

CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA

AMEC Earth & Environmental
550 South Wadsworth Boulevard
Suite 500
Lakewood, CO 80226

Package ID T713DF2

Task Order 313150010

SDG No. Multiple

No. of Analyses 4

Laboratory Pace - Minneapolis

Reviewer E. Wessling

Analysis/Method Dioxins/Furans by Method 1613B

Date: November 21, 2005

Reviewer's Signature [Signature]

ACTION ITEMS*

1. **Case Narrative
Deficiencies**

2. **Out of Scope
Analyses**

3. **Analyses Not Conducted**

4. **Missing Hardcopy
Deliverables**

5. **Incorrect Hardcopy
Deliverables**

6. **Deviations from Analysis**

Protocol, e.g.,

Holding Times

GC/MS Tune/Inst. Performance

Calibration

Method blanks

Surrogates

Matrix Spike/Dup LCS

Field QC

Internal Standard Performance

Compound Identification

Quantitation

System Performance

Qualifications were assigned for the following:

--EMPCs qualified as estimated nondetects

--reanalysis rejected over original analysis for IOJ1337-01

-- method blank contamination

--Laboratory control sample %R exceedance

COMMENTS^b

^a Subcontracted analytical laboratory is not meeting contract and/or method requirements.

^b Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



DATA VALIDATION REPORT

Topanga Fire Surface Water Samples

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUPS: IOJ1337, IOJ1234, IOJ1235, IOJ1236

Prepared by

AMEC—Denver Operations
355 South Teller Street Suite 300
Lakewood, Colorado 80226

1. INTRODUCTION

Task Order Title:	Topanga Fire Ash Samples
Contract Task Order #:	313150010
Sample Delivery Group #:	Multiple
Project Manager:	P. Costa
Matrix:	Water
Analysis:	Dioxins/Furans
QC Level:	Level IV
No. of Samples:	4
No. of Reanalyses/Dilutions:	1
Reviewer:	E. Wessling
Date of Review:	November 21, 2005

The samples listed in Table 1 were validated based on the guidelines outlined in the *AMEC Data Validation Procedure for Dioxins and Furans (DVP-19, Rev. 1)*, *EPA Method 1613*, and the *National Functional Guidelines For Chlorinated Dioxin/Furan Data Review (8/02)*. Any deviations from these procedures and guidelines are documented herein. Qualifiers were applied in cases where the data did not meet the required QC criteria or where special consideration by the data user is required. Data qualifiers were placed on Form Is with the associated qualification codes. Analytes that were rejected for any reason are denoted on the Form I as having only the "R" data qualifier and associated qualification code(s) denoting the reason for rejection. Any additional problems with the data that may have resulted in an estimated value were not denoted by a qualification code since the data had already been rejected.

Table 1. Sample Identification

Client ID	Laboratory ID (Del Mar)	Laboratory ID (Pace)	Matrix	COC Method
WC-1	IOJ1337-01	1021959001	water	1613
WC-1	IOJ1337-01	1021959001-R	water	1613
PCC-1	IOJ1234-01	1021907001	water	1613
CF-1	IOJ1235-01	1021911001	water	1613
SSM-1	IOJ1236-01	1021912001	water	1613

2. DATA VALIDATION FINDINGS

2.1 SAMPLE MANAGEMENT

Following are findings associated with sample management:

2.1.1 Sample Preservation, Handling, and Transport

The samples in this SDG were received at Del Mar Analytical within the temperature limits of 4°C ±2°C, with the exception of WC-1 that was received at 17°C. As the samples were couriered directly from the site to the laboratory, this sample did not have sufficient time to cool. The samples were shipped to Pace for dioxin/furan analysis and were received within the temperature limits of 4°C ±2°C. According to the case narrative and laboratory login sheet, the samples were received intact and in good condition at both laboratories. No qualifications were required.

