

# **CONTRACT COMPLIANCE SCREENING FORM FOR HARDCOPY DATA**

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

Package ID T713DF7

Task Order 313150010

SDG No. IOJ0739

No. of Analyses 9

Laboratory Alta

Reviewer E. Wessling

Analysis/Method Dioxins by 1613

Date: December 20, 2005

Reviewer's Signature 

## **ACTION ITEMS<sup>a</sup>**

**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:

-- estimated maximum possible concentration interferences

-- lack of confirmation analysis of 2,3,7,8-TCDF

-- method blank contamination

## **COMMENTS<sup>b</sup>**

<sup>a</sup> Subcontracted analytical laboratory is not meeting contract and/or method requirements.

<sup>b</sup> Differences in protocol have been adopted by the laboratory but no action against the laboratory is required.



# DATA VALIDATION REPORT

Topanga Fire Surface Samples

ANALYSIS: DIOXINS/FURANS

SAMPLE DELIVERY GROUP: IOJ0739

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 #: IOJ0739  
Project Manager: A. Lenox  
Matrix: Solid  
Analysis: Dioxins/Furans  
QC Level: Level IV  
No. of Samples: 9  
No. of Reanalyses/Dilutions: 0  
Reviewer: E. Wessling  
Date of Review: December 20, 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

EPA ID	MWH ID	Laboratory ID (Del Mar)	Laboratory ID (Alta)	Matrix	COC Method
CF-1-Soil	WL008	IOJ0739-01	26805-001	Soil	1613
CF-1-Ash	WL009	IOJ0739-02	26805-002	Ash	1613
PCC-1-Soil	WL010	IOJ0739-03	26805-003	Soil	1613
PCC-1-Ash	WL011	IOJ0739-04	26805-004	Ash	1613
WC-1-Ash	WL014	IOJ0739-05	26820-001	Ash	1613
WC-1-Soil	WL015	IOJ0739-06	26820-002	Soil	1613
CRP-1-Soil	WL007	IOJ0739-07	26826-001	Soil	1613
SC-1-Soil	WL012	IOJ0739-08	26826-002	Soil	1613
SC-1-Ash	WL013	IOJ0739-09	26826-003	Ash	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. The samples were shipped to Alta for dioxin/furan analysis and were received within temperature limits of 4°C ±2°C. No qualifications were required. 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. 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 6/06/2005. The calibration consisted of six concentration level standards (CS1 through CS6) 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

Three method blanks (Blanks 7348-0-MB001, 7368-0-MB001, and 7352-0-MB001) were extracted and analyzed with the samples in this SDG. No target or total compounds were reported in the method blanks 7348-0-MB001 or 7352-0-MB001. Target compound 1,2,3,4,6,7,8-HpDCF was detected in method blank 7368-0-MB001. Detects for target compounds  $\leq$  five times the concentration reported in the method blank were qualified as estimated, "UJ," in the site samples WL013 and WL015. A review of the method blank raw data and chromatograms indicated no false negatives or false positives. No qualifications were required.

## 2.5 BLANK SPIKES AND LABORATORY CONTROL SAMPLES

Three blank spikes (7348-0-OPR001, 7368-0-OPR001, and 7352-0-OPR001) were extracted and analyzed with the samples in this SDG. All recoveries were within the acceptance criteria listed in Table 6 of Method 1613. A review of the raw data and chromatograms indicated no transcription or calculation errors. No 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. 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." Confirmation for 2,3,7,8-TCDF detected in samples WL008, WL010, and WL007 was not performed; therefore, 2,3,7,8-TCDF was qualified as estimated, "J." No further qualifications were required.

