewed and prepared by:

pri C. Munga

Scott Unze, Project Manager (612) 607-6383 (612) 607-6444 (fax) scott.unze@pacelabs.com



#### **Report of Laboratory Analysis**

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The results relate only to the samples included in this report.



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

### **DISCUSSION**

This report presents the results from the analyses performed on two samples submitted by a representative of Pioneer Technologies Corporation. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. Reporting limits were based on signal-to-noise calculations. The samples were received above the recommended temperature range of 0-6 degrees Celsius.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 55-110%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Since the quantification of the native 2,3,7,8-substituted isomers was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained, or "E" where polychlorinated diphenyl ethers were present.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits, with the exception of a trace level of HpCDD. This was below the calibration range of the method. The HpCDD levels reported for the field samples were higher than the HpCDD level in the blank by three orders of magnitude. These results indicate that the sample processing steps did not contribute significantly to the levels reported for the field samples.

A laboratory spike sample was also prepared with the sample batch using clean sand that had been fortified with native standards. The results show that the spiked native compounds were recovered at 92-110%. These results indicate a high degree of accuracy for these determinations. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

# **REPORT OF LABORATORY ANALYSIS**

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# Appendix A

Sample Management

	Sample Condition Upon	Receipt
Pace Analytical Client Na	ame: Pioneer Techno	Project # 19119
Courier: 2 Fed Ex U UPS U USPS Tracking #: <u>7915-0475-6</u> 55	Client Commercial C Pac	ce Other
Custody Seal on Cooler/Box Present:	yes 🔲 no Seals intact:	⊠ <sup>7</sup> yes ⊡ no <sup>Pto</sup> Name
Packing Material: 🔲 Bubble Wrap 🛛 🛛	Bubble Bage 🔲 None 🗔 Oth	Pr Temp Blank: Yee No
Thermometer Used 80344842 of 179425	Type of Ice: (Wet Blue	None Samples on ice, cooling process has beginn
Cooler Temperature 16.0 Temp should be above freezing to 6°C	Biological Tissue is Froze	n: Yes No Date and Initials of person examining contents:
Chain of Custody Present:	ZIYes DNO DNA 1.	
Chain of Custody Filled Out:	ZIYOS DNO DNA 2.	
Chain of Custody Relinquished:	ZIYAS DINO DINA 3.	
Sampler Name & Signature on COC:	Elyes ElNo ElN/A 4.	
Samples Arrived within Hold Time:	LIVES DNO DINA 5.	
Short Hold Time Analysis (<72hr):	OYes ONO DAVA 6.	
Rush Turn Around Time Requested:	ZIVAS DINO DINA 7.50	ay
Sufficient Volume:	AYes INO IN/A 8.	
Correct Containers Used:	ZYes INO IN/A 9.	
-Pace Containers Used:	PYes DNO DNA	5 G
Containers intact:	ZYes DNO DNA 10.	
Filtered volume received for Dissolved tests	DYES DNO EINA 11.	
Sample Labels match COC:	ZYes DNo DNA 12.	
-Includes date/time/ID/Analysis Matrix:	SI	
checked. Noncompliance are noted in 13.	an Dyes DNo DNA 13.	
All containers needing preservation are found to be in compliance with EPA recommendation.		
Exceptions: VOA,Coliform, TOC, Oli and Grease, WI-DRO	(water UYes Mino completed	Lot # of added
Samples checked for dechlorination:	TYes ONO ZINA 14.	procession of the second secon
Headepace in VOA Vials ( >6mm):	Elves EINO EINA 15.	
Trip Blank Present:	DYes DNO DNA 16.	
Trip Blank Custody Seals Present		
Pace Trip Blank Lot # (if purchased):	/	
Client Notification/ Resolution: Person Contacted:Kw/w Comments/ Resolution:	Date/Time:0	Field Data Required? Y / N 8/31/09
Warved te	mp neg.	
	0 1	
Project Manager Review:	(J)	Date: 08/31/09
lote: Whenever there is a discrepancy affecting Nort F-L213Rev.00, 05Aug2009	h Carolina compliance samples, a copy	of this form will be sent to the Reperiod Adalytical SEMMER, Inc. 1700 Elm Street SE, Suite 200, Minneapolis, MN 55414
Report No10111483 8290	)	Page 5 of 10

# Appendix B

Sample Analysis Summary



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

#### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP1 1011 F909 BAL 11.4 9.6 10.3 F909 BLA	7-ZONE4-0 1483001 905B_13 9 9 9 9 317 905B_01 & NK-20963	82709 F90905B_17	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 08/27/2009 08/31/2009 09/02/2009 09/06/2009	9 16:45 9 09:10 9 17:00 9 00:11	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	 17.00	0.46	0.19 I 0.19	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	20	2.00 2.00 2.00	87 91
2,3,7,8-TCDD Total TCDD	ND 25.00		0.30 0.30	2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDF-1	3C 3C 12C	2.00 2.00 2.00	94 109
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	0.66 5.40 83.00	 	0.27 J 0.32 0.29	1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	00 84 83 83 95
1,2,3,7,8-PeCDD Total PeCDD	0.51 31.00		0.48 J 0.48	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD	-13C 0F-13C	2.00 2.00 2.00	88 73 67
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	3.50	25.00  1.90	0.31 E 0.42 J 0.23 I	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 2.00 4.00	78 55
1,2,3,7,8,9-HxCDF Total HxCDF	4.00 60.00		0.30 J 0.32	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	7.90 1.90 96.00	0.46  	0.32 I 0.29 0.28 J 0.30	2,3,7,8-TCDD-37Cl	4	0.20	97
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	150.00 15.00 600.00	 	0.69 1.10 0.87	Total 2,3,7,8-TCDI Equivalence: 9.8 n (Using 2005 WHO	D g/Kg Factors - Us	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	310.00 530.00		0.32 0.32				
OCDF OCDD	780.00 2700.00		0.61 0.87				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

E = PCDE Interference

I = Interference present

# **REPORT OF LABORATORY ANALYSIS**

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

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#### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP1 1011 F909 BAL 11.4 11.7 10.1 F908 F909 BLA	8-ZONE2-0 1483002 905B_14 9 9 9 317 905B_01 & NK-20963	82709 F90905B_17	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 08/27/2009 08/31/2009 09/02/2009 09/06/2009	9 17:00 9 09:10 9 17:00 9 00:58	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	1.4 25.0		0.18 0.18	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1 2 3 7 8-PeCDF-1	30	2.00 2.00 2.00	88 90 96
2,3,7,8-TCDD Total TCDD	ND 12.0		0.25 0.25	2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1 1,2,3,7,8-PeCDD-1	3C 3C -13C	2.00 2.00 2.00	96 110 86
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	2.1 26.0	0.74 	0.62 I 0.25 J 0.44	1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,7,8,9-HxCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00	76 77 83 89
1,2,3,7,8-PeCDD Total PeCDD	1.2 21.0		0.39 J 0.39	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD	-13C F-13C	2.00 2.00 2.00	83 71 69
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	 1.4 1.7	2.10	0.25 I 0.19 J 0.22 J	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 4.00	77 58
1,2,3,7,8,9-HxCDF Total HxCDF	20.0	0.31	0.22 I 0.22 I 0.22	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	3.6 2.1 41.0	0.96  	0.35 I 0.31 J 0.30 J 0.32	2,3,7,8-TCDD-37Ck	4	0.20	95
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	30.0 1.4 32.0	 	0.27 0.41 J 0.34	Total 2,3,7,8-TCDE Equivalence: 4.5 no (Using 2005 WHO	) g/Kg Factors - Us	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	87.0 210.0		0.60 0.60				
OCDF OCDD	83.0 860.0		0.39 0.35				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

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

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

I = Interference present

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#### Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-20963	Matrix	Solid
Filename	F90905B_09	Dilution	NA
Total Amount Extracted	20.5 g	Extracted	09/02/2009 17:00
ICAL ID	F90817	Analyzed	09/05/2009 21:06
CCal Filename(s)	F90905B_01 & F90905B_17	Injected By	BAL

Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND ND		0.043 0.043	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDE-13C	2.00 2.00 2.00	74 80 85
2,3,7,8-TCDD Total TCDD	ND ND		0.070 0.070	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	88 100 75
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND	 	0.064 0.053 0.058	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	74 73 76
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.064 0.064	1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00 2.00	79 83 67 65
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	ND ND ND	 	0.045 0.051 0.034	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 4.00	75 54
1,2,3,7,8,9-HxCDF Total HxCDF	ND ND		0.050 0.045	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND	  	0.059 0.052 0.046 0.052	2,3,7,8-TCDD-37Cl4	0.20	83
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND	 	0.066 0.075 0.071	Total 2,3,7,8-TCDD Equivalence: 0.096 ng/Kg (Using 2005 WHO Factors -	Using PRL/	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND 0.12		0.084 0.084 J			
OCDF OCDD	ND	0.56	0.110 0.140 I			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

I = Interference present

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## Method 8290 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS F90 20.3 F90 F90 LCS	3-20964 905B_02 3 g 817 905B_01 & 3-20964	F90905B_17	Matrix Dilution Extracted Analyzed Injected By	Solid NA 09/02/2009 17: 09/05/2009 15: BAL	00 45
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.20	100	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	2.00 2.00	80 85
2,3,7,8-TCDD Total TCDD	0.20	0.20	98	1,2,3,7,8-PeCDF-13C 2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	91 104
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.00 1.00	1.00 0.95	100 95	1,2,3,4,7,8-HxCDF-13C 1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	84 76 77 81
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.92	92	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	84 73 71
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	0.95 1.05 1.00	95 105 100	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	80 59
1,2,3,7,8,9-HxCDF Total HxCDF	1.00	1.00	100	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	0.94 0.98 0.95	94 98 95	2,3,7,8-TCDD-37Cl4	0.20	88
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.00 1.00	1.10 1.03	110 103			
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	0.95	95			
OCDF OCDD	2.00 2.00	1.97 2.17	98 109			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

P = Recovery outside of target range

X = Background subtracted value

Y = RF averaging used in calculations

Nn = Value obtained from additional analysis

NA = Not Applicable

\* = See Discussion

## **REPORT OF LABORATORY ANALYSIS**

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

DRAGC Analytical Laborat	ON ratory ratory											CUS NW F .ab@ nlab@	STODY RECORD         Page of _]           W, Olympia, WA 98502         Fax: (360) 866-0556           Fax: (360) 866-0556         Samples Collected By:           @comcast.net         Contact Number: 360 - 570 - 170												of ] 70									
Client: <u>PTC</u> Address: <u>2612 Yelm Hwy SE</u> <u>Olympig, WA 9850</u> <u>Email: robertskows pioner</u> , Project Number: <u>Cum</u>											J Project P.O.: <u>(redit (av]</u> Contact Person: <u>090904-02</u> DAL Project No.: <u>090904-02</u>																							
Matrix Code: $WW =$ wastewater $GW =$ groundwater $S =$ soil or solid $SL =$ sludge $V =$ vapor $O =$ other											EPA 8081)			8270SIM)			HEM)		9050)		Series)		ors	(EPA 900)	SPA 900)									
Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Container Type	MULTEX (EPA 8021b)	Gasoline (NWTPH-Gx)	Diesel (NWTPH-Dx)	Diesel & Oil (NWTPH-Dx)	Fuel Scan (NWTPH-HCID)	VOC's (EPA 8021b)	Organochlorine Pesticides (	PCB's (EPA 8082)	Volatiles (EPA 8260)	PAH's (EPA 8100 or 8270/	Semi-Volatiles (EPA 8270)	Ignitability (EPA 1010)	Oil and Grease (EPA 1664 I	pH (EPA 9040/9045)	Specific Conductance (EPA	Paint Filter Test (EPA 9095	Heavy Metals* (EPA 7000	Biogenic Gases (EPA 3C)	Natural Attenuation Indicat	Gross Alpha Radioactivity (	Gross Beta Radioactivity (E									
SP20-Zone 3-090409	5	69/04/09	1015	3encore 2402	Ϋ́	X		X						Х							X													
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Relinquished by (Signature)     Date/Time     Relinquished by (Signature)     Date/Time     Date/Time       Relinquished by (Signature)     Date/Time     Date/Time							Turn-Around-Time □ Same Day □ 24 Hour ↓ 48 Hour ★5 Day & M(A <sup>+</sup> ) □ 10 Day				* <u>Heavy Metals</u> : Please circle the desired analytes. Ag Al A Ba Be C Cr Cr-VI Co Cu Fe Hg Li Mg Mn Mo N P Sb Se Tl V Zn - Total Ag Al As Ba Be Cd Cr Cr-VI Co Cu Fe Hg Li Mg Mn Mo Ni Pb Sb Se Tl V Zn - Dissolved Ag Al As Ba Be Cd Cr Cr-VI Co Cu Fe Hg Li Mg Mn Mo Ni Pb Sb Se Tl V Zn - TCLP														ed									
Sample Disposal Instructions: 🗌 DAL Disposal @ \$2.50 per Container 🗌 Return 🗌 Pickup								LI Other:																										


2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles ADD ON

#### DAL Number: 090904-02

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF PCB'S IN SOIL BY EPA METHOD 8082

Sample Identification	Date Analyzed	Percent Solids (%)	Aroclor 1016 (mg/kg)	Aroclor 1221 (mg/kg)	Aroclor 1232 (mg/kg)	Aroclor 1242 (mg/kg)	Aroclor 1248 (mg/kg)	Aroclor 1254 (mg/kg)	Aroclor 1260 (mg/kg)	Surrogate Recovery TCMX (%)	Surrogate Recovery DCBP (%)	Data Flags
Method Blank	9/21/2009	n/a	nd	104	75.5							
SP20-ZONE3-090409	9/21/2009	95.1	nd	106	72.5							
LCS	9/21/2009	n/a	102%	n/a	n/a	n/a	n/a	n/a	82.9%	103	68.4	
090908-MS	9/21/2009	n/a	99%	n/a	n/a	n/a	n/a	n/a	103%	108	80.1	
090908-MSD	9/21/2009	n/a	99%	n/a	n/a	n/a	n/a	n/a	81.4%	134	133	
SP20-ZONE3-090409 Dup.	9/21/2009	95.1	nd	128	135							
Method Reporting Limits			0.05	0.05	0.05	0.05	0.05	0.05	0.05			

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

All results based on dry weight.

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090904-02

### ANALYTICAL RESULTS FOR THE ANALYSIS OF FUEL IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Diesel Fuel #2 NWTPH-Dx (mg/kg)	Heavy Oil NWTPH-Dx (mg/kg)	Surrogate Recovery 2-FBP (%)	Data Flags
Method Blank	9/8/2009	n/a	nd	nd	84.7	
SP20-ZONE3-090409	9/8/2009	95.1	nd	nd	89.7	
LCS	9/8/2009	n/a	116%	n/a	n/a	
090908-MS	9/8/2009	n/a	108%	n/a	n/a	
090908-MSD	9/8/2009	n/a	90.4%	n/a	n/a	
Method Reporting Limits			25	100		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090904-02

### ANALYTICAL RESULTS FOR THE ANALYSIS OF GASOLINE RANGE ORGANICS IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Benzene EPA 8021B (mg/kg)	Toluene EPA 8021B (mg/kg)	Ethylbenzene EPA 8021B (mg/kg)	m&p-Xylene EPA 8021B (mg/kg)	o-Xylene EPA 8021B (mg/kg)	Gasoline NWTPH-Gx (mg/kg)	Surrogate Recovery BFB (%)	Data Flags
Method Blank	9/2/2009	n/a	nd	nd	nd	nd	nd	nd	76.7	
SP20-ZONE3-090409	9/2/2009	95.1	nd	nd	nd	nd	nd	nd	71.4	
LCS	9/2/2009	n/a	95%	104%	115%	83.4%	93.1%	84.8%	n/a	
090908-MS	9/2/2009	n/a	104%	101%	73.5%	74.8%	87.9%	92.7%	n/a	
090908-MSD	9/2/2009	n/a	89.8%	89.5%	87.2%	86.1%	121%	89.3%	n/a	
SP20-ZONE3-090409 Dup.	9/2/2009	95.1	nd	nd	nd	nd	nd	nd	76.9	
Method Reporting Limits			0.05	0.10	0.10	0.10	0.10	5.0	109	

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.



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Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090904-02

### ANALYTICAL RESULTS FOR THE ANALYSIS OF HEAVY METALS IN SOIL BY EPA METHOD 6020 A

Sample Identification	Date Analyzed	Percent Solids	Arsenic (As)	Cadmium (Cd)	Lead (Pb)
Chemical Abstract Number (CAS)			7440-38-2	7440-43-9	7439-92-1
Units		(%)	(mg/kg)	(mg/kg)	(mg/kg)
Method Blank	9/10/2009	n/a	nd	nd	nd
SP20-ZONE3-090409	9/10/2009	95.1	3.76	nd	3.96
LCS	9/10/2009	n/a	113%	105%	107%
090908-MS	9/10/2009	n/a	DO	DO	DO
090908-MSD	9/10/2009	n/a	DO	DO	DO
SP20-ZONE3-090409 Dup.	9/10/2009	95.1	3.54	nd	3.81
Method Reporting Limits			0.25	0.25	0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference

Sample results based on dry weight.



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Pioneer Technologies Corporation Project: East Bay IA Stockpiles

### DAL Number: 090904-02

### ANALYTICAL RESULTS FOR THE ANALYSIS OF SEMI-VOLATILE COMPOUNDS IN SOIL BY EPA METHOD 8270

Sample Identification			Blank	SP20-Zone3- 090409	LCS	090904- MS	090904- MSD
Percent Solids (%)			n/a	93.1	n/a	n/a	n/a
Date Extracted	CAS	MRL	9/4/2009	9/4/2009	9/4/2009	9/4/2009	9/4/2009
Date Anlayzed	Number	(mg/kg)	9/4/2009	9/4/2009	9/4/2009	9/4/2009	9/4/2009
Benzo(a)anthracene	56-55-3	0.01	nd	nd	137%	117%	118%
Benzo(a)pyrene	50-32-8	0.01	nd	nd	n/a	n/a	n/a
Benzo(b)fluoranthene	205-99-2	0.01	nd	nd	n/a	n/a	n/a
Benzo(k)fluoranthene	207-08-9	0.01	nd	nd	n/a	n/a	n/a
Chrysene	218-01-9	0.01	nd	nd	130%	113%	111%
Dibenzo(a,h)anthracene	53-70-3	0.01	nd	nd	n/a	n/a	n/a
Ideno(1,2,3-cd)pyrene	193-39-5	0.01	nd	nd	71.4%	67.1%	66.5%
1-Methylnaphthalene	90-12-0	0.01	nd	nd	n/a	n/a	n/a
2-Methylnaphthalene	91-57-6	0.01	nd	nd	n/a	n/a	n/a
Naphthalene	91-20-3	0.01	nd	nd	n/a	n/a	n/a
Surrogate Recovery (%)							
2-Fluorophenol			98.8	88.9	53.0	81.0	81.1
Phenol-d6			93.6	97.7	89.3	104	105
Nitrobenzene-d5			111	113	113	104	103
2-Fluorobiphenol			114	106.0	117	117	110
2,4,6-Tribromophenol			51.7	60.6	93.1	89.1	88.1
Terphenyl-d14			128	138	151	135	133
Data Flags							

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall

ace Analytical\*

1138

# CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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### **Report Prepared for:**

Troy Bussey Pioneer Technologies Corporation 2612 Yelm Highway S.E. Suite B Olympia WA 98501-4826

## REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

**Report Prepared Date:** 

September 17, 2009

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

### **Report Information:**

Pace Project #: 10112009 Sample Receipt Date: 09/05/2009 Client Project #: East Bay IA Stockpiles Client Sub PO #: N/A State Cert #: C218

### **Invoicing & Reporting Options:**

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

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

This report has been reviewed and prepared by:

Ent C. Hunge

Scott Unze, Project Manager (612) 607-6383 (612) 607-6444 (fax) scott.unze@pacelabs.com



### **Report of Laboratory Analysis**

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.



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

### **DISCUSSION**

This report presents the results from the analysis performed on one sample submitted by a representative of Pioneer Technologies Corporation. The sample was analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. The reporting limits were based on signal-to-noise calculations.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extract ranged from 57-88%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Since the quantification of the native 2,3,7,8-substituted isomers was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain trace levels of selected congeners. These were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" on the results table and may be, at least partially, attributed to the background. It should be noted that levels less than ten times the background are not generally considered to be statistically different from the background.