2.1.2 Chain of Custody

The COC and transfer COC were legible and signed by the appropriate field and laboratory personnel, and accounted for the analysis presented in this SDG. As the samples were couriered directly to Del Mar Analytical-Irvine, custody seals were not required. The cooler received by Pace had no custody seals present for samples IOJ1234-01, IOJ1232-01, IOJ1231-01, IOJ1235-01, IOJ1236-01, and IOJ1337-01. All other samples had custody seals present and intact. The EPA IDs were added to the sample result summaries by the reviewer. No qualifications were required.

2.1.3 Holding Times

The samples were extracted and analyzed within a year of collection. No qualifications were required.

2.2 INSTRUMENT PERFORMANCE

Following are findings associated with instrument performance:

2.2.1 GC Column Performance

A Windows Defining Mix (WDM) containing the first and last eluting congeners of each descriptor and isomer specificity compounds was not analyzed prior to the initial calibration sequence or at the beginning of each analytical sequence; however, the first and last eluting congeners and isomer specificity compounds were added to the midpoint of the initial calibration and to the continuing calibration standards (see section 2.3.2). The GC column performance in the calibrations was acceptable, with the height of the valley between the closely eluting isomers and 2,3,7,8-TCDD reported as less than 25%. No qualifications were required.

2.2.2 Mass Spectrometer Performance

The mass spectrometer performance was acceptable with the static resolving power greater than 10,000. No qualifications were required.

2.3 CALIBRATION

2.3.1 Initial Calibration

The initial calibration was analyzed 10/22/05 for instrument F and on 11/04/05 for instrument U. The calibrations consisted of five concentration level standards (CS1 through CS5) analyzed to verify instrument linearity. The initial calibrations were acceptable with %RSDs $\leq 20\%$ for the 16 native compounds (calibration by isotope dilution) and $\leq 35\%$ for the one native and all labeled compounds (calibration by internal standard). The relative retention times and ion abundance ratios were within the QC limits listed in Method 1613 for all standards. A representative number of %RSDs were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

2.3.2 Continuing Calibration

Calibration verification (VER) consisted of a mid-level standard (CS3) analyzed at the beginning of each analytical sequence. The VER was acceptable with the concentrations within the acceptance criteria listed in Table 6 of EPA Method 1613. The ion abundance ratios and relative retention times were within the method QC limits. A representative number of %Ds were verified from the raw data, and no calculation or transcription errors were noted. No qualifications were required.

WDM and isomer specificity compounds were added to the VER standard instead of being analyzed separately, as noted in section 2.2.1 of this report. No adverse effect was observed with this practice.

2.4 BLANKS

Two method blanks (Blank 8208 and Blank 8223) were extracted and analyzed with the samples in this SDG. Seven target compounds, five interferences with target compounds, and four total isomers were reported in the method blank 8208. Target compounds 1,2,3,4,6,7,8-HpCdd and OCDF were reported in method blank 8223 at concentrations of 0.0000041 and 0.0000068 ug/L, respectively. An interference with OCDD was also reported in method blank 8223. Any detects for these target compounds \leq five times the concentration reported in the method blank were qualified as estimated, "UJ," in the site samples of this SDG. Detects for total dioxin and furan isomers at concentrations \leq five times the concentration reported in the method blank were qualified as estimated, "UJ," in the associated samples. In instances where the total concentration included peaks not present in the method blank as well as the method blank contamination, the total concentration was considered estimated, "J," as a portion of the total concentration was considered blank contamination. There were no other target compound detects reported in the method blank. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No further qualifications were required.

2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Two blank spike/blank spike duplicate pairs (LCS/LCSD 8209/8210 and LCS/LCSD 8224/8225) were extracted and analyzed with the samples in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613, with the exception of OCDD in 8209 and 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,6,7,8-HpCDD, and OCDD in 8210. Detects for these compounds were qualified as estimated, "J" in the associated site sample WC-1. No further qualifications were required.

2.6 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD analyses were not performed in this SDG. Evaluation of method accuracy was based on the OPR results. No qualifications were required.

2.7 FIELD QC SAMPLES

Following are findings associated with field QC:

2.7.1 Field Blanks and Equipment Rinsates

The samples in this SDG had no identified field QC samples. No qualifications were required.