Sample ID: IOJ0739-01				EPA Method 1613			
Client Data			Sample Data		Laboratory Data		
Name:	Del Mar Analytical, Irvine		Matrix:	Soil	Lab Sample:	26805-001	Date Received:
Project:	IOJ0739		Sample Size:	11.43 g	QC Batch No.:	7348	Date Extracted:
Date Collected:	7-Oct-05		%Solids:	85.3	Date Analyzed DB-5:	26-Oct-05	Date Analyzed DB-225:
Time Collected:	1330						NA
Analyte	Conc. (pp/g)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>
2,3,7,8-TCDD	ND	0.0676			13C-2,3,7,8-TCDD	79.5	25 - 164
1,2,3,7,8-PeCDD	ND	0.0699			13C-1,2,3,7,8-PeCDD	82.4	25 - 181
1,2,3,4,7,8-HxCDD	ND	0.106			13C-1,2,3,4,7,8-HxCDD	88.7	32 - 141
1,2,3,6,7,8-HxCDD	0.178			J	13C-1,2,3,6,7,8-HxCDD	84.2	28 - 130
1,2,3,7,8,9-HxCDD	0.148			J	13C-1,2,3,4,6,7,8-HpCDD	88.8	23 - 140
1,2,3,4,6,7,8-HpCDD	1.06			J	13C-OCDD	67.1	17 - 157
OCDD	5.59				13C-2,3,7,8-TCDF	78.6	24 - 169
2,3,7,8-TCDF	0.381			J	13C-1,2,3,7,8-PeCDF	79.2	24 - 185
1,2,3,7,8-PeCDF	ND	0.157			13C-2,3,4,7,8-PeCDF	79.1	21 - 178
2,3,4,7,8-PeCDF	0.137			J	13C-1,2,3,4,7,8-HxCDF	80.0	26 - 152
1,2,3,4,7,8-HxCDF	ND	0.0589			13C-1,2,3,6,7,8-HxCDF	79.6	26 - 123
1,2,3,6,7,8-HxCDF	0.102			J	13C-2,3,4,6,7,8-HxCDF	85.7	28 - 136
2,3,4,6,7,8-HxCDF	ND	0.0616			13C-1,2,3,7,8,9-HxCDF	91.3	29 - 147
1,2,3,7,8,9-HxCDF	ND	0.0820			13C-1,2,3,4,6,7,8-HpCDF	82.7	28 - 143
1,2,3,4,6,7,8-HpCDF	ND	0.0986			13C-1,2,3,4,7,8,9-HpCDF	92.9	26 - 138
OCDF	ND	0.0750		J	13C-OCDF	78.4	17 - 157
CRS 37Cl-2,3,7,8-TCDD	0.331					78.1	35 - 197
Totals				Toxic Equivalent Quotient (TEQ) Data <sup>e</sup>			
Total TCDD	0.464		0.257		TEQ (Min):	0.166	
Total PeCDD	ND						
Total HxCDD	1.23						
Total HpCDD	2.16						
Total TCDF	3.57		4.52				
Total PeCDF	0.867		1.15				
Total HxCDF	0.301						
Total HpCDF	0.174						

Analyst: JMH

Approved By: Martha M. Maier 28-Oct-2005 12:05

a. Sample specific estimated detection limit.  
b. Estimated maximum possible concentration.  
c. Method detection limit.  
d. Lower control limit - upper control limit.  
e. Toxic Equivalent Quotient (TEQ) based on International Toxic Equivalent Factors (TEF).