A laboratory spike sample was also prepared with the sample batch using clean sand that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 90-110%. These results indicate a high degree of accuracy for these determinations. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

## **REPORT OF LABORATORY ANALYSIS**

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## Appendix A

Sample Management

Sa	mple Con	ditio	n Upon Receipt
Pace Analytical Client Name	: Pion	<u>el(</u>	Tech-WA Project # 10112009
Courter:         Image: Participation         Image: Participation<	ent 🗖 Comn	nercial	Pace Other Optional
Custody Seal on Cooler/Box Present: 📈 yes	no 🗋 no	Seal	is Intact: Eryes 🗋 no
Packing Material: A Bubble Wrap	e Bage 🔲 I	None	Other Temp Blank: Yes 🔀 No
Thermometer Used 80344042 of 179425	Type of Ice:	We	y Blue None 🔲 Samples on ice, cooling process has begun
Cooler Temperature <u>4.6°</u> Temp should be above freezing to 6°C	Biological *	Tissue	e is Frozen: Yes No Date and initials of person exemining contents: <u>MIT 7-5-07</u>
Chain of Custody Present:	12 Kes DINO	[]N/A	1.
Chain of Custody Filled Out:	XVes DNo		2.
Chain of Custody Relinguished:			3.
Sampler Name & Signature on COC:	Ayes CINo		4.
Samples Arrived within Hold Time:	Dives DNo		5.
Short Hold Time Analysis (<72hr):			6.
Rush Turn Around Time Requested:	CIVes KINO		7.
Sufficient Volume:	CKes []NO		8.
Correct Containers Used:	XYes ⊡No		9.
-Pace Containere Used:	Yes DNo	⊡n⁄a	
Containers intact:	Dives 🗆 No	[]]N/A	10.
Filtered volume received for Dissolved tests	□Yes □No	DANA	11.
Sample Labels match COC:	YYes DNo	CJN/A	12.
-Includes date/time/ID/Analysis Matrix:	SL	÷	
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	CYes CNo /	Kin/a	
All containers needing preservation are found to be in compliance with EPA recommendation.	🖸 Yes 💭 No	5%N/A	Samp #
Exceptions: VOA,Coliform, TOC, Oil and Grease, WI-DRO (water			Initial when Lot # of added completed preservative
Samples checked for dechlorination:	□Yes □No `		14.
Headepace in VOA Vials ( >6mm):		MINA	15.
Trip Blank Present:	□Yes □No `	64N/A	16.
Trip Blank Custody Seals Present		<b>X</b> N/A	
Pace Trip Blank Lot # (If purchased):	·		
Cilent Notification/ Resolution:			
Person Contacted:	r	)ate/T	
Comments/ Resolution;	******		
		<del>4</del>	
Project Manager Review:	P	<u></u>	Date: 09/08/09
Note: Whenever there is a discrepancy affecting North Ca F-L213Rev.00, 05Aug2009	rolina complian	ce sam	nples, a copy of this form will be sent to the Read Adaty Semines, Inc. 1700 Elm Street SE, Suite 200, Minneapolis, MN 55414

₩ 9-4-01 No.....10112009\_8290

Page 5 of 9

## Appendix B

Sample Analysis Summary



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

### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP2 1011 D909 SMT 12.1 6.7 11.3 D909 D909 BLA	D-Zone3-09 2009001 916B_12 9 9 9 914GC2 916A_21 & NK-21259	0409 D90916B_13	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 09/04/2009 09/05/2009 09/10/2009 09/17/2009	9 10:15 9 11:00 9 18:00 9 14:14	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND ND		0.19 0.19	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	20	2.00 2.00	58 72 70
2,3,7,8-TCDD Total TCDD	ND ND		0.16 0.16	1,2,3,7,8-PeCDF-1 2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C 3C	2.00 2.00 2.00	69 88 70
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND	 	0.19 0.27 0.23	1,2,3,4,7,8-HXCDF 1,2,3,6,7,8-HXCDF 2,3,4,6,7,8-HXCDF 1,2,3,7,8,9-HXCDF 1,2,3,4,7,8-HXCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00	76 65 69 75 76
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.23 0.23	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD	-13C )-13C )F-13C	2.00 2.00 2.00	68 61 68
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF	0.39 0.47		0.27 J 0.31 J	1,2,3,4,6,7,8-HpCD OCDD-13C	)D-13C	2.00 2.00 4.00	78 57
1,2,3,7,8,9-HxCDF Total HxCDF	ND 4.60		0.24 B5 0.24 0.27	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND 0.84  1.30	 0.46 	0.34 0.36 J 0.43 I 0.37 J	2,3,7,8-TCDD-37Cl	4	0.20	81
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.90 ND 6.40	 	0.33 J 0.31 0.32	Total 2,3,7,8-TCDI Equivalence: 0.66 (Using 2005 WHO	D ng/Kg Factors - U	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	9.90 20.00		0.45 0.45				
OCDF OCDD	6.30 87.00		0.50 J 1.10				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

ND = Not Detected NA = Not Applicable

NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

B = Less than 10x higher than method blank level

I = Interference present

RL = Reporting Limit.

## **REPORT OF LABORATORY ANALYSIS**

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Report No.....10112009\_8290



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

### Method 8290 Blank Analysis Results

BLANK-21259	Matrix	Solid
D90916A_14	Dilution	NA
10.1 g	Extracted	09/10/2009 18:00
D90914GC2	Analyzed	09/16/2009 20:54
D90916A_07 & D90916A_21	Injected By	BAL
	BLANK-21259 D90916A_14 10.1 g D90914GC2 D90916A_07 & D90916A_21	BLANK-21259MatrixD90916A_14Dilution10.1 gExtractedD90914GC2AnalyzedD90916A_07 & D90916A_21Injected By

Native Isomers	<b>Conc</b> ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.081	0.083	0.062 I 0.062 J	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PoCDE-13C	2.00 2.00 2.00	53 72
2,3,7,8-TCDD Total TCDD	ND ND		0.100 0.100	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	71 95 68
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	0.110 ND 0.110	 	0.110 J 0.083 0.097 J	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	61 68 72
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.100 0.100	1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00 2.00	85 77 60 67
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	ND  0.120	0.120	0.130 0.110 I 0.110 J	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	80 63
1,2,3,7,8,9-HxCDF Total HxCDF	ND 0.120		0.140 0.120	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND	  	0.180 0.150 0.140 0.160	2,3,7,8-TCDD-37Cl4	0.20	75
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND	 	0.160 0.260 0.210	Total 2,3,7,8-TCDD Equivalence: 0.18 ng/Kg (Using 2005 WHO Factors -	Using PRL/	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	0.500 1.000		0.240 J 0.240 J			
OCDF OCDD	3.600	0.440	0.270 I 0.530 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

I = Interference present

## REPORT OF LABORATORY ANALYSIS

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Report No.....10112009\_8290



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

## Method 8290 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS-2 U9091 10.3 g U9091 U9091 BLANI	1260 6A_20 1 6A_07 & U9 <-21259	90916A_21	Matrix Dilution Extracted Analyzed Injected By	Solid NA 09/10/2009 18: 09/17/2009 01: BAL	00 13
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.22	110	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	2.00 2.00	58 63
2,3,7,8-TCDD Total TCDD	0.20	0.20	102	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDF-13C	2.00 2.00 2.00	70 74 80
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.00 1.00	1.06 1.01	106 101	1,2,3,4,7,8-HxCDF-13C 1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	79 71 75 75 70
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.90	90	1,2,3,4,7,6-HXCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	79 71 69
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	1.00 1.06 1.05	100 106 105	1,2,3,4,6,7,8-HpCDD-130 OCDD-13C	2.00 2.00 4.00	69 71 56
1,2,3,7,8,9-HxCDF Total HxCDF	1.00	1.05	105	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	1.01 0.99 1.01	101 99 101	2,3,7,8-TCDD-37Cl4	0.20	69
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.00 1.00	1.07 1.05	107 105			
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	1.00	100			
OCDF OCDD	2.00 2.00	2.01 2.12	101 106			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

P = Recovery outside of target range

X = Background subtracted value

Y = RF averaging used in calculations

Nn = Value obtained from additional analysis

NA = Not Applicable

\* = See Discussion

## **REPORT OF LABORATORY ANALYSIS**

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Report No.....10112009\_8290

DRAGON       RCRA CHAIN O         Analytical Laboratory       2818 Madrona Beach         Client:       PTC         Phone:       360 570 1705         Product       Product												<b>DF (</b> n Rd. 0543 gonI Irago	CUS NW 3 F Lab@ nlab	<b>STO</b> (, Oly (ax: ( ) contorated	DY mpi (360) ncast. pry.co	<b>RE</b> a, W 866 .net .om	CO A 98 -055	<b>RD</b> 3502 56	-					s	ample	es Col t Nun	llected	і Ву:_ ЗС	р Кі <u>с s</u>	1ge L 70	17	of		
Client:       PTC       Phone:       360.570.1700       Project Name:       East Bay IA Stocky         Address:       2012 Yelm thwy SE       Fax:       Project Location:       Project Number:         Olympia       WA 9850/       Email:       Yobertsk @       Project Number:       Project Number:         Matrix Code:       Matrix Code:       Matrix Code:       Matrix Code:       Matrix Code:       Matrix Code:												kp	<u>165</u>	P C D	rojec onta AL	et P.C et Pe Proje	D.: erson	: ío.: _1	09	09	15	<u>(</u>	)4											
Matrix Code: WW = wastewater SL = sludgeGW = groundwater V = vaporS = soil or solid O = otherImage: Color solid SL = sludgeImage: Color solid SL = sludgeI												EPA 900)	(PA 900)																					
Sample Natrix       b65160       volution         Sample Matrix       andress         Sample Matrix       andress         Date Sample Matrix       andress         Date Sample Matrix       andress         Date Sample Matrix       b5150         Container Type       b5150         Patris (EPA 8021b)       b70231b         Diesel (NWTPH-Dx)       b15664 HEA         Paultis (EPA 8021b)       b1664 HEA         Paint Filter Test (EPA 8021b)       conductance (EPA 9095)         PH (EPA 9040/9045)       p14 (EPA 9040/9045)         Phaint Filter Test (EPA 8021b)       constance (EPA 9095)         Paint Filter Test (EPA 8021b)       b1664 HEA         Paint Filter Test (EPA 9040/9045)       p14 (EPA 9040/9045)         Phaural Attenuation Indicators       frost Alpha Radioactivity (EPA 9095)         Paint Filter Test (EPA 9040/9045)       frost Alpha Radioactivity (EPA 9095)         Paint Filter Test (EPA 9095)       heavy Metals* (EPA 9095)         Paint Filter Test (EPA 9040/9045)       frost Alpha Radioactivity (EPA 7000 Serints)         Gro																																		
SP21_20nel-091509	X     A     I     V     I     I     I     I     I     I       UZonel_091509     S 081509     1215     35name     X     X     X     X     X     X																																	
SP22_Zone3_091509	S	071509	1300	3Encore 3402	Х	X		X				X		X							Х													
SP23-Zone4-091509	S	091509	1330	3 HOZ	X	$ \times$		X				$\times$		$ \times$							X					Х								
SP15_Zone3_091509	S	091509	140Ö	140Z								$\mathbf{X}$																			$ \longrightarrow $			
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Relinquished by (Signature)       Date/Time       Received by (Signature)       Date/Time G/////         Kana       Relinquished by (Signature)       Date/Time       Bate/Time         Relinquished by (Signature)       Date/Time       Received by (Signature)       Date/Time         Sample Disposal Instructions:       DAL Disposal @ \$2.50 per Container       Return       Pickup								۶ <u>۶</u>	Turn Sar 24 F 48 F 5 D 5 D 10 I Oth	ne Day Hour Hour ay Day	und-T Mai	ime (	*] A; A; A;	<b>Ieavy</b> g Al ( g Al g Al g Al	Meta As B As B As B	alis: P a Be a Be a Be	Please Cd Cd Cd	circle Cr Cr Cr Cr Cr Cr	the d -VI ( -VI ( -VI (	esired Co Cu Co Cu Co Cu	analy 1 Fe 1 Fe 1 Fe	rtes. Hg L Hg L Hg L	i Mg i Mg i Mg	Mn Mn Mn	Mo 1 Mo 1 Mo 1	Ni Pb Ni Pb Ni Pb	Sb S	Se TI Se TI Se TI	V Zı V Zı V Zı	n - To n - D n - To	otal issolv CLP	/ed		
Sample Disposal Instructions: 🛛 DAL Disposal @ \$2.50 per Container 🗆 Return 🗖 Pickup												Other:																						



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543



Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090915-04

### ANALYTICAL RESULTS FOR THE ANALYSIS OF FUEL IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Diesel Fuel #2 NWTPH-Dx (mg/kg)	Heavy Oil NWTPH-Dx (mg/kg)	Surrogate Recovery 2-FBP (%)	Data Flags
Method Blank	9/17/2009	n/a	nd	nd	71.3	
SP21-ZONE1-091509	9/17/2009	57.8	nd	nd	130	
SP22-ZONE3-091509	9/17/2009	90.5	nd	nd	124	
SP23-ZONE4-091509	9/17/2009	55.3	nd	nd	70.4	
LCS	9/17/2009	n/a	103%	n/a	70.6	
090917-MS	9/17/2009	n/a	92.2%	n/a	n/a	
090917-MSD	9/17/2009	n/a	89.0%	n/a	n/a	
SP15-ZONE3-091509 Dup.	9/17/2009	67.8	nd	nd	90.4	
Method Reporting Limits			25	100		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090915-04

### ANALYTICAL RESULTS FOR THE ANALYSIS OF GASOLINE RANGE ORGANICS IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Benzene EPA 8021B (mg/kg)	Toluene EPA 8021B (mg/kg)	Ethylbenzene EPA 8021B (mg/kg)	m&p-Xylene EPA 8021B (mg/kg)	o-Xylene EPA 8021B (mg/kg)	Gasoline NWTPH-Gx (mg/kg)	Surrogate Recovery BFB (%)	Data Flags
Method Blank	9/17/2009	n/a	nd	nd	nd	nd	nd	nd	81.4	
SP21-ZONE1-091509	9/17/2009	57.8	nd	nd	nd	nd	nd	nd	70.4	
SP22-ZONE3-091509	9/17/2009	90.5	nd	nd	nd	nd	nd	nd	72.2	
SP23-ZONE4-091509	9/17/2009	55.3	nd	nd	nd	nd	nd	nd	72.1	
LCS	9/17/2009	n/a	95.3%	92.9%	83.6%	83.0%	87.4%	86.7%	n/a	
090917-MS	9/17/2009	n/a	92.5%	84.4%	83.1%	86.7%	83.8%	85.4%	n/a	
090917-MSD	9/17/2009	n/a	94.2%	95.8%	75.5%	74.4%	112.0%	86.7%	n/a	
SP15-ZONE3-091509 Dup.	9/17/2009	67.8	nd	nd	nd	nd	nd	nd	72.8	
Method Reporting Limits			0.05	0.10	0.10	0.10	0.10	5.0	109	

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543



Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

### DAL Number: 090915-04

### ANALYTICAL RESULTS FOR THE ANALYSIS OF HEAVY METALS IN SOIL BY EPA METHOD 6020 A

Sample Identification	Date Analyzed	Percent Solids	Arsenic (As)	Cadmium (Cd)	Lead (Pb)
Chemical Abstract Number (CAS)			7440-38-2	7440-43-9	7439-92-1
Units		(%)	(mg/kg)	(mg/kg)	(mg/kg)
Method Blank	9/23/2009	n/a	nd	nd	nd
SP21-ZONE1-091509	9/23/2009	57.8	8.45	0.37	27.8
SP22-ZONE3-091509	9/23/2009	90.5	5.32	0.31	23.8
SP23-ZONE4-091509	9/23/2009	55.3	6.24	0.28	64.4
LCS	9/23/2009	n/a	106%	103%	106%
090923-MS	9/23/2009	n/a	MI	MI	MI
090923-MSD	9/23/2009	n/a	MI	MI	MI
SP21-ZONE1-091509 Dup.	9/23/2009	57.8	8.28	0.38	27.2
Method Reporting Limits			0.25	0.25	0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference

Sample results based on dry weight.



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543



Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

### DAL Number: 090915-04 ANALYTICAL RESULTS FOR THE ANALYSIS OF SEMI-VOLATILE COMPOUNDS IN SOIL BY EPA METHOD 8270

Sample Identification				SP21-ZONE1-	SP22-ZONE3-	SP23-ZONE4-	LCS	090922-	090922-
eample laointeaton			Blank	091509	091509	091509	200	MS	MSD
Percent Solids (%)			n/a	57.8	90.5	55.3	n/a	n/a	n/a
Date Extracted	CAS	MRL	9/22/2009	9/22/2009	9/22/2009	9/22/2009	9/22/2009	9/22/2009	9/22/2009
Date Anlayzed	Number	(mg/kg)	9/22/2009	9/22/2009	9/22/2009	9/22/2009	9/22/2009	9/22/2009	9/22/2009
Benzo(a)anthracene	56-55-3	0.01	nd	0.33	0.14	0.07	96.8%	87.9%	87.4%
Benzo(a)pyrene	50-32-8	0.01	nd	0.29	0.14	0.04	n/a	n/a	n/a
Benzo(b)fluoranthene	205-99-2	0.01	nd	0.40	0.29	0.05	n/a	n/a	n/a
Benzo(k)fluoranthene	207-08-9	0.01	nd	0.17	0.11	0.02	n/a	n/a	n/a
Chrysene	218-01-9	0.01	nd	0.40	0.18	0.05	93.9%	85.8%	86.8%
Dibenzo(a,h)anthracene	53-70-3	0.01	nd	nd	nd	0.34	n/a	n/a	n/a
Ideno(1,2,3-cd)pyrene	193-39-5	0.01	nd	nd	0.02	nd	92.4%	88.5%	84.6%
1-Methylnaphthalene	90-12-0	0.01	nd	0.03	0.01	0.02	n/a	n/a	n/a
2-Methylnaphthalene	91-57-6	0.01	nd	0.05	0.02	0.02	n/a	n/a	n/a
Naphthalene	91-20-3	0.01	nd	0.09	0.02	0.04	n/a	n/a	n/a
Surrogate Recovery (%)									
2-Fluorophenol			65.5	82.2	82.6	94.3	100.0	105	106
Phenol-d6			80.1	89.3	88.8	104	110	115	117
Nitrobenzene-d5			101	114	113	108	106	101	104
2-Fluorobiphenol			111	105.0	111	111	113	90.9	110
2,4,6-Tribromophenol			48.2	58.3	60.2	70.4	77.0	80.9	82.4
Terphenyl-d14			140	125	122	126	139	112	111
Data Flags									

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall

Data reviewed by:



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543





Pioneer Technologies Corporation Project: East Bay IA Stockpile

DAL Number: 090915-04

### QUALITY CONTROL RESULTS FOR THE ANALYSIS OF TCLP HEAVY METALS IN SOIL BY EPA METHOD 1311 AND EPA METHOD 6020 A

Sample Preparation Information for TCLP by EPA Method 1311		Sample Preparation TCLP by EPA Metho	Information for od 1311	Sample Preparation Information for TCLP by EPA Method 1311				
Sample Identification	Method Blank	Sample Identificati	cs	Sample Identification	SP23-Zone3-091509			
Percent Solids	n/a	Percent Solids	n/a	Percent Solids	55.3			
No. of Extractions	1	No. of Extractions	1	No. of Extractions	1			
Type of Extraction	Rotary	Type of Extraction	Rotary	Type of Extraction	Rotary			
Extraction Fluid	#1	Extraction Fluid	#1	Extraction Fluid	#1			
Date Extracted	9/21/2009	Date Extracted	9/21/2009	Date Extracted	9/21/2009			
Sample Preparation Informat	tion for	Sample Preparation	Information for	Sample Preparation I	nformation for			
TCLP by EPA Method 1311		TCLP by EPA Metho	od 1311	TCLP by EPA Method	1311			
	SP23-Zone3-	SI	P23-Zone3-		0000 0 0 000000000000000000000000000000			
Sample Identification	091509 MS	Sample Identificati 09	91509 Dup.	Sample Identification	SP23-Zone3-091509 MSD			
Percent Solids	100	Percent Solids	55.3	Percent Solids	100			
No. of Extractions	1	No. of Extractions	1	No. of Extractions	1			
Type of Extraction	Rotary	Type of Extraction	Rotary	Type of Extraction	Rotary			
Extraction Fluid	#1	Extraction Fluid	#1	Extraction Fluid	#1			
Date Extracted	9/21/2009	Date Extracted	9/21/2009	Date Extracted	9/21/2009			

Comments and Explanations: None

Analyst: Z. Froyland Data reviewed by: R. Lewis



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543



Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

### DAL Number: 090915-04

### ANALYTICAL RESULTS FOR THE ANALYSIS OF TCLP HEAVY METALS IN SOIL BY EPA METHOD 1311 AND EPA METHOD 6020 A

Sample Identification	Date Analyzed	Lead (Pb)
Chemical Abstract Number (CAS)		7439-92-1
Units		(mg/L)
Method Blank	9/23/2009	nd
SP23-ZONE4-091509	9/23/2009	nd
LCS	9/23/2009	101%
090923-MS	9/23/2009	108%
090923-MSD	9/23/2009	104%
SP23-ZONE4-091509 Dup.	9/23/2009	nd
Method Reporting Limits		0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable
"MI" indicates Matrix Interference
Sample results based on dry weight.
Comments and Explanations: None

Analyst: Z. Froyland





2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090915-04

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF PCB'S IN SOIL BY EPA METHOD 8082

Sample Identification	Date Analyzed	Percent Solids (%)	Aroclor 1016 (mg/kg)	Aroclor 1221 (mg/kg)	Aroclor 1232 (mg/kg)	Aroclor 1242 (mg/kg)	Aroclor 1248 (mg/kg)	Aroclor 1254 (mg/kg)	Aroclor 1260 (mg/kg)	Surrogate Recovery TCMX (%)	Surrogate Recovery DCBP (%)	Data Flags
Method Blank	9/21/2009	n/a	nd	104	75.5							
SP21-ZONE1-091509	9/21/2009	57.8	nd	94.1	65.6							
SP22-ZONE3-091509	9/21/2009	90.5	nd	99.1	70.2							
SP23-ZONE4-091509	9/21/2009	55.3	nd	103	86.6							
SP15-ZONE3-091509	9/21/2009	67.8	nd	102	72.6							
LCS	9/21/2009	n/a	102%	n/a	n/a	n/a	n/a	n/a	82.9%	103	68.4	
090908-MS	9/21/2009	n/a	99.1%	n/a	n/a	n/a	n/a	n/a	103%	108	80.1	
090908-MSD	9/21/2009	n/a	99.0%	n/a	n/a	n/a	n/a	n/a	81.4%	134	133	
SP15-ZONE3-091509 Dup.	9/21/2009	67.8	nd	131	133							
Method Reporting Limits			0.05	0.05	0.05	0.05	0.05	0.05	0.05			

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

All results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall Data reviewed by: R. Lewis

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		T	<u> </u>						<b></b>					_			Requeste	d An	alysis	s Filte	red (	(Y/N)			and the second			
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www.pacelabs.com

### **Report Prepared for:**

Kara Roberts Pioneer Technologies Corporation 2612 Yelm Highway SE Olympia WA 98501

## REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

**Report Prepared Date:** 

September 23, 2009

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

### **Report Information:**

Pace Project #: 10112564 Sample Receipt Date: 09/16/2009 Client Project #: East Bay IA Stockpiles Client Sub PO #: N/A State Cert #: C218

### **Invoicing & Reporting Options:**

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

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

This report has been reviewed and prepared by:

pri C. Munga

Scott Unze, Project Manager (612) 607-6383 (612) 607-6444 (fax) scott.unze@pacelabs.com



### **Report of Laboratory Analysis**

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.