2.7.2 Field Duplicates

No field duplicate samples were identified for this SDG.

2.8 INTERNAL STANDARDS

The labeled standard recoveries were within the acceptance criteria listed in Table 7 of Method 1613. No qualifications were required.

2.9 COMPOUND IDENTIFICATION

The laboratory analyzed for polychlorinated dioxins/furans by EPA Method 1613. The compound identifications were verified from the raw data and no false negatives or positives were noted. However, the laboratory was experiencing sporadic cross-contamination problems which they attributed to incomplete glassware cleaning procedures. One sample, WC-1, exhibited target compound detects in the reanalysis. These detects were similar to the contamination that was detected in the original analysis LCS/LCSD pair. The reanalysis was rejected in favor of the original analysis by the reviewer. No further qualifications were required.

2.10 COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantitation was verified from the raw data. The laboratory calculated and reported compound-specific detection limits. Any detects below the laboratory lower calibration level were qualified as estimated, "J," by the laboratory. Any reported EMPC was qualified as an estimated nondetect, "UJ." No further qualifications were required.

Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID IOJ1234-01
Lab Sample ID 1021907001
Filename F51109C_15
Injected By BAL
Total Amount Extracted 951 mL
% Moisture NA
Dry Weight Extracted NA
ICAL Date 10/22/2005
CCal Filename(s) F51109C_02
Method Blank ID BLANK-8223

Matrix Water
Dilution NA
Collected 10/18/2005
Received 10/20/2005
Extracted 11/08/2005
Analyzed 11/10/2005 10:19

Res	Real	Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
u		2,3,7,8-TCDF	ND	— 0.0000024		2,3,7,8-TCDF-13C	2.00	72
u		Total TCDF	ND	— 0.0000024		2,3,7,8-TCDD-13C	2.00	82
						1,2,3,7,8-PeCDF-13C	2.00	74
u		2,3,7,8-TCDD	ND	— 0.0000020		2,3,4,7,8-PeCDF-13C	2.00	81
u		Total TCDD	ND	— 0.0000020		1,2,3,7,8-PeCDD-13C	2.00	98
						1,2,3,4,7,8-HxCDF-13C	2.00	81
u		1,2,3,7,8-PeCDF	ND	— 0.0000035		1,2,3,6,7,8-HxCDF-13C	2.00	78
J	DNQ	2,3,4,7,8-PeCDF	0.0000025	— 0.0000018	J	2,3,4,6,7,8-HxCDF-13C	2.00	79
J	DNQ	Total PeCDF	0.0000160	— 0.0000027	J	1,2,3,7,8,9-HxCDF-13C	2.00	78
						1,2,3,4,7,8-HxCDD-13C	2.00	78
u		1,2,3,7,8-PeCDD	ND	— 0.0000026		1,2,3,6,7,8-HxCDD-13C	2.00	87
u		Total PeCDD	ND	— 0.0000026		1,2,3,4,6,7,8-HpCDF-13C	2.00	71
						1,2,3,4,7,8,9-HpCDF-13C	2.00	60
u	DNQ	1,2,3,4,7,8-HxCDF	0.0000050	— 0.0000022	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	73
u	* IO	1,2,3,6,7,8-HxCDF	— 0.0000027	0.0000019	I	OCDD-13C	4.00	53
u		2,3,4,6,7,8-HxCDF	ND	— 0.0000023				
J	DNQ	1,2,3,7,8,9-HxCDF	0.0000028	— 0.0000028	J	1,2,3,4-TCDD-13C	2.00	NA
J	DNQ	Total HxCDF	0.0000310	— 0.0000023	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
u		1,2,3,4,7,8-HxCDD	ND	— 0.0000032		2,3,7,8-TCDD-37Cl4	0.20	90
u	* IO	1,2,3,6,7,8-HxCDD	— 0.0000170	0.0000032	I			
u		1,2,3,7,8,9-HxCDD	ND	— 0.0000027				
J	DNQ	Total HxCDD	0.0000061	— 0.0000031	J			
J	DNQ	1,2,3,4,6,7,8-HpCDF	0.0000320	— 0.0000028	J			
u		1,2,3,4,7,8,9-HpCDF	ND	— 0.0000026				
J	DNQ	Total HpCDF	0.0000320	— 0.0000027	J			
		1,2,3,4,6,7,8-HpCDD	0.0003000	— 0.0000064				
		Total HpCDD	0.0004500	— 0.0000064				
J	DNQ	OCDF	0.0000660	— 0.0000047	BJ			
		OCDD	0.0020000	— 0.0000083				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
LOD = Limit of Detection. Totals are averages of individual isomer LODs.
D = Result obtained from analysis of diluted sample
B = Less than 10 times higher than method blank level
P = Recovery outside of method 1613 control limits
J = Concentration detected is below the calibration range
Nn = Value obtained from additional analysis