Sample ID: IOJ0739-02				EPA Method 1613			
Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Solid	Lab Sample:	26805-002	Date Received:	14-Oct-05
Project:	IOJ0739	Sample Size:	5.05 g	QC Batch No.:	7348	Date Extracted:	24-Oct-05
Date Collected:	7-Oct-05	%Solids:	99.5	Date Analyzed DB-5:	26-Oct-05	Date Analyzed DB-225:	NA
Time Collected:	1335						
Analyte	Conc. (pg/g)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.187			13C-2,3,7,8-TCDD	72.5	25 - 164
1,2,3,7,8-PeCDD	ND	0.154			13C-1,2,3,7,8-PeCDD	72.0	25 - 181
1,2,3,4,7,8-HxCDD	ND	0.419			13C-1,2,3,4,7,8-HxCDD	87.3	32 - 141
1,2,3,6,7,8-HxCDD	ND	0.421			13C-1,2,3,6,7,8-HxCDD	84.1	28 - 130
1,2,3,7,8,9-HxCDD	ND	0.422			13C-1,2,3,4,6,7,8-HpCDD	84.8	23 - 140
1,2,3,4,6,7,8-HpCDD	0.581			J	13C-OCDD	56.0	17 - 157
OCDD	3.64			J	13C-2,3,7,8-TCDF	70.5	24 - 169
2,3,7,8-TCDF	ND	0.189			13C-1,2,3,7,8-PeCDF	69.2	24 - 185
1,2,3,7,8-PeCDF	ND	0.231			13C-2,3,4,7,8-PeCDF	67.7	21 - 178
2,3,4,7,8-PeCDF	ND	0.212			13C-1,2,3,4,7,8-HxCDF	81.4	26 - 152
1,2,3,4,7,8-HxCDF	0.110			J	13C-1,2,3,6,7,8-HxCDF	80.0	26 - 123
1,2,3,6,7,8-HxCDF	ND	0.0717			13C-2,3,4,6,7,8-HxCDF	83.7	28 - 136
2,3,4,6,7,8-HxCDF	ND	0.0764			13C-1,2,3,7,8,9-HxCDF	85.9	29 - 147
1,2,3,7,8,9-HxCDF	ND	0.112			13C-1,2,3,4,6,7,8-HpCDF	77.2	28 - 143
1,2,3,4,6,7,8-HpCDF	ND	0.107			13C-1,2,3,4,7,8,9-HpCDF	83.2	26 - 138
1,2,3,4,7,8,9-HpCDF	ND	0.153			13C-OCDF	62.5	17 - 157
OCDF	ND	0.441			CRS 37C1-2,3,7,8-TCDD	71.8	35 - 197
Totals				Toxic Equivalent Quotient (TEQ) Data <sup>e</sup>			
Total TCDD	ND	0.187		TEQ (Mln): 0.0204			
Total PeCDD	ND	0.154					
Total HxCDD	ND	0.421					
Total HpCDD	0.581						
Total TCDF	ND	0.189					
Total PeCDF	ND	0.221					
Total HxCDF	0.110						
Total HpCDF	ND	0.127					

Analyst: JMH

Approved By:

Martha M. Maier

28-Oct-2005 12:05



Sample ID: IOJ0739-03				EPA Method 1613			
Client Data			Sample Data		Laboratory Data		
Name:	Del Mar Analytical, Irvine		Matrix:	Soil	Lab Sample:	26805-003	Date Received:
Project:	IOJ0739		Sample Size:	9.31 g	QC Batch No.:	7348	Date Extracted:
Date Collected:	7-Oct-05		%Solids:	98.6	Date Analyzed DB-5:	26-Oct-05	Date Analyzed DB-225:
Time Collected:	1420						NA
Analyte	Conc. (pg/g)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>
2,3,7,8-TCDD	ND	0.106			IS 13C-2,3,7,8-TCDD	77.5	25 - 164
1,2,3,7,8-PeCDD	ND	0.106			13C-1,2,3,7,8-PeCDD	75.0	25 - 181
1,2,3,4,7,8-HxCDD	ND	0.253			13C-1,2,3,4,7,8-HxCDD	85.6	32 - 141
1,2,3,6,7,8-HxCDD	ND	0.259			13C-1,2,3,6,7,8-HxCDD	85.8	28 - 130
1,2,3,7,8,9-HxCDD	ND	0.257			13C-1,2,3,4,6,7,8-HpCDD	83.8	23 - 140
1,2,3,4,6,7,8-HpCDD	0.355			J	13C-OCDD	63.5	17 - 157
OCDD	2.40			J	13C-2,3,7,8-TCDF	73.9	24 - 169
2,3,7,8-TCDF	0.151			J	13C-1,2,3,7,8-PeCDF	70.5	24 - 185
1,2,3,7,8-PeCDF	ND	0.142			13C-2,3,4,7,8-PeCDF	68.1	21 - 178
2,3,4,7,8-PeCDF	ND	0.131			13C-1,2,3,4,7,8-HxCDF	81.7	26 - 152
1,2,3,4,7,8-HxCDF	ND	0.0561			13C-1,2,3,6,7,8-HxCDF	79.4	26 - 123
1,2,3,6,7,8-HxCDF	ND	0.0510			13C-2,3,4,6,7,8-HxCDF	84.5	28 - 136
2,3,4,6,7,8-HxCDF	ND	0.0596			13C-1,2,3,7,8,9-HxCDF	85.9	29 - 147
1,2,3,7,8,9-HxCDF	ND	0.0875			13C-1,2,3,4,6,7,8-HpCDF	77.0	28 - 143
1,2,3,4,6,7,8-HpCDF	ND	0.112			13C-1,2,3,4,7,8,9-HpCDF	82.6	26 - 138
1,2,3,4,7,8,9-HpCDF	ND	0.138			13C-OCDF	67.8	17 - 157
OCDF	ND	0.358			CRS 37Cl-2,3,7,8-TCDD	74.4	35 - 197
Totals					Toxic Equivalent Quotient (TEQ) Data <sup>c</sup>		
Total TCDD	ND	0.106			TEQ (Min):	0.0210	
Total PeCDD	ND	0.106					
Total HxCDD	ND	0.257					
Total HpCDD	0.760						
Total TCDF	0.387		0.813				
Total PeCDF	ND	0.136					
Total HxCDF	0.123						
Total HpCDF	ND	0.124					