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

### **DISCUSSION**

This report presents the results from the analyses performed on three samples submitted by a representative of Pioneer Technologies Corporation. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. Reporting limits were based on signal-to-noise calculations.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 37-116%. With the exception of one low value, which was flagged "P" on the results table, the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Since the quantification of the native 2,3,7,8-substituted isomers was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain trace levels of selected congeners. These were below the calibration range of the method. The levels reported for the affected congeners in the field samples were higher than the corresponding blank levels two or more orders of magnitude. These results indicate that the sample processing steps did not contribute significantly to the levels reported for the field samples.

Laboratory and matrix spike samples were also prepared with the sample batch using clean sand or sample matrix that had been fortified with native standards. The results show that the spiked native compounds were generally recovered at 75-135%, with relative percent differences of 0.4-24.7%. The recovery value obtained for OCDD in LCS-21464 was above the 70-130% target range and was flagged "P" on the results table; this may indicate a high bias for this congener in these determinations. Also, somewhat variable background-subtracted values were obtained for selected congeners in the matrix spike samples, due to the levels of these compounds in the sample material.

## **REPORT OF LABORATORY ANALYSIS**

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## Appendix A

Sample Management

( Courier: 凶 Fed Ex ロ UPS ロ USPS ロ Clic Tracking #:	ant 🗌 Com	mercial	Pace Other	Cotoria Proj. Di N Dabi
Custody Seal on Cooler/Box Present: 🛛 yes	no 🗖 no	Seale	intact: Ves	no <b>Frains</b>
Packing Material: 😹 Bubble Wrap 🛛 🗙 Bubble	e Bage 🔲	None	Other	Temp Blank: Yes 📐 No
Thermometer Used 80344042 or (79425)	Type of lo	e: (Ve	) Blue None	Samples on ice, cooling process has be
Cooler Temperature	Biologica	i Tissua	<b>is Frozen:</b> Yes	to Date and Initials of person examined to contents: <u><u>M</u>-16-09</u>
Temp should be above freezing to 6°C			Comments:	
Chain of Custody Present:		D IN/A	1	
Chain of Custody Filled Out:			2.	······································
Chain of Custody Relinquished:	Elves DN	0 🗆 N/A	3.	
Sampler Name & Signature on COC:	Dives DN	o 🖾N/A	4.	
Samples Arrived within Hold Time:	Elves DN		<u>5.</u>	
Short Hold Time Analysis (<72hr):			6.	
Rush Turn Around Time Requested:			7. 5	daup
Sufficient Volume:			8.	0
Correct Containers Used:	ØYes □No	⇒ □N/A	9.	
-Pace Containers Used:				
Containers Intact:			10.	
-iltered volume received for Dissolved tests	DYes DNo	<b>EINA</b>	11.	
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix:	□Yes Date SL	> □N⁄A	12. There . The Sam	plets says 9-15-09
Il containers needing acid/base preservation have been		EN/A	13. 🗆	
All containers needing preservation are found to be in		-	Samp #	
ompliance with EPA recommendation.			la Malashak	
xceptions: VOA,Coliform, TOC, Oil and Grease, WI-DRO (wate		5	completed	preservative
Samples checked for dechlorination:	□Yes □No	EIN/A	14.	
leadepace in VOA Vials ( >6mm):		EINA	15.	
rip Blank Present:	Yes UNC		16.	
rip Blank Custody Seals Present	□Yes □No			
Pace Trip Blank Lot # (if purchased):				
				Field Data Required? V / N
Clent Notification/ Resolution:		Date/	Time <sup>.</sup>	
Commenter Resolution:				

9/11/119

## Appendix B

Sample Analysis Summary



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

### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP2 1011 F909 SMT 13.4 6.9 12.5 F908 F909 BLAI	1_ZONE1-0 2564001 923A_05 9 9 9 928_14 & 022B_14 & NK-21463	191509 F90923A_10	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 09/15/200 09/16/200 09/16/200 09/23/200	9 12:15 9 12:15 9 19:15 9 06:01	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	1.00 17.00		0.29 0.29	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	20	2.00 2.00	85 84
2,3,7,8-TCDD Total TCDD	0.67 9.70		0.32 J 0.32	1,2,3,7,8-PeCDF-1 2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C	2.00 2.00 2.00	99 98 112
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	2.10 25.00	0.50 	0.38 I 0.25 J 0.31	1,2,3,4,7,8-HXCDF 1,2,3,6,7,8-HXCDF 2,3,4,6,7,8-HXCDF 1,2,3,7,8,9-HXCDF 1,2,3,4,7,8,9-HXCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	96 62 71 76 103
1,2,3,7,8-PeCDD Total PeCDD	1.10 17.00		0.32 J 0.32	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD	0-13C 0F-13C	2.00 2.00 2.00	64 60
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	2.50 1.80 1.20		0.22 J 0.29 J 0.19 J	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 2.00 4.00	61 53
1,2,3,7,8,9-HxCDF Total HxCDF	0.88 31.00		0.19 J 0.22	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	9-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.60 7.00 2.90 61.00	  	0.55 J 0.47 0.30 J 0.44	2,3,7,8-TCDD-37Cl	14	0.20	91
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	51.00 3.10 160.00	 	0.55 0.91 J 0.73	Total 2,3,7,8-TCDI Equivalence: 8.1 n (Using 2005 WHO	D g/Kg Factors - U	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	240.00 610.00		0.82 0.82				
OCDF OCDD	170.00 2600.00		0.66 2.50				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

ND = Not Detected NA = Not Applicable

NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

I = Interference present

RL = Reporting Limit.

## **REPORT OF LABORATORY ANALYSIS**

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### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP2 1011 F909 SMT 13.8 11.7 12.2 F908 F909 BLA	2_ZONE3-0 12564002 923A_06 9 9 9 9 317 922B_14 & NK-21463	91509 F90923A_10	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 09/15/2009 09/16/2009 09/16/2009 09/23/2009	9 13:00 9 12:15 9 19:15 9 06:47	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	6.3 89.0		0.33 0.33	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	20	2.00 2.00 2.00	80 82
2,3,7,8-TCDD Total TCDD	2.4 100.0		0.32 0.32	1,2,3,7,8-PeCDF-1 2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C 3C	2.00 2.00 2.00 2.00	94 94 106 91
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	4.8 8.2 75.0	 	1.10 0.66 0.86	1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,7,8,9-HxCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	57 68 71 97
1,2,3,7,8-PeCDD Total PeCDD	8.9 100.0		0.77 0.77	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD	-13C 0F-13C	2.00 2.00 2.00	62 51 50
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	6.0 7.6 7.0		0.39 0.30 0.36	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 4.00	50 54 37 P
1,2,3,7,8,9-HxCDF Total HxCDF	1.7 94.0		0.35 J 0.35	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	6.0 15.0 8.3 150.0	  	0.50 0.69 0.48 0.56	2,3,7,8-TCDD-37Cl	4	0.20	90
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	64.0 4.2 190.0	 	0.87 0.76 0.82	Total 2,3,7,8-TCDI Equivalence: 24 ng (Using 2005 WHO	) /Kg Factors - Us	sing PRL/2	where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	270.0 550.0		1.00 1.00				
OCDF OCDD	190.0 2400.0		0.75 1.70				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

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

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

P = Recovery outside target range

## **REPORT OF LABORATORY ANALYSIS**

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### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP2: 1011 F909 SMT 13.2 12.6 11.5 F908 F909 BLA	3_ZONE4-0 2564003 923A_07 9 9 9 317 922B_14 & NK-21463	191509 F90923A_10	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 09/15/2009 09/16/2009 09/16/2009 09/23/2009	9 13:30 9 12:15 9 19:15 9 07:34	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.54 6.80		0.15 J 0.15	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	30	2.00 2.00 2.00	85 87 102
2,3,7,8-TCDD Total TCDD	ND 4.10		0.19 0.19	2,3,4,7,8-PeCDF-13 1,2,3,7,8-PeCDD-13	3C 3C 12C	2.00 2.00 2.00	102 104 116
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	0.33 1.30 15.00	 	0.19 J 0.24 J 0.21	1,2,3,4,7,0-HXCDF- 1,2,3,6,7,8-HXCDF- 2,3,4,6,7,8-HXCDF- 1,2,3,7,8,9-HXCDF- 1,2,3,4,7,8,9-HXCDF-	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	65 73 77 100
1,2,3,7,8-PeCDD Total PeCDD	0.62 8.60		0.26 J 0.26	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD	-13C F-13C F-13C	2.00 2.00 2.00 2.00	69 59 61
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.40 0.73 0.56		0.17 J 0.24 J 0.20 J	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 4.00	61 51
1,2,3,7,8,9-HxCDF Total HxCDF	0.42 14.00		0.24 J 0.21	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	0.74 2.70 1.20 19.00	  	0.22 J 0.30 J 0.20 J 0.24	2,3,7,8-TCDD-37Ck	4	0.20	93
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	14.00 1.10 49.00	 	0.29 0.30 J 0.30	Total 2,3,7,8-TCDE Equivalence: 2.8 ng (Using 2005 WHO	) g/Kg Factors - Us	sing PRL/2	where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	54.00 93.00		0.39 0.39				
OCDF OCDD	68.00 430.00		0.31 0.53				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers). EMPC = Estimated Maximum Possible Concentration ND = Not Detected NA = Not Applicable

NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

RL = Reporting Limit.

## REPORT OF LABORATORY ANALYSIS

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

### Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-21463	Matrix	Solid
Filename	F90922B_08	Dilution	NA
Total Amount Extracted	10.3 g	Extracted	09/16/2009 19:15
ICAL ID	F90817	Analyzed	09/22/2009 21:31
CCal Filename(s)	F90922B_01 & F90922B_14	Injected By	SMT

Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND ND		0.071 0.071	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDF-13C	2.00 2.00 2.00	70 68 91
2,3,7,8-TCDD Total TCDD	ND ND		0.120 0.120	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,4,7,8-HxCDF-13C	2.00 2.00 2.00	93 107 78
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND	 	0.085 0.120 0.100	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00	65 70 75
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.120 0.120	1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00 2.00	87 71 62
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3.4.6.7.8-HxCDF	ND ND ND	 	0.074 0.083 0.060	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	66 60
1,2,3,7,8,9-HxCDF Total HxCDF	ND ND		0.084 0.075	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND	  	0.100 0.110 0.088 0.100	2,3,7,8-TCDD-37Cl4	0.20	79
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND	 	0.089 0.140 0.120	Total 2,3,7,8-TCDD Equivalence: 0.17 ng/Kg (Using 2005 WHO Factors -	Using PRL/	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND	0.25	0.110 I 0.110			
OCDF OCDD	0.32 2.40		0.110 J 0.220 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

I = Interference present

## REPORT OF LABORATORY ANALYSIS

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

## Method 8290 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS-2 F9092 10.9 g F9081 F9092 LCS-2	1464 2B_04 7 2B_01 & F9 1464	0922B_14	Matrix Dilution Extracted Analyzed Injected By	Solid NA 09/16/2009 19: 09/22/2009 18: SMT	15 25
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.20	101	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	2.00 2.00	72 70
2,3,7,8-TCDD Total TCDD	0.20	0.22	111	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDF-13C	2.00 2.00 2.00	89 106
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.00 1.00	1.01 0.97	101 97	1,2,3,4,7,8-HxCDF-13C 1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	76 64 69 77
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.91	91	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	69 62
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	0.98 1.01 0.99	98 101 99	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	68 60
1,2,3,7,8,9-HxCDF Total HxCDF	1.00	1.00	100	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	0.94 0.98 0.98	94 98 98	2,3,7,8-TCDD-37Cl4	0.20	77
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.00 1.00	1.13 1.11	113 111			
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	1.03	103			
OCDF OCDD	2.00 2.00	2.18 2.69	109 135 P			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

P = Recovery outside of target range

X = Background subtracted value

Y = RF averaging used in calculations

Nn = Value obtained from additional analysis

NA = Not Applicable

\* = See Discussion

## **REPORT OF LABORATORY ANALYSIS**

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Report No.....10112564\_8290

Page 11 of 14



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

### Method 8290 Spiked Sample Report

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	SP 10' F9( 13. F9( F9( BL	21_ZONE1-0 112564001-M 0923A_01 4 g 0817 0922B_14 & ANK-21463	91509-MS S F90923A_10	Matrix Dilution Extracted Analyzed Injected By	Solid NA 09/16/2009 09/23/2009 SMT	9 19:15 9 02:55	
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	115	2,3,7,8-TCDF- 2,3,7,8-TCDD- 1,2,3,7,8-TCDD-	13C 13C 0F-13C	2.00 2.00 2.00	80 77 85
2,3,7,8-TCDD	0.20	0.23	115	2,3,4,7,8-PeCE 1,2,3,7,8-PeCE 1,2,3,7,8-PeCE	DF-13C DD-13C DD-13C	2.00 2.00 2.00	80 91 92
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF	1.00 1.00	1.24 0.99	124 99	1,2,3,6,7,8-Hx( 2,3,4,6,7,8-Hx( 1,2,3,7,8,9-Hx( 1,2,3,7,8,9-Hx(	CDF-13C CDF-13C CDF-13C CDF-13C	2.00 2.00 2.00 2.00	73 73 80
1,2,3,7,8-PeCDD	1.00	0.95	95	1,2,3,6,7,8-Hx 1,2,3,6,7,8-Hx 1,2,3,4,6,7,8-H 1,2,3,4,7,8,9-H	DD-13C pCDF-13C pCDF-13C	2.00 2.00 2.00 2.00	77 57 53
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	1.06 1.05 1.07	106 105 107	1,2,3,4,6,7,8-H OCDD-13C	pCDD-13C	2.00 4.00	60 42
1,2,3,7,8,9-HxCDF	1.00	1.04	104	1,2,3,4-TCDD- 1,2,3,7,8,9-Hx0	13C CDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	1.00 1.00 1.00	1.00 1.07 0.87	100 107 87	2,3,7,8-TCDD-	37Cl4	0.20	87
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF	1.00 1.00	2.12 1.18	212 118				
1,2,3,4,6,7,8-HpCDD	1.00	4.70	470				
OCDF OCDD	2.00 2.00	5.01 50.37	250 2519				

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

## **REPORT OF LABORATORY ANALYSIS**

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### Method 8290 Spiked Sample Report

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	SP2 101 F90 13.: F90 F90 BL/	21_ZONE1-0 12564001-M )923A_02 5 g )817 )922B_14 & ANK-21463	91509-MSD SD F90923A_10	Matrix Dilution Extracted Analyzed Injected By	Solid NA 09/16/2009 09/23/2009 SMT	9 19:15 9 03:42	
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.23	116	2,3,7,8-TCDF- 2,3,7,8-TCDD- 1,2,2,7,8 PoC	13C 13C	2.00 2.00	83 81 108
2,3,7,8-TCDD	0.20	0.24	119	2,3,4,7,8-PeCE 1,2,3,7,8-PeCE	DF-13C DF-13C DD-13C	2.00 2.00 2.00	100 102 101
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF	1.00 1.00	1.22 1.00	122 100	1,2,3,4,7,8-11X 1,2,3,6,7,8-Hx( 2,3,4,6,7,8-Hx( 1,2,3,7,8,9-Hx( 1,2,3,7,8,9-Hx(	CDF-13C CDF-13C CDF-13C CDF-13C	2.00 2.00 2.00 2.00	80 83 92
1,2,3,7,8-PeCDD	1.00	0.94	94	1,2,3,6,7,8-Hx 1,2,3,4,6,7,8-Hx 1,2,3,4,6,7,8-H	DD-13C pCDF-13C pCDF-13C	2.00 2.00 2.00 2.00	86 61 68
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	1.05 1.06 1.04	105 106 104	1,2,3,4,6,7,8-H OCDD-13C	pCDD-13C	2.00 4.00	75 64
1,2,3,7,8,9-HxCDF	1.00	1.03	103	1,2,3,4-TCDD- 1,2,3,7,8,9-Hx0	13C CDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	1.00 1.00 1.00	0.95 1.07 0.78	95 107 78	2,3,7,8-TCDD-	37Cl4	0.20	95
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF	1.00 1.00	1.99 1.15	199 115				
1,2,3,4,6,7,8-HpCDD	1.00	4.42	442				
OCDF OCDD	2.00 2.00	4.98 39.31	249 1966				

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

## **REPORT OF LABORATORY ANALYSIS**

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

### Method 8290 Spike Sample Results

Client - Pioneer Technologies Corporation

Client Sample ID	SP21_ZONE1-091509			<u>Dry Weights</u>	
Lab Sample ID	10112564001	Sample Filename	F90923A_05	Sample Amount	12.5 g
MSID	10112564001-MS	MS Filename	F90923A_01	MS Ámount	12.4 g
MSD ID	10112564001-MSD	MSD Filename	F90923A_02	MSD Amount	12.6 g

	Sample Conc.	MS/MSD Qs	MS Qm	MSD Qm		Background Subtracted		
Analyte	ng/Kg	(ng)	(ng)	(ng)	RPD	MS % Rec.	MSD % Rec.	RPD
2,3,7,8-TCDF	1.034	0.20	0.23	0.23	1.2	108	110	1.1
2,3,7,8-TCDD	0.669	0.20	0.23	0.24	3.5	111	115	3.6
1,2,3,7,8-PeCDF	0.000	1.00	1.24	1.22	1.2	123	122	1.2
2,3,4,7,8-PeCDF	2.130	1.00	0.99	1.00	1.5	96	98	1.5
1,2,3,7,8-PeCDD	1.141	1.00	0.95	0.94	0.6	93	93	0.7
1,2,3,4,7,8-HxCDF	2.546	1.00	1.06	1.05	1.2	103	102	1.3
1,2,3,6,7,8-HxCDF	1.790	1.00	1.05	1.06	0.6	103	103	0.6
2,3,4,6,7,8-HxCDF	1.197	1.00	1.07	1.04	2.8	105	102	2.9
1,2,3,7,8,9-HxCDF	0.885	1.00	1.04	1.03	1.1	103	102	1.1
1,2,3,4,7,8-HxCDD	1.642	1.00	1.00	0.95	5.2	98	93	5.3
1,2,3,6,7,8-HxCDD	7.019	1.00	1.07	1.07	0.4	98	99	0.3
1,2,3,7,8,9-HxCDD	2.857	1.00	0.87	0.78	9.8	83	75	10.3
1,2,3,4,6,7,8-HpCDF	51.220	1.00	2.12	1.99	6.2	148	135	9.5
1,2,3,4,7,8,9-HpCDF	3.114	1.00	1.18	1.15	2.1	114	111	2.2
1,2,3,4,6,7,8-HpCDD	236.861	1.00	4.70	4.42	6.3	176	143	20.2
OCDF	174.045	2.00	5.01	4.98	0.5	142	140	1.8
OCDD	2566.892	2.00	50.37	39.31	24.7	922	350	89.9

### Definitions

MS = Matrix Spike MSD = Matrix Spike Duplicate Qm = Quantity Measured Qs = Quantity Spiked % Rec. = Percent Recovery RPD = Relative Percent Difference NA = Not Applicable NC = Not Calculated CDD = Chlorinated dibenzo-p-dioxin

CDF = Chlorinated dibenzo-p-furan

T = Tetra

Pe = Penta

Hx = Hexa

Hp = Hepta

O = Octa
DRAGO Analytical Laborat	N ory	- 2		•				<b>RC</b> 281	C <b>RA</b> 8 M Phon	adro ac: (3 Er W	HAI na B 60) nail: /ebsi	N ( eacl 866- Dra te: c	DF ( n Rd. 0543 gonI trago	CUS NW B F Lab@ nlab@	STO , Oly fax: ( com orato	DY mpi 360) .cast. ory.co	<b>RF</b> a, W 866 .net .net	CCO A 98 5-055	<b>RD</b> 3502 6	2					s	Samples Contact	: Colle Numb	ected E ber: <u>3</u>		Page	- - - -	of ]]0	0
Client: <u>PTC</u> Address: <u>2612 Y</u> Olympi	PTC       Phone: 360 570 1700 Project Name: East Bay IA stockpil Project P.O.:         2612 Yelm Hwy SE       Fax:       Project Location:       Contact Person:         0 lymp ia WA 98501       Email: robertst@       Project Number:       DAL Project No.: 090923-03         wspioneer.com       Project Number:       DAL Project No.: 090923-03								3																								
Matrix Code: $WW =$ wastewater $GW =$ $SL =$ sludge $V =$ vaj	ground por	water S C	= soil or so = other	lid							EPA 8081)			3270SIM)			HEM)		9050)	)	Series)		DIS	EPA 900)	PA 900)								
Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Container Type	MIDE BTEX EPA 8021b)	Gasoline (NWTPH-Gx)	Diesel (NWTPH-Dx)	Diesel & Oil (NWTPH-Dx)	Fuel Scan (NWTPH-HCID)	VOC's (EPA 8021b)	Organochlorine Pesticides (I	PCB's (EPA 8082)	Volatiles (EPA 8260)	PAH's (EPA 8100 or 8270/8	Semi-Volatiles (EPA 8270)	Ignitability (EPA 1010)	Oil and Grease (EPA 1664 F	pH (EPA 9040/9045)	Specific Conductance (EPA	Paint Filter Test (EPA 9095)	Heavy Metals* (EPA 7000 S	Biogenic Gases (EPA 3C)	Natural Attenuation Indicate	Gross Alpha Radioactivity (	Gross Beta Radioactivity (E	TUP Lead							
SP24-Zon2-092309-1	5	092309	900	85.40	X	X		X				Х		X							Х												
SP24-Zone2-092309-1	S		1145	61	X	ľΧ		$\times$				X	<u> </u>	$\left  X \right $							X	<u> </u>											
SP25-20124-092309-1	S		12.00	6	X	X	[	$\times$				ľΧ		X							X												
SP25-Zone4_012309_2	S		1230	6	X	X		$\times$				X		X							$\times$												
SP25-Zone-4-092309-3	S		1245	G	X	X		X				X		X							X												
SP25-Zone 4-092309-	Cón	.pl	1230	64																						$\times$							
SP26Zonel-09230	S	<u> </u>	1430	GN 3Eniore 2 402	X	X		X	<u>.</u>			X		X	3						$\times$												
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		Dispusa	. eg #2.50 pel C																														



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543



Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090923-03

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF FUEL IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Diesel Fuel #2 NWTPH-Dx (mg/kg)	Heavy Oil NWTPH-Dx (mg/kg)	Surrogate Recovery 2-FBP (%)	Data Flags
Method Blank	10/1/2009	n/a	nd	nd	92.0	
SP24-ZONE2-092309-1	10/1/2009	89.5	nd	nd	127	
SP24-ZONE2-092309-2	10/1/2009	93.0	nd	287	123	
SP25-ZONE4-092309-1	10/1/2009	93.3	nd	nd	96.6	
SP25-ZONE4-092309-2	10/1/2009	95.0	nd	nd	86.2	
SP25-ZONE4-092309-3	10/1/2009	89.7	nd	nd	133	
SP26-ZONE1-092309	10/1/2009	88.7	nd	nd	82.3	
LCS	10/1/2009	n/a	92.0%	n/a	n/a	
091001-MS	10/1/2009	n/a	99.6%	n/a	n/a	
091001-MSD	10/1/2009	n/a	105%	n/a	n/a	
Method Reporting Limits			25	100		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 090923-03

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF GASOLINE RANGE ORGANICS IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Benzene EPA 8021B (mg/kg)	Toluene EPA 8021B (mg/kg)	Ethylbenzene EPA 8021B (mg/kg)	m&p-Xylene EPA 8021B (mg/kg)	o-Xylene EPA 8021B (mg/kg)	Gasoline NWTPH-Gx (mg/kg)	Surrogate Recovery BFB (%)	Data Flags
Method Blank	10/1/2009	n/a	nd	nd	nd	nd	nd	nd	77.8	
SP24-ZONE2-092309-1	10/1/2009	89.5	nd	nd	nd	nd	nd	nd	129	
SP24-ZONE2-092309-2	10/1/2009	93.0	nd	nd	nd	nd	nd	nd	103	
SP25-ZONE4-092309-1	10/1/2009	93.3	nd	nd	nd	nd	nd	nd	72.7	
SP25-ZONE4-092309-2	10/1/2009	95.0	nd	nd	nd	nd	nd	nd	79.7	
SP25-ZONE4-092309-3	10/1/2009	89.7	nd	nd	nd	nd	nd	nd	101	
SP26-ZONE1-092309	10/1/2009	88.7	nd	nd	nd	nd	nd	nd	111	
LCS	10/1/2009	n/a	n/a	92.0%	n/a	n/a	n/a	n/a	n/a	
LCS	10/2/2009	n/a	99.3%	n/a	n/a	n/a	n/a	n/a	n/a	
091001-MS	10/1/2009	n/a	n/a	99.6%	n/a	n/a	n/a	n/a	n/a	
091002-MS	10/2/2009	n/a	110%	n/a	n/a	n/a	n/a	n/a	n/a	
091001-MSD	10/1/2009	n/a	n/a	105%	n/a	n/a	n/a	n/a	n/a	
091002-MSD	10/2/2009	n/a	97%	n/a	n/a	n/a	n/a	n/a	n/a	
Method Reporting Limits			0.05	0.10	0.10	0.10	0.10	5.0		

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"n/a" indicates not applicable

Sample results based on dry weight.