I = Interference
E = PCDE Interference
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion

Report No.....1021907

REPORT OF LABORATORY ANALYSIS

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Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID IOJ1235-01
 Lab Sample ID 1021911001
 Filename F51110A_04
 Injected By SMT
 Total Amount Extracted 1020 mL
 % Moisture NA
 Dry Weight Extracted NA
 ICAL Date 10/22/2005
 CCal Filename(s) F51109C_18
 Method Blank ID BLANK-8223

Matrix Water
 Dilution NA
 Collected 10/18/2005
 Received 10/20/2005
 Extracted 11/08/2005
 Analyzed 11/10/2005 15:26

Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	—0.00000120		2,3,7,8-TCDF-13C	2.00	67
Total TCDF	ND	—0.00000120		2,3,7,8-TCDD-13C	2.00	75
				1,2,3,7,8-PeCDF-13C	2.00	68
2,3,7,8-TCDD	ND	—0.00000130		2,3,4,7,8-PeCDF-13C	2.00	74
Total TCDD	ND	—0.00000130		1,2,3,7,8-PeCDD-13C	2.00	90
				1,2,3,4,7,8-HxCDF-13C	2.00	75
1,2,3,7,8-PeCDF	ND	—0.00000180		1,2,3,6,7,8-HxCDF-13C	2.00	77
2,3,4,7,8-PeCDF	ND	—0.00000092		2,3,4,6,7,8-HxCDF-13C	2.00	74
Total PeCDF	ND	—0.00000140		1,2,3,7,8,9-HxCDF-13C	2.00	74
				1,2,3,4,7,8-HxCDD-13C	2.00	74
1,2,3,7,8-PeCDD	ND	—0.00000160		1,2,3,6,7,8-HxCDD-13C	2.00	79
Total PeCDD	ND	—0.00000160		1,2,3,4,6,7,8-HpCDF-13C	2.00	72
				1,2,3,4,7,8,9-HpCDF-13C	2.00	61
1,2,3,4,7,8-HxCDF	ND	—0.00000098		1,2,3,4,6,7,8-HpCDD-13C	2.00	78
1,2,3,6,7,8-HxCDF	ND	—0.00000099		OCDD-13C	4.00	62
2,3,4,6,7,8-HxCDF	ND	—0.00000110				
1,2,3,7,8,9-HxCDF	ND	—0.00000130		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	—0.00000110		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	—0.00000130		2,3,7,8-TCDD-37Cl4	0.20	83
1,2,3,6,7,8-HxCDD	ND	—0.00000130				
1,2,3,7,8,9-HxCDD	ND	—0.00000130				
Total HxCDD	ND	—0.00000130				
1,2,3,4,6,7,8-HpCDF	ND	—0.00000140				
1,2,3,4,7,8,9-HpCDF	ND	—0.00000170				
Total HpCDF	ND	—0.00000150				
1,2,3,4,6,7,8-HpCDD	ND	—0.00000150				
Total HpCDD	ND	—0.00000150				
OCDF	—0.00000690	0.0000160	I			
OCDD	0.000015	—0.00000390	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
 EMPC = Estimated Maximum Possible Concentration
 LOD = Limit of Detection. Totals are averages of individual isomer LODs.
 D = Result obtained from analysis of diluted sample
 B = Less than 10 times higher than method blank level
 P = Recovery outside of method 1613 control limits
 J = Concentration detected is below the calibration range
 Nn = Value obtained from additional analysis