Analyst: JMH

Approved By: Martha M. Maier 28-Oct-2005 12:05

a. Sample specific estimated detection limit.  
b. Estimated maximum possible concentration.  
c. Method detection limit.  
d. Lower control limit - upper control limit.  
e. Toxic Equivalent Quotient (TEQ) based on International Toxic Equivalent Factors (ITEF).

Sample ID: IOJ0739-04

EPA Method 1613

Client Data			Sample Data		Laboratory Data		
Name:	Del Mar Analytical, Irvine		Matrix:	Solid	Lab Sample:	26805-004	Date Received:
Project:	IOJ0739		Sample Size:	4.33 g	QC Batch No.:	7348	Date Extracted:
Date Collected:	7-Oct-05		%Solids:	99.2	Date Analyzed DB-5:	26-Oct-05	Date Analyzed DB-225:
Time Collected:	1425						NA
Analyte	Conc. (pg/g)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>
2,3,7,8-TCDD	ND	0.249			IS 13C-2,3,7,8-TCDD	81.0	25 - 164
1,2,3,7,8-PeCDD	ND	0.207			13C-1,2,3,7,8-PeCDD	75.0	25 - 181
1,2,3,4,7,8-HxCDD	ND	0.404			13C-1,2,3,4,7,8-HxCDD	88.5	32 - 141
1,2,3,6,7,8-HxCDD	ND	0.397			13C-1,2,3,6,7,8-HxCDD	87.7	28 - 130
1,2,3,7,8,9-HxCDD	ND	0.402			13C-1,2,3,7,8,9-HxCDD	86.5	23 - 140
1,2,3,4,6,7,8-HpCDD	0.833			J	13C-OCDD	59.6	17 - 157
OCDD	2.33			J	13C-2,3,7,8-TCDF	75.5	24 - 169
2,3,7,8-TCDF	ND	0.199			13C-1,2,3,7,8-PeCDF	72.6	24 - 185
1,2,3,7,8-PeCDF	ND	0.225			13C-2,3,4,7,8-PeCDF	71.6	21 - 178
2,3,4,7,8-PeCDF	ND	0.191			13C-1,2,3,4,7,8-HxCDF	83.2	26 - 152
1,2,3,4,7,8-HxCDF	ND	0.0880			13C-1,2,3,6,7,8-HxCDF	82.0	26 - 123
1,2,3,6,7,8-HxCDF	ND	0.0836			13C-2,3,4,6,7,8-HxCDF	86.5	28 - 136
2,3,4,6,7,8-HxCDF	ND	0.104			13C-1,2,3,7,8,9-HxCDF	90.3	29 - 147
1,2,3,7,8,9-HxCDF	ND	0.130			13C-1,2,3,4,6,7,8-HpCDF	79.7	28 - 143
1,2,3,4,6,7,8-HpCDF	ND	0.150			13C-1,2,3,4,7,8,9-HpCDF	85.2	26 - 138
1,2,3,4,7,8,9-HpCDF	ND	0.174			13C-OCDF	69.1	17 - 157
OCDF	ND	0.504			CRS 37C1-2,3,7,8-TCDD	79.1	35 - 197
Totals					Toxic Equivalent Quotient (TEQ) Data <sup>e</sup>		
Total TCDD	ND	0.249			TEQ (Min):	0.0107	
Total PeCDD	ND	0.207			a. Sample specific estimated detection limit.		
Total HxCDD	0.319				b. Estimated maximum possible concentration.		
Total HpCDD	1.85				c. Method detection limit.		
Total TCDF	ND	0.199			d. Lower control limit - upper control limit.		
Total PeCDF	ND	0.207			e. Toxic Equivalent Quotient (TEQ) based on International Toxic Equivalent Factors (ITEF).		
Total HxCDF	ND	0.0999					
Total HpCDF	ND	0.160					