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Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090923-03

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF HEAVY METALS IN SOIL BY EPA METHOD 6020 A

Sample Identification	Date Analyzed	Percent Solids	Arsenic (As)	Cadmium (Cd)	Lead (Pb)
Chemical Abstract Number (CAS)			7440-38-2	7440-43-9	7439-92-1
Units		(%)	(mg/kg)	(mg/kg)	(mg/kg)
Method Blank	9/30/2009	n/a	nd	nd	nd
SP24-ZONE2-092309-1	9/30/2009	89.5	3.53	nd	9.82
SP24-ZONE2-092309-2	9/30/2009	93.0	6.32	0.41	95.2
SP25-ZONE4-092309-1	9/30/2009	93.3	2.08	nd	2.74
SP25-ZONE4-092309-2	9/30/2009	95.0	4.44	nd	24.4
SP25-ZONE4-092309-3	9/30/2009	89.7	2.38	nd	3.95
SP26-ZONE1-092309	9/30/2009	88.7	4.05	0.28	17.4
LCS	9/30/2009	n/a	101%	103%	105%
090930-MS	9/30/2009	n/a	MI	MI	MI
090930-MSD	9/30/2009	n/a	MI	MI	MI
SP24-ZONE2-092309-2 Dup.	9/30/2009	93.0	6.32	0.40	94.7
Method Reporting Limits			0.25	0.25	0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference

Sample results based on dry weight.



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Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090923-03

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF SEMI-VOLATILE COMPOUNDS IN SOIL BY EPA METHOD 8270

Sample Identification			Blank	SP24-ZONE2- 092309-1	SP24-ZONE2- 092309-2	SP25-ZONE4- 092309-1	SP25-ZONE4- 092309-2	SP25-ZONE4- 092309-3	SP26-ZONE1- 091509	LCS	090928- MS	090928- MSD	SP25-ZONE4- 092309-3 Dup.
Percent Solids (%)			n/a	89.5	93.0	93.3	95.0	89.7	88.7	n/a	n/a	n/a	89.7
Date Extracted	CAS	MRL	9/28/2009	9/28/2009	9/28/2009	9/28/2009	9/28/2009	9/28/2009	9/28/2009	9/28/2009	9/28/2009	9/28/2009	9/28/2009
Date Anlayzed	Number	(mg/kg)	9/28/2009	9/28/2009	9/28/2009	9/28/2009	9/28/2009	9/28/2009	9/28/2009	9/28/2009	9/28/2009	9/28/2009	9/28/2009
Benzo(a)anthracene	56-55-3	0.01	nd	0.02	10.4	0.02	0.04	0.02	0.06	86.5%	84.6%	85.3%	0.02
Benzo(a)pyrene	50-32-8	0.01	nd	0.01	7.83	nd	0.01	nd	0.05	n/a	n/a	n/a	nd
Benzo(b)fluoranthene	205-99-2	0.01	nd	nd	8.52	nd	nd	nd	0.05	n/a	n/a	n/a	nd
Benzo(k)fluoranthene	207-08-9	0.01	nd	nd	3.03	nd	0.03	nd	nd	n/a	n/a	n/a	nd
Chrysene	218-01-9	0.01	nd	0.02	9.41	0.01	0.02	nd	0.06	80.1%	78.0%	77.7%	0.01
Dibenzo(a,h)anthracene	53-70-3	0.01	nd	nd	0.89	nd	nd	nd	nd	n/a	n/a	n/a	nd
Ideno(1,2,3-cd)pyrene	193-39-5	0.01	nd	nd	3.42	nd	nd	nd	nd	58.5%	61.8%	56.2%	nd
1-Methylnaphthalene	90-12-0	0.01	nd	0.01	1.42	nd	nd	nd	0.01	n/a	n/a	n/a	nd
2-Methylnaphthalene	91-57-6	0.01	nd	0.01	1.59	nd	nd	nd	0.01	n/a	n/a	n/a	nd
Naphthalene	91-20-3	0.01	nd	0.01	0.81	nd	0.01	nd	0.02	n/a	n/a	n/a	nd
Surrogate Recovery (%)													
2-Fluorophenol			87.3	34.1	72.6	80.7	81.1	107	92.3	72.1	54.7	55.2	104
Phenol-d6			98.6	62.8	108	108	97.4	107	108	107	81.1	80.5	103
Nitrobenzene-d5			67.0	89.5	47.6	87.2	79.8	106	49.7	50.3	88.9	88.8	105
2-Fluorobiphenol			82.7	97.6	72.0	93.3	91.8	96.1	76.1	77.8	94.6	94.6	96.8
2,4,6-Tribromophenol			47.1	44.5	58.7	65.7	53.6	51.9	54.8	68.0	61.8	62.7	50.5
Terphenyl-d14			103	102	73.9	90.2	85.1	85.5	76.7	62.2	79.4	80.6	85.6
Data Flags													

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall

Data reviewed by:



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090923-03

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF PCB'S IN SOIL BY EPA METHOD 8082

Sample Identification	Date Analyzed	Percent Solids (%)	Aroclor 1016 (mg/kg)	Aroclor 1221 (mg/kg)	Aroclor 1232 (mg/kg)	Aroclor 1242 (mg/kg)	Aroclor 1248 (mg/kg)	Aroclor 1254 (mg/kg)	Aroclor 1260 (mg/kg)	Surrogate Recovery TCMX (%)	Surrogate Recovery DCBP (%)	Data Flags
Method Blank	10/1/2009	n/a	nd	117	104							
SP24-ZONE2-092309-1	10/1/2009	89.5	nd	101	82.6							
SP24-ZONE2-092309-2	10/1/2009	93.0	nd	102	89.1							
SP25-ZONE4-092309-1	10/1/2009	93.3	nd	104	87.6							
SP25-ZONE4-092309-2	10/1/2009	95.0	nd	105	94.4							
SP25-ZONE4-092309-3	10/1/2009	89.7	nd	99.6	81.8							
SP26-ZONE1-092309	10/1/2009	88.7	nd	99.1	96.9							
LCS	10/1/2009	n/a	108%	n/a	n/a	n/a	n/a	n/a	87.9%	103	92.0	
090917-MS	10/1/2009	n/a	110%	n/a	n/a	n/a	n/a	n/a	84.8%	97.5	77.5	
090917-MSD	10/1/2009	n/a	101%	n/a	n/a	n/a	n/a	n/a	103%	126	128	
SP25-ZONE4-092309-1Dup.	10/1/2009	93.3	nd	130	119							
Method Reporting Limits			0.05	0.05	0.05	0.05	0.05	0.05	0.05			

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

All results based on dry weight.



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090923-03

#### QUALITY CONTROL RESULTS FOR THE ANALYSIS OF TCLP HEAVY METALS IN SOIL BY EPA METHOD 1311 AND EPA METHOD 6020 A

# Sample Preparation Information for TCLP by EPA Method 1311

Sample Identification	Method Blank
Percent Solids	n/a
No. of Extractions	1
Type of Extraction	Rotary
Extraction Fluid	#1
Date Extracted	9/29/2009

# Sample Preparation Information for TCLP by EPA Method 1311

Sample Identification	SP25-Zone4-092309-COMP MS
Percent Solids	100
No. of Extractions	1
Type of Extraction	Rotary
Extraction Fluid	#1
Date Extracted	9/29/2009

# Sample Preparation Information for TCLP by EPA Method 1311

LCS
n/a
1
Rotary
#1
9/29/2009

# Sample Preparation Information for TCLP by EPA Method 1311

Sample Identification	SP25-Zone4-092309-COMP Dup
Percent Solids	92.1
No. of Extractions	1
Type of Extraction	Rotary
Extraction Fluid	#1
Date Extracted	9/29/2009

# Sample Preparation Information for TCLP by EPA Method 1311

Sample Identification	SP25-Zone4-092309-COMP
Percent Solids	92.1
No. of Extractions	1
Type of Extraction	Rotary
Extraction Fluid	#1
Date Extracted	9/29/2009

# Sample Preparation Information for TCLP by EPA Method 1311

Sample Identification	SP25-Zone4-092309-COMP MSD
Percent Solids	100
No. of Extractions	1
Type of Extraction	Rotary
Extraction Fluid	#1
Date Extracted	9/29/2009

Comments and Explanations: None

Analyst: Z. Froyland Data reviewed by: R. Lewis

page 2 of 2



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 090923-03

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF TCLP HEAVY METALS IN SOIL BY EPA METHOD 1311 AND EPA METHOD 6020 A

Sample Identification	Date Analyzed	Lead (Pb)
Chemical Abstract Number (CAS)		7439-92-1
Units		(mg/L)
Method Blank	10/1/2009	nd
SP25-ZONE4-092309-COMP	10/1/2009	nd
LCS	10/1/2009	104%
091001-MS	10/1/2009	106%
091001-MSD	10/1/2009	107%
SP25-ZONE4-092309-COMP Dup.	10/1/2009	nd
Method Reporting Limits		0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.
"n/a" indicates not applicable
"MI" indicates Matrix Interference
Sample results based on dry weight.
Comments and Explanations: None

Analyst: Z. Froyland Data reviewed by: R Lewis

page 1 of 1

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\*



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### **Report Prepared for:**

Troy Bussey Pioneer Technologies Corporation 2612 Yelm Highway S.E. Suite B Olympia WA 98501-4826

# REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

**Report Prepared Date:** October 1, 2009 Pace Analytical Services, Inc. 1700 Elm Street Minneapolis, MN 55414 Phone: 612.607.1700 Fax: 612.607.6444

#### **Report Information:**

Pace Project #: 10113236 Sample Receipt Date: 09/24/2009 Client Project #: East Bay IA Stockpile Client Sub PO #: N/A State Cert #: C218

#### **Invoicing & Reporting Options:**

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

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

This report has been reviewed and prepared by:

Ent C. Munge

Scott Unze, Project Manager (612) 607-6383 (612) 607-6444 (fax) scott.unze@pacelabs.com



### **Report of Laboratory Analysis**

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.



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

### **DISCUSSION**

This report presents the results from the analyses performed on six samples submitted by a representative of Pioneer Technologies Corporation. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. Reporting limits were based on signal-to-noise calculations. The samples were received above the recommended temperature range of 0-6 degrees Celsius.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 32-106%. With the exception of one low value, which was flagged "P" on the results table, the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Since the quantification of the native 2,3,7,8-substituted isomers was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained, or "E" where polychlorinated diphenyl ethers were present.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain background levels of selected congeners. With the exception of the OCDD, these were below the calibration range of the method. The levels reported for the affected congeners in the field samples were higher than the corresponding blank levels by one or more orders of magnitude. These results indicate that the sample processing steps did not contribute significantly to the levels reported for the field samples.

Laboratory and matrix spike samples were also prepared with the sample batch using clean sand or sample matrix that had been fortified with native standards. The results show that the spiked native compounds were generally recovered at 87-127%, with relative percent differences generally from 0.3-19.0%. Somewhat variable results were obtained for HpCDD and OCDD in the matrix spike samples, due to the levels of these compounds in the sample material.

# **REPORT OF LABORATORY ANALYSIS**

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# Appendix A

Sample Management

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Courier: 🔯 Fed Ex 🔲 UPS 🗍 USPS 🗍 C Tracking #:	lient 🗖	Com	mercla	I 🛛 Pace OI	her.		Konali ji (Duorit) ale:	
Custody Seal on Cooler/Box Present: U ye	»s 💢	no	Seal	s intact: 🔲 y	ves 🔲	no	J. NEMOS	
Packing Material: Bubble Wrap	ole Bage		None	Other		Temp Blank	Yes 📉	No
Thermometer Used 80344042 or (79425)	Туре	of loc	: (We	D Blue None		Samples on ic	, cooling proces	is has begi
Cooler Temperature	Biolo	gical	Tissu	e is Frozen: Yes Commente:	s No	Date and In contents	nitials of person	n exeminin -07
Chain of Custody Present:		ПNо		1.			V	
Chain of Custody Filled Out:	TYes	[]No		2.			·····	
Chain of Custody Relinquished:	TYes			3.				
Sampler Name & Signature on COC:	TIYes			4.				
Samples Arrived within Hold Time:	-Elves			5.				
Short Hold Time Analysis (<72hr):	⊡Yes,	, Laino		6. 5d	ry b	Jater	10 day	. <u>SL</u>
Rush Turn Around Time Requested:	⊡Yes			7.	0		I	<b>\</b> .
Sufficient Volume:	<b>D</b> Yes	ШNо	DN/A	8.				
Correct Containers Used:	EYes	⊡No	⊡n⁄a	9.				
-Pace Containers Used:	[]Yes	⊡No				····		
Containers Intact:	PIYes			10.				
Filtered volume received for Dissolved tests	[]Yes	DNo	CHVA	11.			,	
Sample Labels match COC:	<b>E</b> Yes			12. Don	e of	the D	ample !!	s wer
-Includes date/time/ID/Analysis Matrix:	WI C	îς	L.		- yw	D'me le	ب ھ	
hecked. Noncompliance are noted in 13.	⊡Yes	⊡No	.EINA	13. Dome "				
NI containers needing preservation are found to be in ompliance with EPA recommendation.	∐Yes	□No	CIN/A	oamp #	• • • • • • • • • • •			
xceptions: VOA,Coliform, TOC, Oli and Grease, Wi-DRO (wat	er DYes	<b>1</b> 2No		initial when completed		Lot # of added preservative		
amples checked for dechlorination:	⊡Yes	□No	ØNA	14.				
leadspace in VOA Vials ( >6mm):			ZINA	15.				
rip Blank Present:	□Yes	<b>LINO</b>	⊡n⁄a	16.				
rip Blank Custody Seals Present	[]Yes	DNo	<b>JZIN</b> IA					
ace Trip Blank Lot # (If purchased):	<del></del>							
lient Notification/ Resolution:					· · · ·	Field Data Recul	red? Y	/ N
Person Contacted: Kara			Date/1	ime: 09/;	24/09	• • • • • • • • • • • • • • • • • • •		
Comments/ Resolution:				······	t			
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# Appendix B

Sample Analysis Summary



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### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP24 1011 U909 SMT 11.3 10.4 10.1 U909 U909 BLA	4-ZONE2-0 3236001 930A_05 9 9 911 929B_15 & NK-21632	92309-1 U90930A_17	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 09/23/200 09/24/200 09/25/200 09/30/200	99 11:45 99 09:48 99 15:30 99 17:55	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND 4.30		0.67 0.67	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PoCDE-1	30	2.00 2.00 2.00	73 80 77
2,3,7,8-TCDD Total TCDD	ND 5.30		0.49 0.49	2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDF-1	3C 3C 3C	2.00 2.00 2.00	76 89
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND  10.00	1.30	0.50 0.55 I 0.53	1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,7,8,9-HxCDF	-13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	91 80 82 77 94
1,2,3,7,8-PeCDD Total PeCDD	ND 4.20		0.48 0.48 J	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD 1,2,3,4,6,7,8-HpCD	-13C )F-13C )F-13C	2.00 2.00 2.00	85 64 57
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	 ND 0.88	2.90	1.00 E 0.75 0.79 .1	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 2.00 4.00	56 54 Y
1,2,3,7,8,9-HxCDF Total HxCDF	ND 22.00		0.84 0.85	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	3.40	0.92  0.94 	0.67   0.84 J 0.83   0.78	2,3,7,8-TCDD-37Cl	4	0.20	84
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	13.00 ND 52.00	 	1.20 1.30 1.20	Total 2,3,7,8-TCDI Equivalence: 3.5 n (Using 2005 WHO	D g/Kg Factors - U	Jsing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	160.00 540.00		1.80 1.80				
OCDF OCDD	54.00 1600.00		1.80 2.50				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

E = PCDE Interference

I = Interference present

Y = Calculated using average of daily RFs

# **REPORT OF LABORATORY ANALYSIS**

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Report No.....10113236\_8290

ND = Not Detected

NA = Not Applicable NC = Not Calculated



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

### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP2 1011 U909 SMT 11.3 6.9 10.5 U909 U909 BLA	4-ZONE2-09 13236002 930A_04 9 9 9 9 911 929B_15 & NK-21632	92309-2 U90930A_17	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 09/23/2009 09/24/2009 09/25/2009 09/30/2009	9 12:00 9 09:48 9 15:30 9 17:06	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	4.5 130.0		0.85 0.85	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDE-1	30	2.00 2.00 2.00	72 81 69
2,3,7,8-TCDD Total TCDD	1.6 100.0		0.82 0.82	2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C -13C	2.00 2.00 2.00	66 76
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	  150.0	11 21 	0.75 E 1.10 E 0.91	1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,7,8,9-HxCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	91 70 78 84
1,2,3,7,8-PeCDD Total PeCDD	8.0 130.0		1.70 1.70	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD 1,2,3,4,6,7,8-HpCD	-13C 0F-13C 0F-13C	2.00 2.00 2.00	65 51 42
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	16.0 12.0 21.0	 	1.40 1.10 1.70	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 4.00	46 48 Y
1,2,3,7,8,9-HxCDF Total HxCDF	5.4 570.0		1.60 1.50	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	11.0 64.0 24.0 500.0	  	2.40 3.10 1.50 2.30	2,3,7,8-TCDD-37Cl	4	0.20	85
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	430.0 17.0 1600.0	 	3.80 4.50 4.10	Total 2,3,7,8-TCDI Equivalence: 51 ng (Using 2005 WHO	D J/Kg Factors - Us	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	1600.0 3500.0		6.30 6.30				
OCDF OCDD	2000.0 16000.0		4.50 4.80				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

ND = Not Detected NA = Not Applicable

NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

E = PCDE Interference

RL = Reporting Limit.