I = Interference
 E = PCDE Interference
 ND = Not Detected
 NA = Not Applicable
 NC = Not Calculated
 * = See Discussion

Report No.....1021911

Level IV Validated
REPORT OF LABORATORY ANALYSIS

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Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOJ1236-01	<i>SSM-1</i>
Lab Sample ID	1021912001	
Filename	F51110A_05	
Injected By	SMT	
Total Amount Extracted	893 mL	Matrix
% Moisture	NA	Dilution
Dry Weight Extracted	NA	Collected
ICAL Date	10/22/2005	Received
CCal Filename(s)	F51109C_18	Extracted
Method Blank ID	BLANK-8223	Analyzed
		Water
		10/18/2005
		10/20/2005
		11/08/2005
		11/10/2005 16:15

CCal Filename(s)		F51109C_18		Extracted		11/10/2005 16:15			
Method Blank ID		BLANK-8223		Analyzed					
Prep	Anal	Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery	
u	u	2,3,7,8-TCDF	ND	—	0.0000015	2,3,7,8-TCDF-13C	2.00	63	
		Total TCDF	ND	—	0.0000015	2,3,7,8-TCDD-13C	2.00	72	
						1,2,3,7,8-PeCDF-13C	2.00	65	
		2,3,7,8-TCDD	ND	—	0.0000017	2,3,4,7,8-PeCDF-13C	2.00	69	
		Total TCDD	ND	—	0.0000017	1,2,3,7,8-PeCDD-13C	2.00	84	
						1,2,3,4,7,8-HxCDF-13C	2.00	69	
		1,2,3,7,8-PeCDF	ND	—	0.0000019	1,2,3,6,7,8-HxCDF-13C	2.00	74	
		2,3,4,7,8-PeCDF	ND	—	0.0000014	2,3,4,6,7,8-HxCDF-13C	2.00	70	
		Total PeCDF	ND	—	0.0000016	1,2,3,7,8,9-HxCDF-13C	2.00	69	
						1,2,3,4,7,8-HxCDD-13C	2.00	69	
u	u	1,2,3,7,8-PeCDD	ND	—	0.0000024	1,2,3,6,7,8-HxCDD-13C	2.00	74	
		Total PeCDD	ND	—	0.0000024	1,2,3,4,6,7,8-HpCDF-13C	2.00	66	
						1,2,3,4,7,8,9-HpCDF-13C	2.00	55	
		1,2,3,4,7,8-HxCDF	—	0.0000016	0.0000016	I	1,2,3,4,6,7,8-HpCDD-13C	2.00	69
		1,2,3,6,7,8-HxCDF	ND	—	0.0000014		OCDD-13C	4.00	47
		2,3,4,6,7,8-HxCDF	ND	—	0.0000018				
		1,2,3,7,8,9-HxCDF	ND	—	0.0000023		1,2,3,4-TCDD-13C	2.00	NA
		Total HxCDF	0.0000027	—	0.0000018	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
		1,2,3,4,7,8-HxCDD	ND	—	0.0000014		2,3,7,8-TCDD-37Cl4	0.20	79
u	u	1,2,3,6,7,8-HxCDD	0.0000023	—	0.0000012	J			
		1,2,3,7,8,9-HxCDD	ND	—	0.0000018				
		Total HxCDD	0.0000023	—	0.0000015	J			
		1,2,3,4,6,7,8-HpCDF	0.0000050	—	0.0000014	J			
		1,2,3,4,7,8,9-HpCDF	ND	—	0.0000022				
		Total HpCDF	0.0000110	—	0.0000018	J			
		1,2,3,4,6,7,8-HpCDD	0.0000350	—	0.0000027	BJ			
		Total HpCDD	0.0000490	—	0.0000027	J			
u	u	OCDF	—	0.0000140	0.0000028	I			
		OCDD	0.0001900	—	0.0000056				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
LOD = Limit of Detection. Totals are averages of individual isomer LODs.
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B = Less than 10 times higher than method blank level
P = Recovery outside of method 1613 control limits
J = Concentration detected is below the calibration range
Nn = Value obtained from additional analysis