Analyst: JMH

Approved By: Martha M. Maier 28-Oct-2005 12:05



Sample ID: IOJ0739-05				EPA Method 1613			
Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Solid	Lab Sample:	26820-001	Date Received:	19-Oct-05
Project:	IOJ0739	Sample Size:	10.02 g	QC Batch No.:	7352	Date Extracted:	26-Oct-05
Date Collected:	10-Oct-05	%Solids:	97.3	Date Analyzed DB-5:	30-Oct-05	Date Analyzed DB-25:	NA
Time Collected:	1145						
Analyte	Conc. (pg/g)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	3.57				13C-2,3,7,8-TCDD	85.8	25 - 164
1,2,3,7,8-PeCDD	9.61				13C-1,2,3,7,8-PeCDD	83.3	25 - 181
1,2,3,4,7,8-HxCDD	6.67				13C-1,2,3,4,7,8-HxCDD	87.4	32 - 141
1,2,3,6,7,8-HxCDD	10.2				13C-1,2,3,6,7,8-HxCDD	87.2	28 - 130
1,2,3,7,8,9-HxCDD	12.4				13C-1,2,3,4,6,7,8-HpCDD	91.0	23 - 140
1,2,3,4,6,7,8-HpCDD	95.1				13C-OCDD	57.2	17 - 157
OCDD	232				13C-2,3,7,8-TCDF	84.1	24 - 169
2,3,7,8-TCDF	ND				13C-1,2,3,7,8-PeCDF	83.7	24 - 185
1,2,3,7,8-PeCDF	0.198		0.173	J	13C-2,3,4,7,8-PeCDF	83.1	21 - 178
2,3,4,7,8-PeCDF	0.306			J	13C-1,2,3,4,7,8-HxCDF	82.0	26 - 152
1,2,3,4,7,8-HxCDF	0.357			J	13C-1,2,3,6,7,8-HxCDF	87.3	28 - 136
1,2,3,6,7,8-HxCDF	0.379			J	13C-1,2,3,7,8,9-HxCDF	91.8	29 - 147
2,3,4,6,7,8-HxCDF	0.433			J	13C-1,2,3,4,6,7,8-HpCDF	79.0	28 - 143
1,2,3,7,8,9-HxCDF	ND	0.307		J	13C-1,2,3,4,7,8,9-HpCDF	85.1	26 - 138
1,2,3,4,6,7,8-HpCDF	1.83			J	13C-OCDF	64.2	17 - 157
1,2,3,4,7,8,9-HpCDF	ND	0.220		J	CRS 37Cl-2,3,7,8-TCDD	79.6	35 - 197
OCDF	2.28			J			
Totals				Toxic Equivalent Quotient (TEQ) Data <sup>e</sup>			
Total TCDD	74.5			TEQ (Mn): 12.8			
Total PeCDD	117						
Total HxCDD	196						
Total HpCDD	253						
Total TCDF	8.97						
Total PeCDF	4.52		9.40				
Total HxCDF	6.27		5.17				
Total HpCDF	4.93						