Y = Calculated using average of daily RFs

# **REPORT OF LABORATORY ANALYSIS**

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### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP2: 1011 U909 SMT 11.0 6.6 10.3 U909 U909 BLA	5-ZONE4-0 3236003 930A_06 9 9 9 9 911 929B_15 & NK-21632	92309-1 U90930A_17	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 09/23/2009 09/24/2009 09/25/2009 09/30/2009	9 12:30 9 09:48 9 15:30 9 18:44	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND ND		0.36 0.36	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-DoCDE-12	30	2.00 2.00 2.00	74 83 83
2,3,7,8-TCDD Total TCDD	ND ND		0.30 0.30	2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C 12C	2.00 2.00 2.00	81 95
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND  0.94	0.33	0.34 0.27 I 0.30 J	1,2,3,4,7,6-HXCDF 1,2,3,6,7,8-HXCDF 2,3,4,6,7,8-HXCDF 1,2,3,7,8,9-HXCDF 1,2,3,4,7,8,9-HXCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	92 81 82 82 97
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.20 0.20	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD	-13C F-13C	2.00 2.00 2.00	85 69 62
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	ND ND	1.40 	0.41 E 0.39 0.47	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 2.00 4.00	61 54 Y
1,2,3,7,8,9-HxCDF Total HxCDF	ND 4.10		0.43 0.43 J	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND  ND 3.20	0.49	0.33 0.36 I 0.37 0.35 J	2,3,7,8-TCDD-37Ck	4	0.20	85
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	3.70 ND 16.00	 	0.72 J 1.10 0.89	Total 2,3,7,8-TCDE Equivalence: 0.65 r (Using 2005 WHO	) ng/Kg Factors - Us	sing PRL/2	where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	13.00 28.00		0.71 0.71				
OCDF OCDD	14.00 87.00		1.70 1.60				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

E = PCDE Interference

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### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP2 1011 U909 SMT 10.6 6.8 9.87 U909 U909 BLA	5-ZONE4-0 3236004 930A_07 9 9 911 929B_15 & NK-21632	92309-2 U90930A_17	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 09/23/2009 09/24/2009 09/25/2009 09/30/2009	9 12:45 9 09:48 9 15:30 9 19:33	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	1.5 19.0		0.33 0.33	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDE-1	30	2.00 2.00 2.00	74 84 79
2,3,7,8-TCDD Total TCDD	ND 23.0		0.32 0.32	2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C 13C	2.00 2.00 2.00	77 91
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	2.6 5.2 63.0	 	0.54 J 0.50 0.52	1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,7,8,9-HxCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	77 77 75 92
1,2,3,7,8-PeCDD Total PeCDD	1.2 30.0		0.43 J 0.43	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD 1,2,3,4,6,7,8-HpCD	-13C F-13C	2.00 2.00 2.00	82 61 58
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	3.0 5.5	31.0	0.66 E 0.56 J 0.49	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 2.00 4.00	55 48 Y
1,2,3,7,8,9-HxCDF Total HxCDF	220.0	2.7	0.54 I 0.56	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.8 10.0 3.6 100.0	  	0.64 J 0.74 0.63 J 0.67	2,3,7,8-TCDD-37Ck	4	0.20	85
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	110.0 9.8 490.0	 	0.84 1.20 1.00	Total 2,3,7,8-TCDE Equivalence: 11 ng (Using 2005 WHO	) /Kg Factors - Us	sing PRL/2	where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	320.0 620.0		1.50 1.50				
OCDF OCDD	540.0 2500.0		2.30 2.00				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

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J = Value below calibration range

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### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP2 1011 U909 SMT 12.0 6.1 11.3 U909 U909 BLA	5-ZONE4-09 3236005 930A_08 9 9 9 911 929B_15 & NK-21632	92309-3 U90930A_17	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 09/23/2009 09/24/2009 09/25/2009 09/30/2009	9 13:00 9 09:48 9 15:30 9 20:22	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.38 2.40		0.23 J 0.23	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	30	2.00 2.00 2.00	71 81 76
2,3,7,8-TCDD Total TCDD	ND ND		0.29 0.29	2,3,4,7,8-PeCDF-13 1,2,3,7,8-PeCDF-13	3C 3C 3C	2.00 2.00 2.00	76 74 85
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND  3.90	0.65	0.26 0.22 I 0.24 J	1,2,3,4,7,6-HXCDF 1,2,3,6,7,8-HXCDF 2,3,4,6,7,8-HXCDF 1,2,3,7,8,9-HXCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	93 84 82 77 96
1,2,3,7,8-PeCDD Total PeCDD	0.30 2.50		0.26 J 0.26 J	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD	-13C )F-13C	2.00 2.00 2.00	86 60 48
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF	ND  ND	2.30  0.30	0.29 E 0.28 0.22 I 0.22	1,2,3,4,7,0,9-1 pCD 1,2,3,4,6,7,8-HpCD OCDD-13C 1,2,3,4-TCDD-13C	D-13C	2.00 2.00 4.00 2.00	40 50 32 PY NA
Total HxCDF	13.00		0.25	1,2,3,7,8,9-HxCDD	-13C	2.00	NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	0.33 0.96 0.53 4.40	  	0.29 J 0.29 J 0.23 J 0.27 J	2,3,7,8-TCDD-37Cl	4	0.20	83
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	6.80 ND 28.00	 	0.80 1.30 1.00	Total 2,3,7,8-TCDI Equivalence: 1.1 no (Using 2005 WHO	D g/Kg Factors - Us	sing PRL/2	where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	24.00 48.00		0.88 0.88				
OCDF OCDD	24.00 180.00		1.70 2.10				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

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NC = Not Calculated

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### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP2 1011 U909 SMT 12.7 11.3 11.3 U909 U909 BLA	6-ZONE1-09 13236006 930A_09 - 9 9 9 911 929B_15 & NK-21632	92309 U90930A_17	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 09/23/200 09/24/200 09/25/200 09/30/200	9 14:30 9 09:48 9 15:30 9 21:11	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	2.9 37.0		0.41 0.41	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	20	2.00 2.00	72 80 76
2,3,7,8-TCDD Total TCDD	1.2 44.0		0.30 0.30	1,2,3,7,8-PeCDF-1 2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C 3C	2.00 2.00 2.00	76 75 86
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	4.2 8.1 83.0	 	0.27 J 0.98 0.62	1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,7,8,9-HxCDF	-13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	90 74 76 75 96
1,2,3,7,8-PeCDD Total PeCDD	5.2 57.0		0.73 0.73	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD	0-13C 0F-13C	2.00 2.00 2.00	76 60 56
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	 7.7 8.9	26 	0.57 E 0.51 0.71	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 2.00 4.00	50 55 52 Y
1,2,3,7,8,9-HxCDF Total HxCDF	4.7 130.0		0.56 0.59	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	9-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	8.4 47.0 18.0 340.0	  	0.84 0.83 0.92 0.86	2,3,7,8-TCDD-37Cl	14	0.20	82
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	160.0 8.5 400.0	 	0.78 1.00 0.91	Total 2,3,7,8-TCDI Equivalence: 40 ng (Using 2005 WHO	D g/Kg Factors - U	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	1600.0 3700.0		2.90 2.90				
OCDF OCDD	360.0 12000.0		1.60 0.68				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

NC = Not Calculated

ND = Not Detected

NA = Not Applicable

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

E = PCDE Interference

Y = Calculated using average of daily RFs

# **REPORT OF LABORATORY ANALYSIS**

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### Method 8290 Blank Analysis Results

BLANK-21632	Matrix	Solid
U90929B_06	Dilution	NA
20.1 g	Extracted	09/25/2009 15:30
U90911	Analyzed	09/30/2009 05:57
U90929A_16 & U90929B_15	Injected By	SMT
	BLANK-21632 U90929B_06 20.1 g U90911 U90929A_16 & U90929B_15	BLANK-21632MatrixU90929B_06Dilution20.1 gExtractedU90911AnalyzedU90929A_16 & U90929B_15Injected By

Native Isomers	<b>Conc</b> ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND ND		0.093 0.093	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1 2 3 7 8-PeCDE-13C	2.00 2.00 2.00	68 80 78
2,3,7,8-TCDD Total TCDD	ND ND		0.150 0.150	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	79 93 91
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND	 	0.130 0.083 0.110	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00	84 85 83
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.086 0.086	1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00 2.00	96 85 78 74
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	ND ND ND	 	0.093 0.083 0.100	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	70 57
1,2,3,7,8,9-HxCDF Total HxCDF	ND ND		0.100 0.095	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND	  	0.110 0.097 0.100 0.100	2,3,7,8-TCDD-37Cl4	0.20	81
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND 0.34	 	0.110 0.170 0.140 J	Total 2,3,7,8-TCDD Equivalence: 0.18 ng/Kg (Using 2005 WHO Factors -	Using PRL/	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	 ND	0.43	0.200 l 0.200			
OCDF OCDD	0.38 6.80		0.260 J 0.320			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Value below calibration range

I = Interference present

# REPORT OF LABORATORY ANALYSIS

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

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## Method 8290 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS-2 U9092 20.3 g U9091 U9092 BLANI	1633 29B_01 1 29A_16 & U K-21632	90929B_15	Matrix Dilution Extracted Analyzed Injected By	Solid NA 09/25/2009 15: 09/30/2009 01: SMT	30 52
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.21	106	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	2.00 2.00	69 79
2,3,7,8-TCDD Total TCDD	0.20	0.19	94	1,2,3,7,8-PeCDF-13C 2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	77 77 92
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.00 1.00	1.02 0.98	102 98	1,2,3,4,7,8-HxCDF-13C 1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	88 83 84 81
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.88	88	1,2,3,4,7,6-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	92 90 77
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	1.01 1.02 1.01	101 102 101	1,2,3,4,7,6,7,8-HpCDD-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	69 69 49
1,2,3,7,8,9-HxCDF Total HxCDF	1.00	0.99	99	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	0.99 0.94 0.94	99 94 94	2,3,7,8-TCDD-37Cl4	0.20	80
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.00 1.00	0.98 0.98	98 98			
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	1.01	101			
OCDF OCDD	2.00 2.00	1.80 2.03	90 102			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

P = Recovery outside of target range

X = Background subtracted value

Y = RF averaging used in calculations

Nn = Value obtained from additional analysis

NA = Not Applicable

\* = See Discussion

## **REPORT OF LABORATORY ANALYSIS**

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### Method 8290 Spiked Sample Report

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	SP 10 <sup>7</sup> F90 11. F90 F90 BL	24-ZONE2-09 113236001-M 0930B_17 7 g 0817 0930B_04 & ANK-21632	92309-1-MS S F90930B_20	Matrix Dilution Extracted Analyzed Injected By	Solid NA 09/25/2009 10/01/2009 BAL	9 15:30 9 04:46	
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.21	104	2,3,7,8-TCDF- 2,3,7,8-TCDD- 1,2,2,7,8 PoC	13C 13C	2.00 2.00	91 90 97
2,3,7,8-TCDD	0.20	0.22	110	1,2,3,7,8-PeCE 2,3,4,7,8-PeCE 1,2,3,7,8-PeCE	DF-13C DF-13C DD-13C	2.00 2.00 2.00	98 112
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF	1.00 1.00	0.98 0.95	98 95	1,2,3,4,7,6-HX 1,2,3,6,7,8-HX 2,3,4,6,7,8-HX 1,2,3,7,8,9-HX	DF-13C DF-13C DF-13C DF-13C DF-13C	2.00 2.00 2.00 2.00	82 68 75 80
1,2,3,7,8-PeCDD	1.00	0.91	91	1,2,3,4,7,6-nx 1,2,3,6,7,8-Hx 1,2,3,4,6,7,8-H 1,2,3,4,6,7,8-H	DD-13C DD-13C pCDF-13C pCDF-13C	2.00 2.00 2.00 2.00	90 74 66 74
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	0.97 1.02 0.98	97 102 98	1,2,3,4,6,7,8-H OCDD-13C	pCDD-13C	2.00 4.00	73 68
1,2,3,7,8,9-HxCDF	1.00	0.99	99	1,2,3,4-TCDD- 1,2,3,7,8,9-Hx0	13C CDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	1.00 1.00 1.00	0.92 0.99 0.94	92 99 94	2,3,7,8-TCDD-	37Cl4	0.20	100
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF	1.00 1.00	1.31 1.08	131 108				
1,2,3,4,6,7,8-HpCDD	1.00	3.22	322				
OCDF OCDD	2.00 2.00	3.11 31.88	155 1594				

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

## **REPORT OF LABORATORY ANALYSIS**

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### Method 8290 Spiked Sample Report

Client - Pioneer Technologies Corporation

SP: 101 F90 11. F90 F90 BL/	24-ZONE2-09 13236001-M 0930B_18 6 g 0817 0930B_04 & ANK-21632	92309-1-MSD SD F90930B_20	Matrix Dilution Extracted Analyzed Injected By	Solid NA 09/25/2009 10/01/2009 BAL	9 15:30 9 05:32	
<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards		ng's Added	Percent Recovery
0.20	0.20	99	2,3,7,8-TCDF- 2,3,7,8-TCDD- 1,2,2,7,8 PoC	13C 13C 25 13C	2.00 2.00	96 92
0.20	0.21	106	2,3,4,7,8-PeCI 1,2,3,7,8-PeCI 1,2,3,7,8-PeCI	DF-13C DF-13C DD-13C	2.00 2.00 2.00	102 101 113
1.00 1.00	1.00 0.90	100 90	1,2,3,4,7,8-Hx 1,2,3,6,7,8-Hx 2,3,4,6,7,8-Hx 1,2,3,7,8,9-Hx	CDF-13C CDF-13C CDF-13C CDF-13C	2.00 2.00 2.00 2.00	67 67 76 80
1.00	0.88	88	1,2,3,4,7,8-HX 1,2,3,6,7,8-HX 1,2,3,4,6,7,8-H 1 2 3 4 7 8 9-H	CDD-13C CDD-13C IpCDF-13C	2.00 2.00 2.00 2.00	67 59 56
1.00 1.00 1.00	0.95 0.95 0.94	95 95 94	1,2,3,4,6,7,8-H OCDD-13C	pCDD-13C	2.00 4.00	63 56
1.00	0.95	95	1,2,3,4-TCDD- 1,2,3,7,8,9-Hx(	13C CDD-13C	2.00 2.00	NA NA
1.00 1.00 1.00	0.88 0.95 0.94	88 95 94	2,3,7,8-TCDD-	37Cl4	0.20	98
1.00 1.00	1.22 1.02	122 102				
1.00	2.09	209				
2.00 2.00	2.57 15.65	128 782				
	SP: 101 F90 11. F90 BL/ Qs (ng) 0.20 0.20 1.00 1.00 1.00 1.00 1.00 1.00	SP24-ZONE2-09           10113236001-M           F90930B_18           11.6 g           F90817           F90930B_04 &           BLANK-21632           Qs         Qm           (ng)         (ng)           0.20         0.20           0.20         0.21           1.00         1.00           1.00         0.90           1.00         0.95           1.00         0.95           1.00         0.95           1.00         0.95           1.00         0.95           1.00         0.95           1.00         0.95           1.00         0.95           1.00         0.95           1.00         0.95           1.00         0.95           1.00         0.95           1.00         0.94           1.00         1.02           1.00         1.02           1.00         2.09           2.00         2.57           2.00         2.57           2.00         15.65	SP24-ZONE2-092309-1-MSD 10113236001-MSD F90930B_18 11.6 g F90930B_04 & F90930B_20 BLANK-21632QsQm% (ng)(ng)(ng)% Rec.0.200.20990.200.211061.001.001001.000.90901.000.95951.000.95951.000.94941.000.95951.000.94941.000.95951.000.94941.000.95951.000.94941.001.021021.001.221221.001.021021.002.092092.002.571282.002.571282.002.57128	SP24-ZONE2-092309-1-MSD           10113236001-MSD           F90930B_18         Matrix           11.6 g         Dilution           F90817         Extracted           P90817         Extracted           P90930B_04 & F90930B_20         Analyzed           BLANK-21632         Internal           Cas         Cm         %           Internal         Standards           0.20         0.20         99         2,3,7,8-TCDF- 2,3,7,8-TCDF- 2,3,7,8-PeCI           0.20         0.21         106         2,3,4,7,8-PeCI           0.20         0.21         106         2,3,4,7,8-PeCI           0.20         0.21         106         2,3,4,7,8-PeCI           1.00         1.00         1,2,3,4,7,8-PeCI         1,2,3,4,7,8-PeCI           1.00         1.00         1,2,3,4,7,8-PeCI         1,2,3,4,7,8-PeCI           1.00         0.95         95         OCDD-13C           1.00         0.95         95         OCDD-13C           1.00         0.95         95         1,2,3,4,6,7,8-H           1.00         0.95         95         1,2,3,4,6,7,8-H           1.00         0.95         95         1,2,3,4,7,8,9-H           1.0	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

## **REPORT OF LABORATORY ANALYSIS**

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### Method 8290 Spike Sample Results

Client - Pioneer Technologies Corporation

Client Sample ID	SP24-ZONE2-092309-1			Dry Weights	
Lab Sample ID	10113236001	Sample Filename	U90930A_05	Sample Amount	10.1 g
MSID	10113236001-MS	MS Filename	F90930B_17	MS Ámount	10.5 g
MSD ID	10113236001-MSD	MSD Filename	F90930B_18	MSD Amount	10.4 g

Sample Conc. MS/MSD Qs MS Qm MSD Qm Background							Ind Subtracted	
Analyte	ng/Kg	(ng)	(ng)	(ng)	RPD	MS % Rec.	MSD % Rec.	RPD
2,3,7,8-TCDF	0.000	0.20	0.21	0.20	4.5	104	99	4.5
2,3,7,8-TCDD	0.000	0.20	0.22	0.21	3.8	110	106	3.8
1,2,3,7,8-PeCDF	0.000	1.00	0.98	1.00	1.6	98	100	1.6
2,3,4,7,8-PeCDF	0.000	1.00	0.95	0.90	5.8	94	89	5.9
1,2,3,7,8-PeCDD	0.000	1.00	0.91	0.88	4.1	91	88	4.1
1,2,3,4,7,8-HxCDF	0.000	1.00	0.97	0.95	2.6	94	92	2.6
1,2,3,6,7,8-HxCDF	0.000	1.00	1.02	0.95	7.3	102	95	7.3
2,3,4,6,7,8-HxCDF	0.880	1.00	0.98	0.94	4.2	97	93	4.2
1,2,3,7,8,9-HxCDF	0.000	1.00	0.99	0.95	3.3	99	95	3.3
1,2,3,4,7,8-HxCDD	0.000	1.00	0.92	0.88	5.4	92	87	5.5
1,2,3,6,7,8-HxCDD	3.420	1.00	0.99	0.95	4.6	96	91	4.8
1,2,3,7,8,9-HxCDD	0.000	1.00	0.94	0.94	0.3	93	93	0.3
1,2,3,4,6,7,8-HpCDF	13.200	1.00	1.31	1.22	7.2	117	108	8.0
1,2,3,4,7,8,9-HpCDF	0.000	1.00	1.08	1.02	5.1	108	102	5.1
1,2,3,4,6,7,8-HpCDD	159.000	1.00	3.22	2.09	42.3	156	45	110.5
OCDF	54.300	2.00	3.11	2.57	19.0	127	100	23.5
OCDD	1570.000	2.00	31.88	15.65	68.3	772	0	200.0

#### Definitions

MS = Matrix Spike MSD = Matrix Spike Duplicate Qm = Quantity Measured Qs = Quantity Spiked % Rec. = Percent Recovery RPD = Relative Percent Difference NA = Not Applicable NC = Not Calculated CDD = Chlorinated dibenzo-p-dioxin

CDF = Chlorinated dibenzo-p-furan

T = Tetra

Pe = Penta

Hx = Hexa

Hp = Hepta

O = Octa

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Matrix Code: $WW =$ wastewater $GW = g$ $SL =$ sludge $V =$ var	ground oor	lwater S O	= soil or so = other	olid							EPA 8081)			(MIS010)			(M)		9050)	0	ieries)		rs	EPA 900)	(006 VA								
Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Container Type	MBER EPA 8021b)	Gasoline (NWTPH-Gx)	Diesel (NWTPH-Dx)	Diesel & Oil (NWTPH-Dx)	Fuel Scan (NWTPH-HCID)	VOC's (EPA 8021b)	Organochlorine Pesticides (E	PCB's (EPA 8082)	Volatiles (EPA 8260)	PAH's (EPA 8100 or 8270/8	Semi-Volatiles (EPA 8270)	Ignitability (EPA 1010)	Oil and Grease (EPA 1664 H	pH (EPA 9040/9045)	Specific Conductance (EPA	Paint Filter Test (EPA 9095)	Heavy Metals* (EPA 7000 S	Biogenic Gases (EPA 3C)	Natural Attenuation Indicato	Gross Alpha Radioactivity (I	Gross Beta Radioactivity (El								
SP27-Zone3-101509	S	101509	1336	350000 2402	X	X		X				X		X							X												
SP28-Zone2-101509	1		1400		X	X		X		-	-	X	-	X							X				_	_			-	-	-	-	
SP24-Lone4-101509-1	-		1500		X	X	-	X				X		X	-	-	-		-	-	X				_		-			-	-	-	-
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2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 091015-09

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF GASOLINE RANGE ORGANICS IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Benzene EPA 8021B (mg/kg)	Toluene EPA 8021B (mg/kg)	Ethylbenzene EPA 8021B (mg/kg)	m&p-Xylene EPA 8021B (mg/kg)	o-Xylene EPA 8021B (mg/kg)	Gasoline NWTPH-Gx (mg/kg)	Surrogate Recovery BFB (%)	Data Flags
Method Blank	10/20/2009	n/a	nd	nd	nd	nd	nd	nd	95.2	
SP27-ZONE3-101509	10/20/2009	91.6	nd	nd	nd	nd	nd	nd	74.0	
SP28-ZONE2-101509	10/20/2009	91.8	nd	nd	nd	nd	nd	nd	81.3	
SP29-ZONE4-101509-1	10/20/2009	80.1	nd	nd	nd	nd	nd	nd	80.74	
SP29-ZONE4-101509-2	10/20/2009	92.8	nd	nd	nd	nd	nd	nd	88	
LCS	10/21/2009	n/a	105.0%	97.2%	95.1%	82.1%	97.7%	121%	n/a	
102009-MS	10/21/2009	n/a	109%	103%	105.0%	91.7%	99%	99.3%	n/a	
Method Reporting Limits			0.05	0.10	0.10	0.10	0.10	5.0		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

Analyst: J. Thomas Data Reviewed by: RL

page 1 of 1



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 091015-09

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF FUEL IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Diesel Fuel #2 NWTPH-Dx (mg/kg)	Heavy Oil NWTPH-Dx (mg/kg)	Surrogate Recovery 2-FBP (%)	Data Flags
Method Blank	10/20/2009	n/a	nd	nd	72.5	
SP27-ZONE3-101509	10/20/2009	91.6	nd	nd	89.3	
SP28-ZONE2-101509	10/20/2009	91.8	nd	nd	116	
SP29-ZONE4-101509-1	10/20/2009	80.1	nd	nd	169	
SP29-ZONE4-101509-2	10/20/2009	92.8	nd	nd	96.6	
LCS	10/20/2009	n/a	117%	n/a	n/a	
102009-MS	10/20/2009	n/a	125%	n/a	n/a	
Method Reporting Limits			25	100		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall Data reviewed by: RL

page 1 of 1



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 091015-09

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF PCB'S IN SOIL BY EPA METHOD 8082