I = Interference
E = PCDE Interference
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion

Report No.....1021912

REPORT OF LABORATORY ANALYSIS

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Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID	IOJ1337-01	WC-1
Lab Sample ID	1021959001	
Filename	U51105B_14	
Injected By	BAL	
Total Amount Extracted	854 mL	Matrix
% Moisture	NA	Dilution
Dry Weight Extracted	NA	Collected
ICAL Date	11/04/2005	Received
CCal Filename(s)	U51105B_01	Extracted
Method Blank ID	BLANK-8208	Analyzed
		Water
		11/03/2005
		11/06/2005 05:21

		Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
u		2,3,7,8-TCDF	ND	----0.00000096		2,3,7,8-TCDF-13C	2.00	82
u		Total TCDF	ND	----0.00000096		2,3,7,8-TCDD-13C	2.00	87
						1,2,3,7,8-PeCDF-13C	2.00	91
u		2,3,7,8-TCDD	ND	----0.00000200		2,3,4,7,8-PeCDF-13C	2.00	98
u		Total TCDD	ND	----0.00000200		1,2,3,7,8-PeCDD-13C	2.00	108
						1,2,3,4,7,8-HxCDF-13C	2.00	92
u		1,2,3,7,8-PeCDF	ND	----0.00000190		1,2,3,6,7,8-HxCDF-13C	2.00	90
u		2,3,4,7,8-PeCDF	ND	----0.00000110	I	2,3,4,6,7,8-HxCDF-13C	2.00	93
u		Total PeCDF	ND	----0.00000150		1,2,3,7,8,9-HxCDF-13C	2.00	91
						1,2,3,4,7,8-HxCDD-13C	2.00	88
u		1,2,3,7,8-PeCDD	ND	----0.00000210		1,2,3,6,7,8-HxCDD-13C	2.00	84
u		Total PeCDD	ND	----0.00000210		1,2,3,4,6,7,8-HpCDF-13C	2.00	78
						1,2,3,4,7,8,9-HpCDF-13C	2.00	70
u	B	1,2,3,4,7,8-HxCDF	0.0000021	----0.00000120	BJ	1,2,3,4,6,7,8-HpCDD-13C	2.00	87
u	B	1,2,3,6,7,8-HxCDF	0.0000024	----0.00000097	BJ	OCDD-13C	4.00	78
u	K10	2,3,4,6,7,8-HxCDF	ND	----0.00000180	I			
u		1,2,3,7,8,9-HxCDF	ND	----0.00000100		1,2,3,4-TCDD-13C	2.00	NA
u	B	Total HxCDF	0.0000091	----0.00000100	BJ	1,2,3,7,8,9-HxCDD-13C	2.00	NA
u	B	1,2,3,4,7,8-HxCDD	0.0000017	----0.00000160	BJ	2,3,7,8-TCDD-37Cl4	0.20	76
u	L	1,2,3,6,7,8-HxCDD	0.0000059	----0.00000110	J			
u	*10	1,2,3,7,8,9-HxCDD	ND	----0.00000170	I			
u	B	Total HxCDD	0.0000180	----0.00000120	BJ			
u	*10	1,2,3,4,6,7,8-HpCDF	ND	----0.00000210	E			
u		1,2,3,4,7,8,9-HpCDF	ND	----0.00000230				
u		Total HpCDF	ND	----0.00000210				
		1,2,3,4,6,7,8-HpCDD	0.0000640	----0.00000170				
		Total HpCDD	0.0001100	----0.00000170				
u	DNA	OCDF	0.0000240	----0.00000320	J			
u	L	OCDD	0.0004400	----0.00000360				