Analyst: DMS

Approved By: Martha M. Maier 02-Nov-2005 10:15



Sample ID: IOJ0739-06				EPA Method 1613			
Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Soil	Lab Sample:	26820-002	Date Received:	19-Oct-05
Project:	IOJ0739	Sample Size:	10.35 g	QC Batch No.:	7352	Date Extracted:	26-Oct-05
Date Collected:	10-Oct-05	%Solids:	99.6	Date Analyzed DB-5:	30-Oct-05	Date Analyzed DB-225:	NA
Time Collected:	1145						
Analyte	Conc. (pg/g)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND		0.179	J	13C-2,3,7,8-TCDD	85.6	25 - 164
1,2,3,7,8-PeCDD	0.379			J	13C-1,2,3,7,8-PeCDD	87.0	25 - 181
1,2,3,4,7,8-HxCDD	0.286			J	13C-1,2,3,4,7,8-HxCDD	88.5	32 - 141
1,2,3,6,7,8-HxCDD	0.535			J	13C-1,2,3,6,7,8-HxCDD	82.9	28 - 130
1,2,3,7,8,9-HxCDD	0.565			J	13C-1,2,3,4,6,7,8-HpCDD	89.8	23 - 140
1,2,3,4,6,7,8-HpCDD	5.27				13C-OCDD	60.9	17 - 157
OCDD	20.6				13C-2,3,7,8-TCDF	79.7	24 - 169
2,3,7,8-TCDF	ND	0.0895			13C-1,2,3,7,8-PeCDF	83.9	24 - 185
1,2,3,7,8-PeCDF	ND	0.0934			13C-2,3,4,7,8-PeCDF	82.0	21 - 178
2,3,4,7,8-PeCDF	ND	0.0863			13C-1,2,3,4,7,8-HxCDF	82.2	26 - 152
1,2,3,4,7,8-HxCDF	ND	0.0598			13C-1,2,3,6,7,8-HxCDF	80.4	26 - 123
1,2,3,6,7,8-HxCDF	ND	0.0560			13C-2,3,4,6,7,8-HxCDF	86.2	28 - 136
2,3,4,6,7,8-HxCDF	ND	0.0630			13C-1,2,3,7,8,9-HxCDF	89.0	29 - 147
1,2,3,7,8,9-HxCDF	ND	0.0895			13C-1,2,3,4,6,7,8-HpCDF	74.1	28 - 143
1,2,3,4,6,7,8-HpCDF	ND	0.0661			13C-1,2,3,4,7,8,9-HpCDF	88.1	26 - 138
1,2,3,4,7,8,9-HpCDF	ND	0.0708			13C-OCDF	67.6	17 - 157
OCDF	ND	0.413			CRS 37Cl-2,3,7,8-TCDD	82.5	35 - 197
Totals				Toxic Equivalent Quotient (TEQ) Data <sup>e</sup>			
Total TCDD	2.52		3.32	TEQ (Min): 0.402			
Total PeCDD	3.66		4.48				
Total HxCDD	8.62						
Total HpCDD	13.4						
Total TCDF	ND		0.276				
Total PeCDF	0.124						
Total HxCDF	ND	0.0659					
Total HpCDF	ND	0.0680					

Analyst: DMS

Approved By: Martha M. Maier 02-Nov-2005 10:15



Sample ID: IOJ0739-07				EPA Method 1613				
Client Data		Sample Data		Laboratory Data				
Name:	Del Mar Analytical, Irvine	Matrix:	Soil	Lab Sample:	26826-001	Date Received:	20-Oct-05	
Project:	IOJ0739	Sample Size:	9.95 g	QC Batch No.:	7368	Date Extracted:	30-Oct-05	
Date Collected:	7-Oct-05	%Solids:	99.5	Date Analyzed DB-5:	1-Nov-05	Date Analyzed DB-225:	NA	
Time Collected:	1215							
Analyte	Conc. (pg/g)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup>	Qualifiers
2,3,7,8-TCDD	ND	0.185			13C-2,3,7,8-TCDD	95.4	25 - 164	
1,2,3,7,8-PeCDD	ND	0.277			13C-1,2,3,7,8-PeCDD	102	25 - 181	
1,2,3,4,7,8-HxCDD	ND	0.164			13C-1,2,3,4,7,8-HxCDD	97.0	32 - 141	
1,2,3,6,7,8-HxCDD	0.331			J	13C-1,2,3,6,7,8-HxCDD	88.5	28 - 130	
1,2,3,7,8,9-HxCDD	ND	0.155			13C-1,2,3,4,6,7,8-HpCDD	82.3	23 - 140	
1,2,3,4,6,7,8-HpCDD	3.41				13C-OCDD	54.7	17 - 157	
OCDD	14.8				13C-2,3,7,8-TCDF	85.4	24 - 169	
2,3,7,8-TCDF	0.213			J	13C-1,2,3,7,8-PeCDF	101	24 - 185	
1,2,3,7,8-PeCDF	ND	0.231			13C-2,3,4,7,8-HxCDF	98.3	21 - 178	
2,3,4,7,8-PeCDF	ND	0.215			13C-1,2,3,6,7,8-HxCDF	102	26 - 152	
1,2,3,4,7,8-HxCDF	ND	0.119			13C-2,3,4,6,7,8-HxCDF	105	26 - 123	
1,2,3,6,7,8-HxCDF	ND	0.110			13C-1,2,3,7,8,9-HxCDF	101	28 - 136	
2,3,4,6,7,8-HxCDF	ND	0.128			13C-1,2,3,4,6,7,8-HpCDF	89.5	28 - 143	
1,2,3,7,8,9-HxCDF	ND	0.198			13C-1,2,3,4,7,8,9-HpCDF	91.6	26 - 138	
1,2,3,4,6,7,8-HpCDF	0.360			J,B	13C-OCDF	65.4	17 - 157	
1,2,3,4,7,8,9-HpCDF	ND	0.0951			CRS 37Cl-2,3,7,8-TCDD	96.6	35 - 197	
OCDF	ND							
Totals			0.425					
Total TCDD	0.519		0.801					
Total PeCDD	ND	0.277						
Total HxCDD	3.07		3.22					
Total HpCDD	7.32							
Total TCDF	1.65							
Total PeCDF	ND		0.664					
Total HxCDF	0.390							
Total HpCDF	0.360		0.629	B				