Sample Identification	Date Analyzed	Percent Solids (%)	Aroclor 1016 (mg/kg)	Aroclor 1221 (mg/kg)	Aroclor 1232 (mg/kg)	Aroclor 1242 (mg/kg)	Aroclor 1248 (mg/kg)	Aroclor 1254 (mg/kg)	Aroclor 1260 (mg/kg)	Surrogate Recovery TCMX (%)	Surrogate Recovery DCBP (%)	Data Flags
Method Blank	10/21/2009	n/a	nd	108	134							
SP27-Zone3-101509	10/21/2009	91.6	nd	92.6	124							
SP28-Zone2-101509	10/21/2009	91.8	nd	96.1	129							
SP29-Zone4-101509-1	10/21/2009	80.1	nd	100	77.3							
SP29-Zone4-101509-2	10/21/2009	92.8	nd	111	87.9							
LCS	10/21/2009	n/a	121%	n/a	n/a	n/a	n/a	n/a	122%	104	133	
091021-MS	10/21/2009	n/a	79.2%	n/a	n/a	n/a	n/a	n/a	69.6%	104	80.0	
091021-MSD	10/21/2009	n/a	87.0%	n/a	n/a	n/a	n/a	n/a	83.2%	88.6	119	
SP29-Zone4-101509-1	10/21/2009	80.1	nd	95.7	123							
Method Reporting Limits			0.05	0.05	0.05	0.05	0.05	0.05	0.05			

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

All results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall

Data reviewed by: RL



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 091015-09

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF SEMI-VOLATILE COMPOUNDS IN SOIL BY EPA METHOD 8270

Sample Identification			Blank	SP27-Zone3- 101509	SP28-Zone2- 101509	SP29-Zone4- 101509-1	SP29-Zone4- 101509-2	LCS	091020-MS	091020-MSD	SP29-Zone4- 101509-1 Dup.
Percent Solids (%)			n/a	91.6	91.8	80.1	92.8	n/a	n/a	n/a	80.1
Date Extracted	CAS	MRL	10/19/2009	10/19/2009	10/19/2009	10/19/2009	10/19/2009	10/19/2009	10/19/2009	10/19/2009	10/19/2009
Date Anlayzed	Number	(mg/kg)	10/19/2009	10/19/2009	10/19/2009	10/19/2009	10/19/2009	10/19/2009	10/19/2009	10/19/2009	10/19/2009
Benzo(a)anthracene	56-55-3	0.01	nd	0.04	0.12	nd	0.02	104%	104%	104%	nd
Benzo(a)pyrene	50-32-8	0.01	nd	nd	nd	nd	nd	n/a	n/a	n/a	nd
Benzo(b)fluoranthene	205-99-2	0.01	nd	nd	nd	nd	nd	n/a	n/a	n/a	nd
Benzo(k)fluoranthene	207-08-9	0.01	nd	nd	0.16	nd	0.03	n/a	n/a	n/a	nd
Chrysene	218-01-9	0.01	nd	0.02	0.17	nd	0.03	106%	106%	107%	nd
Dibenzo(a,h)anthracene	53-70-3	0.01	nd	nd	nd	nd	nd	n/a	n/a	n/a	nd
Ideno(1,2,3-cd)pyrene	193-39-5	0.01	nd	nd	nd	nd	nd	92.3%	74.3%	85.3%	nd
1-Methylnaphthalene	90-12-0	0.01	nd	0.02	0.03	nd	nd	n/a	n/a	n/a	nd
2-Methylnaphthalene	91-57-6	0.01	nd	0.02	0.03	nd	nd	n/a	n/a	n/a	nd
Naphthalene	91-20-3	0.01	nd	0.02	0.03	nd	nd	n/a	n/a	n/a	nd
Surrogate Recovery (%)			_								
2-Fluorophenol			36.3	33.7	62.9	53.3	82.3	64.2	41.9	40.6	53.7
Phenol-d6			40.9	38.0	70.9	59.0	92.5	70.1	58.4	58.1	59.9
Nitrobenzene-d5			64.5	70.2	81.8	59.3	65.8	77.4	71.8	73.2	59.7
2-Fluorobiphenol			87.3	88.7	108	83.0	91.1	85.8	85.5	84.0	82.9
2,4,6-Tribromophenol			32.8	26.4	66.4	43.0	74.4	58.6	67.6	66.9	42.2
Terphenyl-d14			108	97.1	108	105	81.8	81.1	86.0	86.8	111
Data Flags											

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

Comments and Explanations: None

Analyst: T. McCall

Data reviewed by: RL



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543



Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 091015-09

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF HEAVY METALS IN SOIL BY EPA METHOD 6020 A

Sample Identification	Date Analyzed	Percent Solids	Arsenic (As)	Cadmium (Cd)	Lead (Pb)
Chemical Abstract Number (CAS)			7440-38-2	7440-43-9	7439-92-1
Units		(%)	(mg/kg)	(mg/kg)	(mg/kg)
Method Blank	10/16/2009	n/a	nd	nd	nd
SP27-Zone3-101509	10/16/2009	91.6	3.08	nd	4.61
SP28-Zone2-101509	10/16/2009	91.8	8.44	nd	28.5
SP29-Zone4-101509-1	10/16/2009	80.1	4.37	nd	13.5
SP29-Zone4-101509-2	10/16/2009	92.8	3.03	nd	15.3
LCS	10/16/2009	n/a	88.9%	95.6%	96.1%
091016-MS	10/16/2009	n/a	DO	DO	DO
091016-MSD	10/16/2009	n/a	DO	DO	DO
SP29-Zone4-101509-1	10/16/2009	80.1	4.33	nd	13.7
Method Reporting Limits			0.25	0.25	0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference

Sample results based on dry weight.

Comments and Explanations: None

Analyst: Z. Froyland Data reviewed by: RL

page 1 of 1

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www.pacelabs.com

### **Report Prepared for:**

Troy Bussey Pioneer Technologies Corporation 2612 Yelm Highway S.E. Suite B Olympia WA 98501-4826

# REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

# Report Prepared Date:

October 23, 2009

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

### **Report Information:**

Pace Project #: 10114819 Sample Receipt Date: 10/16/2009 Client Project #: East Bay IA Stockpile Client Sub PO #: N/A State Cert #: C755

### Invoicing & Reporting Options:

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

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

### This report has been reviewed by:

October 23, 2009

Scott Unze, Project Manager (612) 607-6383 (612) 607-6444 (fax) scott.unze@pacelabs.com



### **Report of Laboratory Analysis**

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.



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

### **DISCUSSION**

This report presents the results from the analyses performed on four samples submitted by a representative of Pioneer Technologies Corporation. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. Reporting limits were based on signal-to-noise calculations.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 57-94%. All of the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Since the quantification of the native 2,3,7,8-substituted isomers was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners; the affected values were flagged "I" where incorrect isotope ratios were obtained, or "P" where polychlorinated diphenyl ethers were present. Also, the OCDD concentration reported for sample "SP-28\_ZONE2\_101509" was above the calibration range; the value was flagged "E" and should be regarded as an estimate.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain trace levels of selected congeners. These were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" on the results tables and may be, at least partially, attributed to the background. It should be noted that levels less than ten times the background are not generally considered to be statistically different from the background.

A laboratory spike sample was also prepared with the sample batch using clean sand that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 89-106%. These results indicate a high degree of accuracy for these determinations. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

# **REPORT OF LABORATORY ANALYSIS**

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

## Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	
Arizona	AZ0014	Nevada	MN00064_2000
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New Mexico	MN00064
Colorado	MN00064	New York (NEL	11647
Connecticut	PH-0256	North Carolina	27700
EPA Region 5	WD-15J	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (DNR)	959	Oklahoma	D9922
Guam	08-004r	Oregon (ELAP)	MN200001-005
Hawaii	SLD	Oregon (OREL	MN200001-005
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200012	Saipan	MP0003
Indiana		South Carolina	74003001
Indiana	C-MN-01	Tennesee	2818
lowa	368	Tennessee	02818
Kansas	E-10167	Texas	T104704192-08
Kentucky	90062	Utah (NELAP)	PAM
Louisiana	LA0900016	Virginia	00251
Maine	2007029	Washington	C755
Maryland	322	West Virginia	9952C
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-Q
Mississippi	MN00064		

# **REPORT OF LABORATORY ANALYSIS**

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Report No.....10114819

Report No.....10114819\_8290

# Appendix A

Sample Management
S	ample C	ondifi	in Upon Receipt
Pace Analytical Client Nam	e: []		10/18819
Choirt Ham	·	1010	
	lient 🛛 C	ommercia	al D Pace Other
Tracking #: 8392 2231525	3		用同時回顧
Custody Seal on Cooler/Box Present:	s 🗋 n	o Sea	is intact: U yes U no
Packing Material: D Bubble Wrap	ole Bage [	] None	Other Temp Blank: Yes No
Thermometer Used 80344042 or 179425	Type of	ice: M	of Blue None 🔲 Samples on ice, cooling process has begun
Cooler Temperature	Biologi	cal Tissi	e is Frozen: Yes No Date and initials of person examining contents:
Temp should be above freezing to 6°C			Comments:
Chain of Custody Present:			<u>A</u> [1.
Chain of Custody Filled Out:		INO DN/	<u>A</u> <u>2.</u>
Chain of Custody Relinquished:			A 3.
Sampler Name & Signature on COC:			A [4.
Samples Arrived within Hold Time:			<u>\</u>
Short Hold Time Analysis (<72hr):		No LIN/	6. Ender the the the the the the the the the the
Rush Turn Around Time Requested:			7. Jaky IA
Sufficient Volume:			8. /
Correct Containers Used:		No CIN/	9.
-Pace Containers Used:		No LIN/	
		No LINA	10.
Flitered volume received for Dissolved tests		No LINA	11.
Sample Labels match COC:	AlYes Li Si	No L'IN/A	12.
-Includes date/time/ID/Analysis Matrix: All containers needing acid/base preservation have been			
checked. Noncompliance are noted in 13.	LIYes LI	No L⊴îN/A	13. L L
compliance with EPA recommendation.		NO DINA	
Symplians MOA Colline TOC Of and Granes MII DEC Aud		No.	Initial when Lot # of added
Exceptions: VOA, Collidini, TOC, Oll and Grease, WI-DHO (Wat			completed [preservative
			]]4.
Frie Rionk Present:			<u>1</u> 3.
the Blank Custorly Socia Present			16.
2000 Trip Blank Let # (# purchased):		io jain/a	
ate hip blank Lot # (il pulchaseu).			
Client Notification/ Resolution:			Field Data Required? Y / N
Person Contacted:		Date/	Fime:
Comments/ Resolution:			
	·····		· · · · · · · · · · · · · · · · · · ·
······································	<u></u>		
Project Meneger Peylow		ก	Bates inter La

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## **Reporting Flags**

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- \* = See Discussion

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# Appendix B

Sample Analysis Summary



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### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP-2 1011 F910 BAL 11.0 7.9 10.1 F910 F910 BLAN	7_ZONE3_ 4819001 23A_05 g g 21 22B_13 & VK-22071	101509 F91023A_16	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 10/15/200 10/16/200 10/20/200 10/23/200	9 13:30 9 09:55 9 15:30 9 04:04	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.36 1.90		0.110 J 0.110	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PeCDE-1	30	2.00 2.00 2.00	71 81 63
2,3,7,8-TCDD Total TCDD	ND 2.50		0.130 0.130	2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C -13C	2.00 2.00 2.00	67 74
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.50 15.00	0.52	0.150 I 0.110 J 0.130	1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,7,8,9-HxCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	89 79 79 71 94
1,2,3,7,8-PeCDD Total PeCDD	2.40	0.24	0.190 l 0.190 J	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD	-13C 0F-13C 0F-13C	2.00 2.00 2.00	79 60 59
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	 0.81 1.00	4.20	0.250 P 0.210 J 0.240 J	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 2.00 4.00	70 57
1,2,3,7,8,9-HxCDF Total HxCDF	48.00	0.74	0.230 l 0.230	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	0.49 1.80 0.74 14.00	  	0.160 J 0.180 J 0.094 J 0.140	2,3,7,8-TCDD-37Cl	4	0.20	81
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	21.00 1.60 91.00	 	0.270 0.810 J 0.540	Total 2,3,7,8-TCDI Equivalence: 2.1 n (Using 2005 WHO	D g/Kg Factors - U	sing PRL/2	where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	53.00 98.00		0.390 0.390				
OCDF OCDD	67.00 530.00		0.320 0.380				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Estimated value

P = PCDE Interference

I = Interference present

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ND = Not DetectedNA = Not ApplicableNC = Not Calculated



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### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP-2 1011 F910 BAL 11.0 8.0 10.1 F910 F910 BLAN	8_ZONE2_ 4819002 23A_06 g 21 22B_13 & VK-22071	101509 F91023A_16	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 10/15/2009 10/16/2009 10/20/2009 10/23/2009	9 14:00 9 09:55 9 15:30 9 04:53	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	2.80 40.00		0.130 0.130	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C		2.00 2.00	72 78
2,3,7,8-TCDD Total TCDD	0.97 34.00		0.093 J 0.093	2,3,4,7,8-PeCDF-13 1,2,3,7,8-PeCDD-13	3C 3C	2.00 2.00 2.00	63 69
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	3.50 7.80 140.00	 	0.170 J 0.150 0.160	1,2,3,4,7,8-HxCDF- 1,2,3,6,7,8-HxCDF- 2,3,4,6,7,8-HxCDF- 1,2,3,7,8,9-HxCDF- 1,2,3,7,8,9-HxCDF-	13C 13C 13C 13C 13C	2.00 2.00 2.00 2.00 2.00	88 70 75 72 89
1,2,3,7,8-PeCDD Total PeCDD	6.20 50.00		0.510 0.510	1,2,3,6,7,8-HxCDD- 1,2,3,4,6,7,8-HxCDD- 1,2,3,4,6,7,8-HpCDI	13C 13C F-13C	2.00 2.00 2.00	73 58
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	7.60 11.00	14 	0.210 P 0.400 0.420	1,2,3,4,6,7,8-HpCDI 0CDD-13C	D-13C	2.00 2.00 4.00	69 60
1,2,3,7,8,9-HxCDF Total HxCDF	4.10 290.00		0.340 J 0.340	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-	13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	18.00 68.00 23.00 330.00	  	0.590 0.570 0.710 0.620	2,3,7,8-TCDD-37Cl4	1	0.20	75
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	170.00 7.60 500.00	 	0.670 1.500 1.100	Total 2,3,7,8-TCDD Equivalence: 42 ng/ (Using 2005 WHO F	) ′Kg Factors - Us	sing PRL/2	where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	1400.00 2600.00		5.100 5.100				
OCDF OCDD	400.00 12000.00		0.780 0.600 E				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Estimated value

P = PCDE Interference

E = Exceeds calibration range

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### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP-2 1011 F910 BAL 13.2 19.6 10.6 F910 F910 BLAI	9_ZONE4_ 4819003 923A_07 9 921 922B_13 & NK-22071	_101509_1 F91023A_16	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 10/15/200 10/16/200 10/20/200 10/23/200	9 15:00 9 09:55 9 15:30 9 05:41	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.57 3.40		0.16 J 0.16	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	20	2.00 2.00	59 65
2,3,7,8-TCDD Total TCDD	ND 1.60		0.17 0.17	1,2,3,7,8-PeCDF-1 2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C 3C	2.00 2.00 2.00	56 67 76
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	0.22 0.30 3.20	 	0.11 J 0.12 J 0.11 J	1,2,3,4,7,8-HXCDF 1,2,3,6,7,8-HXCDF 2,3,4,6,7,8-HXCDF 1,2,3,7,8,9-HXCDF 1,2,3,7,8,9-HXCDF	-13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	83 86 83 81 90
1,2,3,7,8-PeCDD Total PeCDD	ND 1.40		0.19 0.19 J	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD	-13C )F-13C	2.00 2.00 2.00	93 71
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF	ND 	0.29	0.22 0.13	1,2,3,4,6,7,8-HpCD 0CDD-13C	)D-13C	2.00 2.00 4.00	84 69
1,2,3,7,8,9-HxCDF Total HxCDF	ND 1.30	0.40 	0.19 T 0.20 0.19 J	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND 0.49  4.50	 0.30 	0.25 0.20 J 0.18 I 0.21 J	2,3,7,8-TCDD-37Cl	4	0.20	64
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.30 ND 3.50	 	0.26 BJ 0.17 0.22 J	Total 2,3,7,8-TCDI Equivalence: 0.55 (Using 2005 WHO	D ng/Kg Factors - U	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	7.00 15.00		0.27 0.27				
OCDF OCDD	2.70 66.00		0.30 J 0.24				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

ND = Not Detected NA = Not Applicable

NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Estimated value

RL = Reporting Limit.

B = Less than 10x higher than method blank level

I = Interference present

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### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP-2 1011 F910 BAL 11.2 6.8 10.4 F910 F910 BLAI	9_ZONE4_ 4819004 923A_08 9 921 922B_13 & NK-22071	101509_2 F91023A_16	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 10/15/2009 10/20/2009 10/23/2009	9 15:30 9 09:55 9 15:30 9 06:30	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	1.50 25.00		0.068 0.068	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1 2 3 7 8-PeCDF-1	30	2.00 2.00 2.00	69 78 61
2,3,7,8-TCDD Total TCDD	0.48 23.00		0.087 J 0.087	2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1 1,2,3,4,7,8-PeCDD-1	3C 3C -13C	2.00 2.00 2.00	67 74 82
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.40 3.00 39.00	 	0.170 J 0.082 J 0.120	1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,7,8,9-HxCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	82 78 72 85
1,2,3,7,8-PeCDD Total PeCDD	1.80 24.00		0.140 J 0.140	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD 1,2,3,4,6,7,8-HpCD	-13C F-13C F-13C	2.00 2.00 2.00	81 61 62
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	 2.40 2.10	4.8	0.280 P 0.300 J 0.300 J	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 4.00	73 61
1,2,3,7,8,9-HxCDF Total HxCDF	0.77 54.00		0.440 J 0.330	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.60 5.40 2.00 63.00	  	0.260 J 0.240 0.240 J 0.250	2,3,7,8-TCDD-37Ck	4	0.20	78
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	33.00 2.50 160.00	 	0.460 0.510 J 0.490	Total 2,3,7,8-TCDE Equivalence: 8.2 no (Using 2005 WHO	) g/Kg Factors - U	sing PRL/2	where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	220.00 650.00		1.300 1.300				
OCDF OCDD	180.00 2700.00		0.310 0.360				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

ND = Not DetectedNA = Not ApplicableNC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Estimated value

P = PCDE Interference

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### Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-22071	Matrix	Solid
Filename	F91023A_04	Dilution	NA
Total Amount Extracted	10.2 g	Extracted	10/20/2009 15:30
ICAL ID	F91021	Analyzed	10/23/2009 03:16
CCal Filename(s)	F91022B_13 & F91023A_16	Injected By	BAL

Native Isomers	<b>Conc</b> ng/Kg	EMPC ng/Kg	RL ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND ND		0.083 0.083	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-TCDD-13C	2.00 2.00 2.00	58 68 60
2,3,7,8-TCDD Total TCDD	ND ND		0.067 0.067	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	70 78 75
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND	 	0.076 0.070 0.073	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	82 82 76
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.100 0.100	1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00 2.00	90 86 68 62
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	ND ND ND	 	0.170 0.110 0.120	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	78 59
1,2,3,7,8,9-HxCDF Total HxCDF	ND ND		0.150 0.140	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND	  	0.170 0.140 0.140 0.150	2,3,7,8-TCDD-37Cl4	0.20	66
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	0.24 ND 0.24	 	0.210 J 0.250 0.230 J	Total 2,3,7,8-TCDD Equivalence: 0.16 ng/Kg (Using 2005 WHO Factors -	Using PRL/	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	0.34 0.80		0.150 J 0.150 J			
OCDF OCDD	ND 2.40		0.480 0.460 J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures. J = Estimated value

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### Method 8290 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS-2 F9102 10.0 g F9102 F9102 BLAN	22072 23A_01 21 22B_13 & F K-22071	-91023A_16	Matrix Dilution Extracted Analyzed Injected By	Solid NA 10/20/2009 15: 10/23/2009 00: BAL	30 50
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.20	100	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	2.00 2.00	70 79
2,3,7,8-TCDD Total TCDD	0.20	0.20	99	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	75 87
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.00 1.00	1.05 0.99	105 99	1,2,3,4,7,8-HxCDF-13C 1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	79 80 81 77
1,2,3,7,8-PeCDD Total PeCDD	1.00	0.91	91	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	94 84 71
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.00 1.00 1.00	0.98 1.02 1.01	98 102 101	1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	80 60
1,2,3,7,8,9-HxCDF Total HxCDF	1.00	0.98	98	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.00 1.00 1.00	0.89 1.06 0.94	89 106 94	2,3,7,8-TCDD-37Cl4	0.20	78
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.00 1.00	0.99 1.00	99 100			
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.00	0.92	92			
OCDF OCDD	2.00 2.00	1.85 2.12	93 106			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent) R = Recovery outside of target range Y = RF averaging used in calculations Nn = Value obtained from additional analysis