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
LOD = Limit of Detection. Totals are averages of individual isomer LODs.
D = Result obtained from analysis of diluted sample
B = Less than 10 times higher than method blank level
P = Recovery outside of method 1613 control limits
J = Concentration detected is below the calibration range
Nn = Value obtained from additional analysis

I = Interference
E = PCDE Interference
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion

Report No..... 1021959

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REPORT OF LABORATORY ANALYSIS

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Method 1613B Analysis Results

Client - Del Mar Analytical

Client's Sample ID IOJ1337-01
Lab Sample ID 1021959001-R WC-1
Filename F51110A_08
Injected By SMT
Total Amount Extracted 1030 mL
% Moisture NA
Dry Weight Extracted NA
ICAL Date 10/22/2005
CCal Filename(s) F51109C_18
Method Blank ID BLANK-8223

Matrix Water
Dilution NA
Collected 10/18/2005
Received 10/21/2005
Extracted 11/08/2005
Analyzed 11/10/2005 18:42

Native Isomers	Conc ug/L	EMPC ug/L	LOD ug/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	0.0000027	0.0000027	2,3,7,8-TCDF-13C	2.00	71
Total TCDF	0.000015	0.0000027	0.0000027	2,3,7,8-TCDD-13C	2.00	78
				1,2,3,7,8-PeCDF-13C	2.00	76
2,3,7,8-TCDD	ND	0.0000016	0.0000016	2,3,4,7,8-PeCDF-13C	2.00	78
Total TCDD	ND	0.0000016	0.0000016	1,2,3,7,8-PeCDD-13C	2.00	95
				1,2,3,4,7,8-HxCDF-13C	2.00	77
1,2,3,7,8-PeCDF	ND	0.0000018	0.0000018	1,2,3,6,7,8-HxCDF-13C	2.00	81
2,3,4,7,8-PeCDF	0.000016	0.0000028	0.0000028 J	2,3,4,6,7,8-HxCDF-13C	2.00	77
Total PeCDF	0.000120	0.0000023	0.0000023	1,2,3,7,8,9-HxCDF-13C	2.00	75
				1,2,3,4,7,8-HxCDD-13C	2.00	72
1,2,3,7,8-PeCDD	0.000016	0.0000023	0.0000023 J	1,2,3,6,7,8-HxCDD-13C	2.00	86
Total PeCDD	0.000019	0.0000023	0.0000023 J	1,2,3,4,6,7,8-HpCDF-13C	2.00	73
				1,2,3,4,7,8,9-HpCDF-13C	2.00	67
1,2,3,4,7,8-HxCDF	0.000028	0.0000029	0.0000029 J	1,2,3,4,6,7,8-HpCDD-13C	2.00	87
1,2,3,6,7,8-HxCDF	0.000022	0.0000034	0.0000034 J	OCDD-13C	4.00	77
2,3,4,6,7,8-HxCDF	0.000063	0.0000029	0.0000029			
1,2,3,7,8,9-HxCDF	0.000020	0.0000021	0.0000021 J	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.000480	0.0000028	0.0000028	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	0.000034	0.0000027	0.0000027 J	2,3,7,8-TCDD-37Cl4	0.20	79
1,2,3,6,7,8-HxCDD	0.000800	0.0000045	0.0000045			
1,2,3,7,8,9-HxCDD	0.000140	0.0000051	0.0000051			
Total HxCDD	0.002000	0.0000041	0.0000041			
1,2,3,4,6,7,8-HpCDF	0.000330	0.0000025	0.0000025			
1,2,3,4,7,8,9-HpCDF	0.000012	0.0000037	0.0000037 J			
Total HpCDF	0.000350	0.0000031	0.0000031			
1,2,3,4,6,7,8-HpCDD	0.010000	0.0000036	0.0000036			
Total HpCDD	0.016000	0.0000036	0.0000036			
OCDF	0.000210	0.0000020	0.0000020			
OCDD	0.053000	0.0000017	0.0000017			

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