Analyst: JMH

TEQ (Min): 0.107

Toxic Equivalent Quotient (TEQ) Data<sup>e</sup>

a. Sample specific estimated detection limit.  
b. Estimated maximum possible concentration.  
c. Method detection limit.  
d. Lower control limit - upper control limit.  
e. Toxic Equivalent Quotient (TEQ) based on International Toxic Equivalent Factors (ITEF).

Approved By: Martha M. Maier 02-Nov-2005 10:17



Sample ID: IOJ0739-08				EPA Method 1613			
Client Data		Sample Data		Laboratory Data			
Name:	Del Mar Analytical, Irvine	Matrix:	Soil	Lab Sample:	26826-002	Date Received:	20-Oct-05
Project:	IOJ0739	Sample Size:	10.25 g	QC Batch No.:	7368	Date Extracted:	30-Oct-05
Date Collected:	10-Oct-05	%Solids:	98.9	Date Analyzed DB-5:	2-Nov-05	Date Analyzed DB-225:	NA
Time Collected:	1041						
Analyte	Conc. (pg/g)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.129			IS 13C-2,3,7,8-TCDD	90.0	25 - 164
1,2,3,7,8-PeCDD	ND	0.108			13C-1,2,3,7,8-PeCDD	96.0	25 - 181
1,2,3,4,7,8-HxCDD	ND	0.204			13C-1,2,3,4,7,8-HxCDD	95.6	32 - 141
1,2,3,6,7,8-HxCDD	ND	0.201			13C-1,2,3,6,7,8-HxCDD	87.7	28 - 130
1,2,3,7,8,9-HxCDD	ND	0.191			13C-1,2,3,4,6,7,8-HpCDD	81.8	23 - 140
1,2,3,4,6,7,8-HpCDD	0.957			J	13C-OCDD	55.1	17 - 157
OCDD	5.91		0.130		13C-2,3,7,8-TCDF	83.8	24 - 169
2,3,7,8-TCDF	ND				13C-1,2,3,7,8-PeCDF	98.1	24 - 185
1,2,3,7,8-PeCDF	ND	0.149			13C-2,3,4,7,8-PeCDF	94.0	21 - 178
2,3,4,7,8-PeCDF	ND	0.141			13C-1,2,3,4,7,8-HxCDF	102	26 - 152
1,2,3,4,7,8-HxCDF	ND	0.0555			13C-1,2,3,6,7,8-HxCDF	104	26 - 123
1,2,3,6,7,8-HxCDF	ND	0.0517			13C-2,3,4,6,7,8-HxCDF	102	28 - 136
2,3,4,6,7,8-HxCDF	ND	0.0564			13C-1,2,3,7,8,9-HxCDF	98.0	29 - 147
1,2,3,7,8,9-HxCDF	ND	0.0893			13C-1,2,3,4,6,7,8-HpCDF	86.5	28 - 143
1,2,3,4,6,7,8-HpCDF	ND		0.234		13C-1,2,3,4,7,8,9-HpCDF	90.9	26 - 138
1,2,3,4,7,8,9-HpCDF	ND	0.0859			13C-OCDF	67.2	17 - 157
OCDF	ND	0.545			CBS 37Cl-2,3,7,8-TCDD	98.1	35 - 197
Totals				Toxic Equivalent Quotient (TEQ) Data <sup>c</sup>			
Total TCDD	ND	0.129		TEQ (Min): 0.0155			
Total PeCDD	ND	0.108					
Total HxCDD	0.250						
Total HpCDD	2.31						
Total TCDF	ND		0.130				
Total PeCDF	ND		0.493				
Total HxCDF	0.551		0.639				
Total HpCDF	ND		0.553				