NA = Not Applicable

\* = See Discussion

## **REPORT OF LABORATORY ANALYSIS**

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

DRAGC Analytical Laborat	₽ <u>∧</u>	<u>I</u> ž						<b>RC</b> 28	CRA 18 M Phon	adro adro ie: (3 Er	HAI ma B 60) mail:	N C each 866- Dra	<b>DF (</b> n Rd. 0543 gonL	CUS NW F Lab@	, Oly ax: (	DY mpi 360) cast.	<b>RF</b> a, W 866 .net	ECC 7A 98 5-055	<b>DRD</b> 8502 56	2						Samp Conta	les Co act Nu	ollecte	d By:_	P	nge <u>1</u>		of
Client: <u>PTC</u> Address: <u>3619</u> <u>BLGmpic</u>	1/21	Im Ho WA 9	~ 4 SE 18501		Phon Fax: Emai	e: <u>F</u> 1: <u>Y(</u>	57 ober	G-	-/7 EQI Pion	-62 us	) v.ci	P P P	Projec Projec Projec	et Na et Lo et Nu	ume: catio	Eus n: r:	.+6	44	±₩	A 2.	100	kp		P C D	roje Conta DAL	ct P. act P Proj	O.: _ erso ject l	n: No.: _	00	112	14-	-04	1
$\begin{tabular}{lllllllllllllllllllllllllllllllllll$	groui por	ndwater S	s = soil or sol = other	lid							EPA 8081)			(270SIM)			(ME)		9050)		ieries)		SI	EPA 900)	PA 900)								
Sample Identification	Sample Matrix	Date Sampled	Time Sampled	Container Type	MtBE/BTEX (EPA 8021b)	Gasoline (NWTPH-Gx)	Diesel (NWTPH-Dx)	Diesel & Oil (NWTPH-Dx)	Fuel Scan (NWTPH-HCID)	VOC's (EPA 8021b)	Organochlorine Pesticides (I	PCB's (EPA 8082)	Volatiles (EPA 8260)	PAH's (EPA 8100 or 8270/8	Semi-Volatiles (EPA 8270)	(gnitability (EPA 1010)	Dil and Grease (EPA 1664 H	pH (EPA 9040/9045)	Specific Conductance (EPA	Paint Filter Test (EPA 9095)	Heavy Metals* (EPA 7000 S	Biogenic Gases (EPA 3C)	Natural Attenuation Indicato	Gross Alpha Radioactivity (I	Gross Beta Radioactivity (El	PTLLP Pb							
5823-20224 121469. Comp	5	12140	0945		T	T											-	-	0.1		-	-	-			X							
SPJ5-ZGN24-121409-60Mp1	1	12/409	1015																						-	X	1						
5925_ZON24_12/409_COM12	11	1	1030																							X							
5830-Zone 4-121409_comp			1145																							X						1	
5129-Zoney_121409_comp	Π		1000																							X						1	
5935-2014 4- 121409 com	1		1530																							X							
5830- Zone 4-121409			1130	1	X	X		X		2		X		X							X	7				1							
5P31_20122-121409			1200		X	X		X				X		X							X			14	to	1	0	10	Sa	res	L	u	
5P32-Zone3-121409			1330		X	X		X				X		X							X	1		T	B	11	15	129	14	ca	C	1	
5833-Zone3-121409			1400		X	X		X				X		X							X		1					İ					
SP34_Zone3-12/409	1		1415	1	X	X		X				X		X		-					X			E	UAI	LI	2-	18-	09	T.B.	usse	4 1	bar
SP35_Zone 4_121409	5	V	1530	1	X	X		X				X		X							X					ANI	44.	9	58-	33 0	nd s	SP 3	14
Relinquished by (Signature) Millow H. Fum Relinquished by (Signature)	D IS/I D	ate/Time Ro 4/69/UO ate/Time Ro	Coeived by (Signa	ature) ature)		D: 12  D:	ate/Time	09	16	25	Turn- Sams 24 H 48 H 5 Da 10 D 3 d	Arou e Day our our y ay	ind-Ti	me A_P	* <u>H</u> Ag Ag	AI	Meta As Ba As Ba	<u>lls</u> : P a Be( a Be	lease of Cd Cd Cd Cd Cd Cd Cd Cd Cd Cd Cd Cd Cd	circle Cr Cr- Cr Cr-	the do VI C VI C	esired Co Cu Co Cu	analy Fe Fe Fe	rtes. Hg L Hg L Hg L	i Mg i Mg i Mg	, Mn Mn	Mo Mo Mo	Ni Pb Ni Pb	Sb S Sb S	e TI e TI	V Zn V Zn V Zn	- Dis - TC	ta) ssolved

2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543

Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 091214-04

### ANALYTICAL RESULTS FOR THE ANALYSIS OF FUEL IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Diesel Fuel #2 NWTPH-Dx (mg/kg)	Heavy Oil NWTPH-Dx (mg/kg)	Surrogate Recovery 2-FBP (%)	Data Flags
Method Blank	12/28/2009	n/a	nd	nd	103	
SP33-ZONE3-121409	12/28/2009	90.1	nd	nd	107	
SP34-ZONE3-121409	12/28/2009	87.9	nd	nd	78.5	
LCS	12/28/2009	n/a	113%	n/a	n/a	
091001-MS	12/28/2009	n/a	67.0%	n/a	n/a	
Method Reporting Limits			25	100		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory



Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 091214-04

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF GASOLINE RANGE ORGANICS IN SOIL

Sample Identification	Date Analyzed	Percent Solids (%)	Benzene EPA 8021B (mg/kg)	Toluene EPA 8021B (mg/kg)	Ethylbenzene EPA 8021B (mg/kg)	m&p-Xylene EPA 8021B (mg/kg)	o-Xylene EPA 8021B (mg/kg)	Gasoline NWTPH-Gx (mg/kg)	Surrogate Recovery BFB (%)	Data Flags
Method Blank	12/29/2009	n/a	nd	nd	nd	nd	nd	nd	95.6	
SP33-ZONE3-121409	12/29/2009	90.1	nd	nd	nd	nd	nd	nd	111	
SP34-ZONE3-121409	12/29/2009	87.9	nd	nd	nd	nd	nd	nd	124	
LCS	12/29/2009	n/a	79.4%	84.2%	n/a	n/a	n/a	87.0%	n/a	
091229-MS	12/29/2009	n/a	113%	102%	170%	134%	151%	87.0%	n/a	
Method Reporting Limits			0.05	0.10	0.10	0.10	0.10	5.0		

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Sample results based on dry weight.

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

DAL Number: 091214-04

### ANALYTICAL RESULTS FOR THE ANALYSIS OF HEAVY METALS IN SOIL BY EPA METHOD 6020 A

Sample Identification	Date Analyzed	Percent Solids	Arsenic (As)	Cadmium (Cd)	Lead (Pb)
Chemical Abstract Number (CAS)			7440-38-2	7440-43-9	7439-92-1
Units		(%)	(mg/kg)	(mg/kg)	(mg/kg)
Method Blank	12/28/2009	n/a	nd	nd	nd
SP33-ZONE3-121409	12/28/2009	90.1	3.98	0.33	35.8
SP34-ZONE3-121409	12/28/2009	87.9	3.79	0.25	7.3
LCS	12/28/2009	n/a	119%	114%	117%
091028-MS	12/28/2009	n/a	MI	MI	MI
091028-MSD	12/28/2009	n/a	MI	MI	MI
Method Reporting Limits			0.25	0.25	0.25

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

"MI" indicates Matrix Interference

Sample results based on dry weight.

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 091214-04 ANALYTICAL RESULTS FOR THE ANALYSIS OF SEMI-VOLATILE COMPOUNDS IN SOIL BY EPA METHOD 8270

Sample Identification			Blank	SP33-ZONE3- 121409	SP34-ZONE3- 121409	LCS	091223- MS	091223- MSD	SP34-ZONE3- 121409 Dup.
Percent Solids (%)			n/a	90.1	87.9	n/a	n/a	n/a	87.9
Date Extracted	CAS	MRL	12/23/2009	12/23/2009	12/23/2009	12/23/2009	12/23/2009	12/23/2009	12/23/2009
Date Anlayzed	Number	(mg/kg)	12/23/2009	12/23/2009	12/23/2009	12/23/2009	12/23/2009	12/23/2009	12/23/2009
Benzo(a)anthracene	56-55-3	0.01	nd	nd	nd	74.0%	n/a	n/a	nd
Benzo(a)pyrene	50-32-8	0.01	nd	nd	nd	72.8%	n/a	n/a	nd
Benzo(b)fluoranthene	205-99-2	0.01	nd	nd	nd	75.8%	n/a	n/a	nd
Benzo(k)fluoranthene	207-08-9	0.01	nd	nd	nd	80.0%	n/a	n/a	nd
Chrysene	218-01-9	0.01	nd	nd	nd	77.6%	n/a	n/a	nd
Dibenzo(a,h)anthracene	53-70-3	0.01	nd	nd	nd	59.4%	n/a	n/a	nd
Ideno(1,2,3-cd)pyrene	193-39-5	0.01	nd	nd	nd	36.3%	n/a	n/a	nd
1-Methylnaphthalene	90-12-0	0.01	nd	nd	nd	87.3%	n/a	n/a	nd
2-Methylnaphthalene	91-57-6	0.01	0.05	nd	nd	94.0%	n/a	n/a	nd
Naphthalene	91-20-3	0.01	nd	nd	nd	79.8%	n/a	n/a	nd
Phenol	108-95-2	0.05	n/a	n/a	n/a	n/a	88.8%	89.6%	n/a
1,4-Dichlorobenzene	106-46-7	0.05	n/a	n/a	n/a	n/a	100%	102%	n/a
n-Nitroso-di-n-propylamine	621-64-7	0.05	n/a	n/a	n/a	n/a	82.8%	82.4%	n/a
1,2,4-Trichlorobenzene	120-82-1	0.05	n/a	n/a	n/a	n/a	103%	102%	n/a
3-Methyl-4-chlorophenol	59-50-7	0.05	n/a	n/a	n/a	n/a	97.7%	98.3%	n/a
Acenaphthene	83-32-9	0.05	n/a	n/a	n/a	n/a	73.0%	73.1%	n/a
2,4-Dinitrotoluene	121-14-2	0.05	n/a	n/a	n/a	n/a	98.9%	100%	n/a
4-Nitrophenol	100-07-7	0.05	n/a	n/a	n/a	n/a	99.2%	92.6%	n/a
4-Chlorophenyl phenyl ether	7005-72-3	0.05	n/a	n/a	n/a	n/a	90.4%	90.3%	n/a
Pentachlorophenol	87-86-5	0.05	n/a	n/a	n/a	n/a	94.3%	92.1%	n/a
Pyrene	129-00-0	0.05	n/a	n/a	n/a	n/a	92.0%	93.1%	n/a
Surrogate Recovery (%)									
2-Fluorophenol			59.4	54.9	71.1	81.5	72.3	72.9	69.9
Phenol-d6			63.2	58.8	64	79.9	71.6	72.6	62.1
Nitrobenzene-d5			66.1	71.6	72.2	83.2	80.3	80.7	72.4
2-Fluorobiphenol			97.5	97.7	98.5	93.5	93.4	93.8	96.3
2,4,6-Tribromophenol			67.4	66.1	73.5	91.7	83.8	81.7	74.2
Terphenyl-d14			114	97.2	103	81.7	81.9	82.7	95
Data Flags									

WA-DOE-Laboratory Certification No.: C2013

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"n/a" indicates not applicable

Sample results based on dry weight.



2818 Madrona Beach Rd NW, Olympia WA 98502 (360) 866-0543



Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

Pioneer Technologies Corporation Project: East Bay IA Stockpiles

#### DAL Number: 091214-04

#### ANALYTICAL RESULTS FOR THE ANALYSIS OF PCB'S IN SOIL BY EPA METHOD 8082

Sample Identification	Date Analyzed	Percent Solids (%)	Aroclor 1016 (mg/kg)	Aroclor 1221 (mg/kg)	Aroclor 1232 (mg/kg)	Aroclor 1242 (mg/kg)	Aroclor 1248 (mg/kg)	Aroclor 1254 (mg/kg)	Aroclor 1260 (mg/kg)	Surrogate Recovery TCMX (%)	Surrogate Recovery DCBP (%)	Data Flags
Method Blank	12/22/2009	n/a	nd	110	78.2							
SP33-ZONE3-121409	12/22/2009	90.1	nd	104	82.4							
SP34-ZONE3-121409	12/22/2009	87.9	nd	125	126							
LCS	12/22/2009	n/a	105%	n/a	n/a	n/a	n/a	n/a	122%	121	96.9	
091222-MS	12/22/2009	n/a	102%	n/a	n/a	n/a	n/a	n/a	85.5%	98.8	85.2	
SP34-ZONE3-121409 Dup.	12/22/2009	87.9	nd	107	85.8							
Method Reporting Limits			0.05	0.05	0.05	0.05	0.05	0.05	0.05			

WA-DOE-Laboratory Certification No.: C2013

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"n/a" indicates not applicable

All results based on dry weight.



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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

PTC Eastbay IA Stockpiles Project

### DAL Project No.: 091214-04

### ANALYTICAL RESULTS FOR THE ANALYSIS OF TCLP HEAVY METALS IN SOIL BY EPA METHOD 1311

Sample Identification	Date Analyzed	Lead (Pb)	Data Flags
Chemical Abstract Number (CAS)		7439-92-1	
Analytical Method		EPA 6020	
Units		(mg/L)	
Method Blank	12/16/2009	nd	
SP23-Zone 4-121409 Comp.	12/16/2009	nd	
SP25-Zone 4-121409 Comp. 1	12/16/2009	nd	
SP25-Zone 4-121409 Comp. 2	12/16/2009	nd	
SP30-Zone 4-121409 Comp.	12/16/2009	nd	
SP29-Zone 4-121409 Comp.	12/16/2009	nd	
SP35-Zone 4-121409 Comp.	12/16/2009	nd	
SP25-Zone 4-121409 Comp. 1 Dup.	12/16/2009	nd	
LCS	12/16/2009	97.5%	
SP25-Zone 4-121409 Comp. 1 MS	12/16/2009	106%	
Method Detection Limit (MDL)		0.25	

WA-DOE-Laboratory Certification No.: C2013

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"n/a" indicates not applicable



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PTC Eastbay IA Stockpiles Project

DAL Project No.: 091214-04

#### QUALITY CONTROL RESULTS FOR THE ANALYSIS OF TCLP HEAVY METALS IN SOIL BY EPA METHOD 1311

Sample Preparation Information for TCLP by EPA Method 1311		Sample Preparation Info TCLP by EPA Method 13	ormation for 311	Sample Preparation Information for TCLP by EPA Method 1311				
Sample Identification	Method Blank	Sample Identification	SP23-Zone 4-121409 Comp.	Sample Identification	SP25-Zone 4-121409 Comp. 1			
Percent Solids	100	Percent Solids	91.2	Percent Solids	91.7			
No. of Extractions	1	No. of Extractions	1	No. of Extractions	1			
Type of Extraction	Rotary	Type of Extraction	Rotary	Type of Extraction	Rotary			
Extraction Fluid	#1	Extractiopn Fluid	#1	Extractiopn Fluid	#1			
Date Extracted	12/15/2009	Date Extracted	12/15/2009	Date Extracted	12/15/2009			
Sample Preparation Information for		Sample Preparation Info	ormation for	Sample Preparation Information for				
Sample Preparation Information for TCLP by EPA Method 1311		Sample Preparation Info TCLP by EPA Method 13	ormation for 311	Sample Preparation Information for TCLP by EPA Method 1311				
Sample Preparation Information for TCLP by EPA Method 1311 Sample Identification	SP25-Zone 4-121409 Comp. 2	Sample Preparation Info TCLP by EPA Method 13 Sample Identification	ormation for 311 SP30-Zone 4-121409 Comp.	Sample Preparation Information for TCLP by EPA Method 1311 Sample Identification	SP29-Zone 4-121409 Comp.			
Sample Preparation Information for TCLP by EPA Method 1311 Sample Identification Percent Solids	SP25-Zone 4-121409 Comp. 2 91.6	Sample Preparation Info TCLP by EPA Method 13 Sample Identification Percent Solids	ormation for 311 SP30-Zone 4-121409 Comp. 92.8	Sample Preparation Information for TCLP by EPA Method 1311 Sample Identification Percent Solids	SP29-Zone 4-121409 Comp. 89.2			
Sample Preparation Information for TCLP by EPA Method 1311 Sample Identification Percent Solids No. of Extractions	SP25-Zone 4-121409 Comp. 2 91.6 1	Sample Preparation Info TCLP by EPA Method 13 Sample Identification Percent Solids No. of Extractions	ormation for 311 SP30-Zone 4-121409 Comp. 92.8 1	Sample Preparation Information for TCLP by EPA Method 1311 Sample Identification Percent Solids No. of Extractions	SP29-Zone 4-121409 Comp. 89.2 1			
Sample Preparation Information for TCLP by EPA Method 1311 Sample Identification Percent Solids No. of Extractions Type of Extraction	SP25-Zone 4-121409 Comp. 2 91.6 1 Rotary	Sample Preparation Info TCLP by EPA Method 13 Sample Identification Percent Solids No. of Extractions Type of Extraction	ormation for 311 SP30-Zone 4-121409 Comp. 92.8 1 Rotary	Sample Preparation Information for TCLP by EPA Method 1311 Sample Identification Percent Solids No. of Extractions Type of Extraction	SP29-Zone 4-121409 Comp. 89.2 1 Rotary			
Sample Preparation Information for TCLP by EPA Method 1311 Sample Identification Percent Solids No. of Extractions Type of Extraction Extraction Fluid	SP25-Zone 4-121409 Comp. 2 91.6 1 Rotary #1	Sample Preparation Info TCLP by EPA Method 13 Sample Identification Percent Solids No. of Extractions Type of Extraction Extraction Fluid	ormation for 311 SP30-Zone 4-121409 Comp. 92.8 1 Rotary #1	Sample Preparation Information for TCLP by EPA Method 1311 Sample Identification Percent Solids No. of Extractions Type of Extraction Extraction Fluid	SP29-Zone 4-121409 Comp. 89.2 1 Rotary #1			

Comments and Explanations: None

Analyst: T. McCall Data reviewed by: R. Lewis

Page 2 of 3

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Hazardous Waste, Microbiology, NPDES, Potable and Non-potable Water Mobile Environmental Laboratory

PTC Eastbay IA Stockpiles Project

DAL Project No.: 091214-04

#### QUALITY CONTROL RESULTS FOR THE ANALYSIS OF TCLP HEAVY METALS IN SOIL BY EPA METHOD 1311

Sample Preparation Information for		Sample Preparation Info	ormation for	Sample Preparation Information for		
TCLP by EPA Method 1311		TCLP by EPA Method 13	311	TCLP by EPA Method 1311		
Sample Identification	SP35-Zone 4-121409 Comp.	Sample Identification	SP25-Zone 4-121409 Comp. 1 Dup.	Sample Identification	SP25-Zone 4-121409 Comp. 1 M	
Percent Solids	88.9	Percent Solids	91.2	Percent Solids	100	
No. of Extractions	1	No. of Extractions	1	No. of Extractions	1	
Type of Extraction	Rotary	Type of Extraction	Rotary	Type of Extraction	Rotary	
Extraction Fluid	#1	Extractiopn Fluid	#1	Extractiopn Fluid	#1	
Date Extracted	12/15/2009	Date Extracted	12/15/2009	Date Extracted	12/15/2009	

## Sample Preparation Information for TCLP by EPA Method 1311

Sample Identification	LCS
Percent Solids	100
No. of Extractions	1
Type of Extraction	Rotary
Extraction Fluid	#1
Date Extracted	12/15/2009

Comments and Explanations: None

Analyst: T. McCall Data reviewed by: R. Lewis

page 3 of 3



s/m

Ф

Required Client Information:

mmia

bortsk

Requested Due Date/TAT: 5 day

SAMPLE ID

(A-Z, 0-9 / ,-)

Sample IDs MUST BE UNIQUE

SP30-Zone 4- 121409

Zone Zone.3

Zone

Zono

-Zone 2-121409

3

ADDITIONAL COMMENTS

bu

TA

Required Client Information

Section A

P

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1

8290

ITEM #

1

2

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P31

SP35

5day

Page

σ of 12

Smpany: DTC

Address: 2612

Section D



### **CHAIN-OF-CUSTODY / Analytical Request Document**

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\*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.



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### **Report Prepared for:**

Troy Bussey Pioneer Technologies Corporation 2612 Yelm Highway S.E. Suite B Olympia WA 98501-4826

## REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

## **Report Prepared Date:**

January 13, 2010

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

### **Report Information:**

Pace Project #: 10118817 Sample Receipt Date: 12/15/2009 Client Project #: EAST BAY IA STOCKPILES Client Sub PO #: N/A State Cert #: C755

### **Invoicing & Reporting Options:**

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

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

### This report has been reviewed by:

January 13, 2010

Scott Unze, Project Manager (612) 607-6383 (612) 607-6444 (fax) scott.unze@pacelabs.com



### **Report of Laboratory Analysis**

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The results relate only to the samples included in this report.



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### **DISCUSSION**

This report presents the results from the analyses performed on two samples submitted by a representative of Pioneer Technologies Corporation. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 8290. Reporting limits were based on signal-to-noise calculations.

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 38-102%. With the exceptions of three low values, which were flagged "R" on the results tables, the labeled standard recoveries obtained for this project were within the 40-135% target range specified in Method 8290. Since the quantification of the native 2,3,7,8-substituted isomers was based on isotope dilution, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained, or "P" where polychlorinated diphenyl ethers were present.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCDDs and PCDFs at the reporting limits.

A laboratory spike sample was also prepared with the sample batch using clean sand that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 81-104%. These results indicate a high degree of accuracy for these determinations. Matrix spikes were prepared with the sample batch using sample material from a separate project; results from these analyses will be provided upon request.

## **REPORT OF LABORATORY ANALYSIS**

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## Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	
Arizona	AZ0014	Nevada	MN00064_2000
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New Mexico	MN00064
Colorado	MN00064	New York (NEL	11647
Connecticut	PH-0256	North Carolina	27700
EPA Region 5	WD-15J	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (DNR)	959	Oklahoma	D9922
Guam	09-019r	Oregon (ELAP)	MN200001-005
Hawaii	SLD	Oregon (OREL	MN200001-005
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200012	Saipan	MP0003
Indiana		South Carolina	74003001
Indiana	C-MN-01	Tennesee	2818
lowa	368	Tennessee	02818
Kansas	E-10167	Texas	T104704192-08
Kentucky	90062	Utah (NELAP)	PAM
Louisiana	LA0900016	Virginia	00251
Maine	2007029	Washington	C755
Maryland	322	West Virginia	9952C
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-Q
Mississippi	MN00064		

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# Appendix A

Sample Management

Sar	mple	Con	iditio	n Upon Receipt
Pace Analytical"	Ī		T/	· / ///8817
Client Name	:			Project #
Courier: 17 Fed Ex U UPS U USPS C Clie Tracking #: 739222315286	nt 🗖	Com	mercia	Pace Other Optional Pro Due Date Pro Name
Custody Seal on Cooler/Box Present: 1/2 yes	Ц	no	Seal	s intact: LX yes D no
Packing Material: Bubble Wrap	Bage		None	Other Temp Blank: Yes <u>No</u> No
Thermometer Used 80344042 or 179425	Туре	of ice	w We	Blue None 🔲 Samples on ice, cooling process has begun
Cooler Temperature 1,80	Biolo	gical	Tissu	a is Frozen: Yes No Date and Initials of person examining contents: 12-15-29 MC
Temp should be above freezing to 6°C	<u> </u>			Comments:
Chain of Custody Present:	YZIYes	DNo.		1
Chain of Custody Filled Out:		□No		2
Chain of Custody Relinquished:				3.
Sampler Name & Signature on COC:		[]No		4
Samples Arrived within Hold Time:	(Xives			5.
Short Hold Time Analysis (<72hr):		<u>XINo</u>		6
Rush Turn Around Time Requested:	<u>)%%es</u> V			7.
Sufficient Volume:	Dives			8.
Correct Containers Used:	/2HYes		LIN/A	9.
-Pace Containers Used:	Kiyes			
	/LalYes			10.
Filtered volume received for Dissolved tests			SIN/A	11.
		LJINO	LINA	12.
All containers needing acid/base preservation have been				
checked. Noncompliance are noted in 13.	1.11.08	L-1140	LOIVA	Samp#
compliance with EPA recommendation.	□Yes	□No	'DIN/A	
Eventions: VOA Colfern TOC OII and Green Mil DBO Auster	. 🗆 Yes	Xno		Initial when Lot # of added
Samples checked for dechlorination:		[ <sup>1</sup> ]N/o		
Headenace in VOA Viale ( Semm)			17 NVA	15
Trin Blank Present			PIN/A	16
Trip Blank Custody Seals Present	⊡Yes	⊡No	ŽIN/A	
Pace Trip Blank I of # (if purchased):				·
Client Notification/ Resolution:			D	Field Data Required? Y / N
Commonte/ Recelution:			Date	
	<u></u>			
***************************************	<u></u>			
Project Manager Review:		(il	)	Date: 12/15/09
Note: Whenever there is a discrepancy affecting North Ca	irolina ci	ompila	nce sar	nples, a copy of this form will be sent to the Read Adalytical SEMMES, Inc.

Report No.....10118817\_8290

D Elm Street SE, Suite 200, Minneapolis, MN 55414

Page 6 of 12



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## **Reporting Flags**

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- \* = See Discussion

## **REPORT OF LABORATORY ANALYSIS**

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# Appendix B

Sample Analysis Summary



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### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP3 1011 U912 BAL 11.0 10.2 9.92 U910 U912 BLAI	3-ZONE3-12 8817004 226A_12 g g 029 226A_01 & NK-23102	21409 U91226A_17	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 12/14/200 12/15/200 12/21/200 12/27/200	09 14:00 09 10:00 09 21:00 09 02:41	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	2.20 45.00		0.37 0.37	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1 2 3 7 8-PeCDF-1	30	2.00 2.00 2.00	68 80 66
2,3,7,8-TCDD Total TCDD	0.80 44.00		0.26 J 0.26	2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C -13C	2.00 2.00 2.00	69 83 95
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	2.20 4.80 60.00	 	0.81 J 0.59 J 0.70	1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,7,8,9-HxCDF	-13C -13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	75 78 70 102
1,2,3,7,8-PeCDD Total PeCDD	2.90 49.00		1.10 J 1.10	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD	-13C F-13C F-13C	2.00 2.00 2.00	75 70 60
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	3.20 2.10	3.4	0.46 l 0.43 J 0.48 J	1,2,3,4,6,7,8-HpCD OCDD-13C	D-13C	2.00 4.00	73 39 R
1,2,3,7,8,9-HxCDF Total HxCDF	1.60 37.00		0.51 J 0.47	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	2.60 8.20 4.40 91.00	  	0.73 J 0.58 0.55 J 0.62	2,3,7,8-TCDD-37Cl	4	0.20	80
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	29.00 2.40 34.00		0.42 0.67 J 0.54	Total 2,3,7,8-TCDI Equivalence: 9.5 no (Using 2005 WHO	) g/Kg Factors - L	Jsing PRL/2	where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	130.00 240.00		0.51 0.51				
OCDF OCDD	130.00 930.00		0.78 0.73				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Estimated value

R = Recovery outside target range

I = Interference present

## **REPORT OF LABORATORY ANALYSIS**

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ND = Not Detected NA = Not Applicable

NC = Not Calculated



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### Method 8290 Sample Analysis Results

Client - Pioneer Technologies Corporation

Client's Sample ID Lab Sample ID Filename Injected By Total Amount Extracted % Moisture Dry Weight Extracted ICAL ID CCal Filename(s) Method Blank ID	SP3 1011 U912 BAL 11.1 13.8 9.59 U910 U912 BLA	4-ZONE3-12 8817005 226A_13 g g 029 226A_01 & NK-23102	21409 U91226A_17	Matrix Dilution Collected Received Extracted Analyzed	Solid NA 12/14/200 12/15/200 12/21/200 12/27/200	9 14:15 9 10:00 9 21:00 9 03:30	
Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards		ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND 4.30		0.45 0.45	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PoCDE-1	30	2.00 2.00 2.00	60 64 59
2,3,7,8-TCDD Total TCDD	ND 5.30		0.37 0.37	2,3,4,7,8-PeCDF-1 1,2,3,7,8-PeCDD-1	3C 3C 3C	2.00 2.00 2.00	63 74
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND 1.10 7.40	 	0.62 0.73 J 0.67	1,2,3,4,7,6-HXCDF 1,2,3,6,7,8-HXCDF 2,3,4,6,7,8-HXCDF 1,2,3,7,8,9-HXCDF 1,2,3,4,7,8,9-HXCDF	-13C -13C -13C -13C	2.00 2.00 2.00 2.00 2.00	82 75 70 62 87
1,2,3,7,8-PeCDD Total PeCDD	ND 5.80		0.68 0.68	1,2,3,6,7,8-HxCDD 1,2,3,4,6,7,8-HpCD	-13C 0F-13C	2.00 2.00 2.00	75 65
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	0.76	1.90  0.78	0.37 P 0.38 J 0.33 I	1,2,3,4,6,7,8-HpCD OCDD-13C	)D-13C	2.00 2.00 4.00	69 38 R
1,2,3,7,8,9-HxCDF Total HxCDF	ND 9.80		0.68 0.44	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD	-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND 3.00  28.00	 1.60 	0.78 0.76 J 0.69 I 0.75	2,3,7,8-TCDD-37Cl	4	0.20	64
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	12.00 ND 38.00	 	0.56 1.10 0.82	Total 2,3,7,8-TCDI Equivalence: 2.9 n (Using 2005 WHO	D g/Kg Factors - U	sing PRL/2	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	99.00 320.00		0.58 0.58				
OCDF OCDD	52.00 1200.00		0.73 0.82				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit.

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Estimated value

R = Recovery outside target range

P = PCDE Interference

I = Interference present

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ND = Not Detected NA = Not Applicable

NC = Not Calculated



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### Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-23102	Matrix	Solid
Filename	F91224B_06	Dilution	NA
Total Amount Extracted	10.0 g	Extracted	12/21/2009 21:00
ICAL ID	F91217	Analyzed	12/24/2009 13:19
CCal Filename(s)	F91224B_01 & F91224B_08	Injected By	AE

Native Isomers	<b>Conc</b> ng/Kg	<b>EMPC</b> ng/Kg	<b>RL</b> ng/Kg	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	ND ND		0.140 0.140	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C 1,2,3,7,8-PoCDE-13C	2.00 2.00 2.00	67 74
2,3,7,8-TCDD Total TCDD	ND ND		0.180 0.180	2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C 1,2,3,7,8-PeCDD-13C	2.00 2.00 2.00	68 91 74
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	ND ND ND		0.100 0.079 0.091	1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.00 2.00 2.00 2.00	81 73 70
1,2,3,7,8-PeCDD Total PeCDD	ND ND		0.100 0.100	1,2,3,4,7,8-HxCDD-13C 1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C 1,2,3,4,6,7,8-HpCDF-13C	2.00 2.00 2.00	80 81 65
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2.3.4.6.7.8-HxCDF	ND ND ND		0.074 0.097 0.093	1,2,3,4,7,6,9-hpCDF-13C 1,2,3,4,6,7,8-HpCDD-13C OCDD-13C	2.00 2.00 4.00	50 71 37 R
1,2,3,7,8,9-HxCDF Total HxCDF	ND ND		0.083 0.087	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.00 2.00	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	ND ND ND ND	  	0.120 0.110 0.120 0.120	2,3,7,8-TCDD-37Cl4	0.20	74
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	ND ND ND	 	0.110 0.130 0.120	Total 2,3,7,8-TCDD Equivalence: 0.20 ng/Kg (Using 2005 WHO Factors -	Using PRL/	2 where ND)
1,2,3,4,6,7,8-HpCDD Total HpCDD	ND ND		0.140 0.140			
OCDF OCDD	ND ND		0.340 0.500			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures. R = Recovery outside target range

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### Method 8290 Laboratory Control Spike Results

Lab Sample ID Filename Total Amount Extracted ICAL ID CCal Filename(s) Method Blank ID	LCS F91 10.0 F91 F91 BLA	S-23103 224B_02 ) g 217 224B_01 & NK-23102	F91224B_08	Matrix Dilution Extracted Analyzed Injected By	Solid NA 12/21/2009 21: 12/24/2009 10: AE	00 15
Native Isomers	<b>Qs</b> (ng)	<b>Qm</b> (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF Total TCDF	0.20	0.20	100	2,3,7,8-TCDF-13C 2,3,7,8-TCDD-13C	2.0 2.0	69 72
2,3,7,8-TCDD Total TCDD	0.20	0.20	98	1,2,3,7,8-PeCDF-13C 2,3,4,7,8-PeCDF-13C 1,2,3,7,8-PeCDD-13C	2.0 2.0 2.0	75 83 112
1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF Total PeCDF	1.0 1.0	1.0 0.96	104 96	1,2,3,4,7,8-HxCDF-13C 1,2,3,6,7,8-HxCDF-13C 2,3,4,6,7,8-HxCDF-13C 1,2,3,7,8,9-HxCDF-13C	2.0 2.0 2.0 2.0	80 86 76 66
1,2,3,7,8-PeCDD Total PeCDD	1.0	0.86	86	1,2,3,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HxCDD-13C 1,2,3,4,6,7,8-HpCDF-13C	2.0 2.0 2.0	90 97 72 63
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF	1.0 1.0 1.0	0.97 0.96 1.00	97 96 100	1,2,3,4,7,6,7,8-HpCDD-13C 0CDD-13C	2.0 2.0 4.0	78 40
1,2,3,7,8,9-HxCDF Total HxCDF	1.0	0.95	95	1,2,3,4-TCDD-13C 1,2,3,7,8,9-HxCDD-13C	2.0 2.0	NA NA
1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD Total HxCDD	1.0 1.0 1.0	0.92 0.90 0.81	92 90 81	2,3,7,8-TCDD-37Cl4	0.20	66
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF Total HpCDF	1.0 1.0	1.0 0.93	101 93			
1,2,3,4,6,7,8-HpCDD Total HpCDD	1.0	0.88	88			
OCDF OCDD	2.0 2.0	1.9 2.0	94 100			

Qs = Quantity Spiked

Qm = Quantity Measured

Rec. = Recovery (Expressed as Percent) R = Recovery outside of target range

Nn = Value obtained from additional analysis

NA = Not Applicable \* = See Discussion

## **REPORT OF LABORATORY ANALYSIS**

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Y = RF averaging used in calculations

PTC Project: East Bay IA Stockpile

### DAL Project No.: 100212-01

### ANALYTICAL RESULTS FOR THE ANALYSIS OF TCLP HEAVY METALS IN SOIL BY EPA METHOD 1311

Sample Identification	Date Analyzed	Lead (Pb)	Data Flags
Chemical Abstract Number (CAS)		7439-92-1	
Analytical Method		EPA 6020	
Units		(mg/L)	
Method Blank	2/17/2010	nd	
SP36-Zone 4-021210-comp	2/17/2010	nd	
SP36-Zone 4-021210-comp Dup	2/17/2010	nd	
100212-LCS	2/17/2010	104%	
SP36-Zone 4-021210-comp MS	2/17/2010	110%	
SP36-Zone 4-0212310-comp MSD	2/17/2010	109%	
Method Reporting Limit (MRL)		0.25	

WA-DOE-Laboratory Certification No.: C2013

"nd" indicates the analyte was not detected at or above the listed Method Reporting Limit.

"n/a" indicates not applicable

Comments and Explanations: None

Analyst: C. Altis Data reviewed by: R. Lewis

### Data Quality Review East Bay Redevelopment Site – Interim Action (IA) Soil Stockpile Samples

### 1. Precision

Precision was assessed via the relative percent difference (RPD) for matrix spike duplicates. As shown in the analytical reports, all documented matrix spike duplicate RPDs were within acceptable ranges listed in the IA Work Plan (PIONEER 2009), with the following exceptions:

- Matrix spike duplicate RPDs for arsenic were either outside the acceptable range listed in the IAWP or were not reported (due to matrix interferences or other issues) for all samples <u>except</u> for the samples associated with SP07 through SP16\_2. Matrix spike duplicate RPDs for lead were either outside the acceptable range listed in the IAWP or were not reported (due to matrix interferences or other issues) for all samples <u>except</u> for the samples associated with SP07 through SP16\_2. Matrix spike duplicate RPDs for lead were either outside the acceptable range listed in the IAWP or were not reported (due to matrix interferences or other issues) for all samples <u>except</u> for the samples associated with SP07 through SP08\_2 and SP12 through SP16\_2. Matrix spike duplicate RPDs for cadmium were either outside the acceptable range listed in the IAWP or were not reported (due to matrix interferences or other issues) for the samples associated with SP20 through SP29\_2, SP33, and SP34. A J-flag was added to all of the affected sample results in which the target analyte was detected since the frequency and nature of unacceptable RPDs may be indicative of a larger laboratory issue.
- United States Environmental Protection Agency (USEPA) Method SW846-8021B matrix spike duplicate RPDs for o-xylene analyses associated with the SP09, SP10, SP17, SP18, and SP20 through SP23 samples were outside the acceptable range listed in the IAWP, but the target analyte was not detected in these samples.
- USEPA Method SW846-8290 matrix spike duplicate RPDs for 1,2,3,4,6,7,8,9octachlorodibenzo-p-dioxin (OCDD) associated with the SP21 through SP26 samples were outside the acceptable range listed in the IAWP. In addition, the matrix spike duplicate RPDs for 1,2,3,4,7,8,9-heptachlorodibenzenofuran associated with the SP24\_1 through SP26 samples were outside the acceptable range listed in the IAWP. The associated results were not qualified given the ubiquitous background presence of these congeners.

### 2. Accuracy

Accuracy was assessed by analysis of laboratory method blanks as well as recoveries in blank spikes, matrix spikes, and surrogates. As shown in the analytical reports, no analytes were detected in laboratory method blanks, and documented recoveries for blank spikes, matrix spikes, and primary sample surrogates were within acceptable ranges listed in the IAWP (PIONEER 2009), with the following exceptions:

- Matrix spike recoveries for arsenic were either outside the acceptable range listed in the IAWP or were not reported (due to matrix interferences or other issues) for all samples <u>except</u> for the samples associated with SP07 through SP08\_2 and SP12 through SP16\_2. Matrix spike recoveries for lead were either outside the acceptable range listed in the IAWP or were not reported (due to matrix interferences or other issues) for all samples <u>except</u> for the samples associated with SP12 through SP16\_2. Matrix spike recoveries for cadmium were either outside the acceptable range listed in the IAWP or were not reported (due to matrix interferences or other issues) for all samples <u>except</u> for the samples associated with SP12 through SP16\_2. Matrix spike recoveries for cadmium were either outside the acceptable range listed in the IAWP or were not reported (due to matrix interferences or other issues) for the samples associated with SP07 through SP08\_2, SP20 through SP29\_2, SP33, and SP34. A J-flag was added to all of the affected sample results in which the target analyte was detected since the frequency and nature of unacceptable recoveries may be indicative of a larger laboratory issue.
- USEPA Method SW846-8021B matrix spike recoveries for ethylbenzene and/or xylenes analyses associated with the SP11, SP33, and SP34 samples were outside the acceptable range listed in the IAWP, but none of the target analytes were detected in these samples.
- USEPA Method SW846-8021B surrogate recoveries associated with the SP12 and SP17 samples were barely outside the acceptable range listed in the IAWP (but not the acceptable range for Washington State Department of Ecology [Ecology] Method NWTPH-G), but none of the target analytes were detected in these samples.

- The analyte 2-methylnapthalene was detected in the method blank for USEPA Method SW846-8270 analyses associated with the SP33 and SP34 samples, but was not detected in these primary samples.
- The surrogate recovery for USEPA Method SW846-8270 associated with the SP18 sample was outside the acceptable range listed in the IAWP, and a J-flag was added to the detected SP18 results. The surrogate recovery for USEPA Method SW846-8270 associated with the SP20 sample was also outside the acceptable range listed in the IAWP, but none of the target analytes were detected in the SP20 sample.
- The surrogate recovery for Ecology Method NWTPH-Dx associated with the SP29\_1 sample was outside the acceptable range listed in the IAWP, but none of the target analytes were detected in that sample.
- Trace levels of select congeners were detected in several dioxins/furans method blanks, but corresponding congener results associated with these method blanks were appropriately qualified by the laboratory.
- The matrix spike recoveries for OCDD associated with the USEPA Method SW846-8290 analyses of the SP21 through SP26 samples were outside the acceptable range listed in the IAWP. The associated results were not qualified given the ubiquitous background presence of OCDD.
- The surrogate recoveries for OCDD-carbon 13 associated with the USEPA Method SW846-8290 analyses of the SP13, SP22, SP25\_3, SP33, and SP34 samples were outside the acceptable range listed in the IAWP. The associated results were not qualified since the OCDD-carbon 13 surrogates were barely outside the acceptable range and the recoveries for other USEPA Method SW846-8290 surrogates in these samples were acceptable.

### 3. Representativeness

Representativeness was assessed by evaluating the sample collection, preservation, handling, and analysis procedures. Samples were collected, preserved, handled, and analyzed in accordance with the IAWP (PIONEER 2009), which was designed to obtain representative samples. In addition, all samples were extracted and analyzed within appropriate holding times listed in the IAWP (PIONEER 2009).

### 4. Comparability

Comparability was assessed by comparing current sample collection and analysis procedures with historical procedures. The samples were collected and analyzed with standard procedures and are comparable with other site data as qualified.

### 5. Sensitivity

Sensitivity was assessed by comparing actual practical quantitation limits (PQLs) with project-specific PQL expectations. Because the laboratories selected to perform IA analyses were different than the presumptive laboratories at the time the IAWP was prepared, some of the PQL expectations needed to be adjusted from what is listed in the IAWP (PIONEER 2009). Based on personal correspondence with the Ecology Site Manager (Ecology 2009b), some of the IAWP PQL expectations were adjusted prior to the IA by considering Ecology's PQL expectations (Ecology 1995), laboratory capabilities, and IA cleanup levels. As shown in the following table, the laboratories were able to achieve actual PQLs that were equal to or lower than these revised PQL expectations, with the exception of a single dioxins/furans sample.

Constituent Type	IAWP PQL Expectations (PIONEER 2009) (mg/kg)	Revised PQL Expectations (Ecology 2009b) (mg/kg)	Actual PQLs During Interim Action (mg/kg)
Metals	2	0.25	0.25
PAHs <sup>(1)</sup>	0.1	0.01	0.01
Dioxins/furans <sup>(2)</sup>	0.000003	0.000005	$0.0000026 - 0.0000063^{(3)}$
TPH-D	50	50	25
TPH-HO	100	100	100
TPH-G	10	10	5
BTEX (1)	0.01	0.1	0.05 - 0.1
PCBs <sup>(1)</sup>	N/A	N/A	0.05

Notes:

BTEX = Benzene, toluene, ethylbenzene, and xylenes

Dioxins/furans = Chlorinated dibenzo-p-dioxins and chlorinated dibenzofurans

IAWP = Interim Action Work Plan (PIONEER 2009)

N/A = Not applicable

PAHs = Polycyclic aromatic hydrocarbons

PCBs = Polychlorinated biphenyls

PQL = Practical quantitation limit

TPH-D = Total petroleum hydrocarbons in the diesel range

TPH-G = Total petroleum hydrocarbons in the gasoline range

TPH-HO = Total petroleum hydrocarbons in the heavy oil range

<sup>(1)</sup> PQL values shown are for each constituent.

<sup>(2)</sup> Total PQL calculated using toxicity equivalency factors in Washington Administrative Code 173-340-708(8).

<sup>(3)</sup> Only one PQL out of 36 PQLs exceeded 0.000005 mg/kg.

### 6. Completeness

Completeness was assessed by calculating the percentage of useable results to all results. A total of 1,825 sample analyses were performed. All of the analyte results are useable as qualified. Thus, the completeness of the analytical data is 100 percent.

### 7. Conclusions

This data is deemed acceptable for use as presented by the laboratory, subject to the qualifications noted in this document. No corrective action or additional data qualification is necessary.

### References

Ecology 1995. Toxics Cleanup Program Guidance on Sampling and Data Analysis Methods, Publication No. 94-49, January.

Ecology 2009b. Personal correspondence between Steve Teel and Troy Bussey regarding approval of proposed changes to practical quantitation limit expectations listed in IAWP, June 5.

PIONEER Technologies Corporation (PIONEER) 2009. Port of Olympia East Bay Site: Interim Action Work Plan, May.

USEPA 2004. USEPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Data Review, October.

USEPA 2005. USEPA Analytical Services Branch (ASB) National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins (CDDs) and Chlorinated Dibenzofurans (CDFs) Data Review, September.

USEPA 2008. USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Method Data Review, July.