Analyst: JMH

Approved By:

Martha M. Maier

02-Nov-2005 10:17



Sample ID: IOJ0739-09				EPA Method 1613			
Client Data		Sample Data		Laboratory Data			
Name: Del Mar Analytical, Irvine	Matrix: Matrix	Solid		Lab Sample: 26826-003	Date Received: 20-Oct-05		
Project: IOJ0739	Sample Size: 10.07 g			QC Batch No.: 7368	Date Extracted: 30-Oct-05		
Date Collected: 10-Oct-05	%Solids: 100			Date Analyzed DB-5: 2-Nov-05	Date Analyzed DB-225: NA		
Time Collected: 1055							
Analyte	Conc. (pg/g)	DL <sup>a</sup>	EMPC <sup>b</sup>	Qualifiers	Labeled Standard	%R	LCL-UCL <sup>d</sup> Qualifiers
2,3,7,8-TCDD	ND	0.208			IS 13C-2,3,7,8-TCDD	88.1	25 - 164
1,2,3,7,8-PeCDD	ND	0.227			13C-1,2,3,7,8-PeCDD	93.2	25 - 181
1,2,3,4,7,8-HxCDD	ND	0.174			13C-1,2,3,4,7,8-HxCDD	94.1	32 - 141
1,2,3,6,7,8-HxCDD	ND	0.367			13C-1,2,3,6,7,8-HxCDD	85.3	28 - 130
1,2,3,7,8,9-HxCDD	ND		0.266		13C-1,2,3,4,6,7,8-HpCDD	78.9	23 - 140
1,2,3,4,6,7,8-HpCDD	2.88				13C-OCDD	55.7	17 - 157
OCDD	13.6				13C-2,3,7,8-TCDF	79.8	24 - 169
2,3,7,8-TCDF	ND	0.162			13C-1,2,3,7,8-PeCDF	92.0	24 - 185
1,2,3,7,8-PeCDF	ND	0.277			13C-2,3,4,7,8-PeCDF	89.7	21 - 178
2,3,4,7,8-PeCDF	ND	0.248			13C-1,2,3,4,7,8-HxCDF	100	26 - 152
1,2,3,4,7,8-HxCDF	ND	0.115			13C-1,2,3,6,7,8-HxCDF	102	26 - 123
1,2,3,6,7,8-HxCDF	ND	0.107			13C-2,3,4,6,7,8-HxCDF	98.0	28 - 136
2,3,4,6,7,8-HxCDF	ND	0.126			13C-1,2,3,7,8,9-HxCDF	96.9	29 - 147
1,2,3,7,8,9-HxCDF	ND	0.195			13C-1,2,3,4,6,7,8-HpCDF	90.0	28 - 143
1,2,3,4,6,7,8-HpCDF	0.412			J,B	13C-1,2,3,4,7,8,9-HpCDF	87.6	26 - 138
1,2,3,4,7,8,9-HpCDF	ND				13C-OCDF	66.7	17 - 157
OCDF	ND	0.0675			CRS 37Cl-2,3,7,8-TCDD	92.2	35 - 197
			0.709				
Totals				Toxic Equivalent Quotient (TEQ) Data <sup>e</sup>			
Total TCDD	0.408		0.901	TEQ (Min): 0.0465			
Total PeCDD	0.607		2.73				
Total HxCDD	2.47						
Total HpCDD	6.38						
Total TCDF	1.14		1.35				
Total PeCDF	0.300		0.766				
Total HxCDF	0.230		0.626				
Total HpCDF	0.840						

Analyst: JMH

Approved By: Martha M. Maier 02-Nov-2005 10:17