

DETERMINATION OF PCDD/PCDF LEVELS

**Prepared for:
ESS Laboratory
Attn: Jena Paola
185 Frances Avenue
Cranston, RI 02910-2211**



This report contains 14 pages.

The results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Project: Chemical Analysis

Client Project Number: 0606346

REPORT OF LABORATORY ANALYSIS

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REPORT OF: CHEMICAL ANALYSES

PROJECT: PCDD/PCDF ANALYSES

DATE: July 11, 2006

ISSUED TO: ESS Laboratory
Attn: Jena Paola
185 Frances Avenue
Cranston, RI 02910-2211

REPORT NO: 06-1034230

INTRODUCTION

This report presents the results from the analyses performed on two samples submitted by a representative of ESS Laboratory. 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.

SAMPLE IDENTIFICATION

<u>Client ID</u>	<u>Sample Type</u>	<u>Date Received</u>	<u>PACE ID</u>
0606346-02	Water	06/23/06	1034230001
0606346-03	Water	06/23/06	1034230002

RESULTS

The results are included in the following:

- Appendix A – Chain of Custody Documentation
- Appendix B – PCDD/PCDF Results

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REPORT OF: CHEMICAL ANALYSES

PROJECT: PCDD/PCDF ANALYSES

DATE: July 11, 2006

PAGE: 2

REPORT NO: 06-1034230

DISCUSSION

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample extracts ranged from 72-112%. All of the labeled standard recoveries obtained for the samples 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.

The responses for two analytes in ending calibration F60705A_18 were outside the target range for this method. The average response factors from the bracketing continuing calibrations were used to quantify the samples, as described in the method.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results, found at the beginning of Appendix B, show the blank to contain trace levels of selected PCDDs and PCDFs. 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.

Laboratory spike samples were 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 99-157%, with relative percent differences of 0.0-24.3%. The OCDD recovery in LCS-10090 was above the target range for this method and could indicate a high bias for this analyte. The remaining results indicate high degrees of accuracy and precision for these determinations.

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REPORT OF: CHEMICAL ANALYSES

PROJECT: PCDD/PCDF ANALYSES

DATE: July 11, 2006

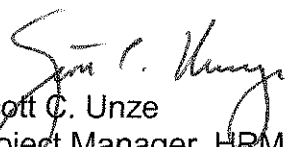
PAGE: 3

REPORT NO: 06-1034230

REMARKS

The sample extracts will be retained for a period of 15 days from the date of this report and then discarded unless other arrangements are made. The raw mass spectral data will be archived on magnetic tape for a period of not less than one year. Questions regarding the data contained in this report may be directed to the author at the number provided below.

Pace Analytical Services, Inc.



Scott C. Unze
Project Manager, HRMS
(612) 607-6383

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TABLE 1. 2,3,7,8-TCDD Equivalency Factors (TEFs) for the Polychlorinated Dibenzo-p-dioxins and Dibenzofurans

Number	Compound(s)	TEF
1	2,3,7,8-TCDD	1.00
2	1,2,3,7,8-PeCDD	0.50
3	1,2,3,6,7,8-HxCDD	0.1
4	1,2,3,7,8,9-HxCDD	0.1
5	1,2,3,4,7,8-HxCDD	0.1
6	1,2,3,4,6,7,8-HpCDD	0.01
7	OCDD	0.001
8	* Total - TCDD	0.0
9	* Total - PeCDD	0.0
10	* Total - HxCDD	0.0
11	* Total - HpCDD	0.0
12	2,3,7,8-TCDF	0.10
13	1,2,3,7,8-PeCDF	0.05
14	2,3,4,7,8-PeCDF	0.5
15	1,2,3,6,7,8-HxCDF	0.1
16	1,2,3,7,8,9-HxCDF	0.1
17	1,2,3,4,7,8-HxCDF	0.1
18	2,3,4,6,7,8-HxCDF	0.1
19	1,2,3,4,6,7,8-HpCDF	0.01
20	1,2,3,4,7,8,9-HpCDF	0.01
21	OCDF	0.001
22	* Total - TCDF	0.0
23	* Total - PeCDF	0.0
24	* Total - HxCDF	0.0
25	* Total - HpCDF	0.0

*Excluding the 2,3,7,8-substituted congeners.

Reference: International Toxic Equivalence

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Pace Analytical Services, Inc.
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Minneapolis, MN 55414
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APPENDIX A

REPORT OF LABORATORY ANALYSIS

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ESS Laboratory *face Analytical* CHAIN OF CUSTODY

Division of *Thielsch Engineering, Inc.*
 185 Frances Avenue, Cranston, RI 02910-2211
 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

Turn Time Standard Other _____
 If faster than 5 days, prior approval by laboratory is required # _____
 State where samples were collected from:
 MA RI CT NH NJ NY ME Other _____
 Is this project for any of the following: USACE Other _____
 MA-MCP Navy

Reporting Limits _____ ESS LAB PROJECT ID _____
 Electronic Deliverable Yes ___ No ___
 Format: Excel ___ Access ___ PDF ___ Other _____

Project # _____ Project Name (20 Char. or less) _____
 Address _____ PO# _____
 City _____ State _____ Zip _____
 Telephone # _____ Fax # _____ Email Address _____

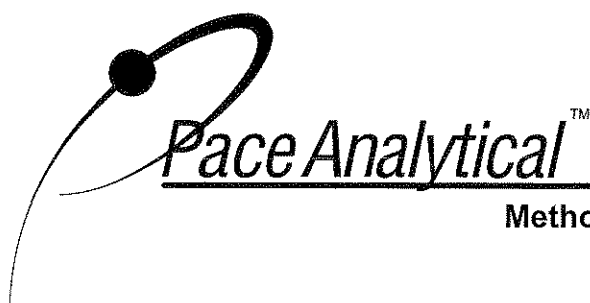
ESS LAB Sample#	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	Write Required Analysis									
	6/21/06	1253		X	S	0606346-02	1	2	X	Dioxins/Furans									
	6/21/06	1330		X	S	0606346-03	1	2	X										

Container Type: P-Poly Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters
 Cooler Present Yes ___ No ___ Internal Use Only
 Seals Intact Yes ___ No ___ NA: [] Pickup [] Technicians _____
 Cooler Temp: _____
 Preservation Code 1-NP2-HCl, 3-H₂SO₄, 4-HNO₃, 5-NaOH, 6-MeOH, 7-Asorbic Acid, 8-ZnAct, 9-
 Sampled by: _____
 Comments: 780c
 Relinquished by: (Signature) _____ Date/Time 6/20/06 1800
 Received by: (Signature) B. Flew Date/Time 6/23/06 9:15
 Relinquished by: (Signature) _____ Date/Time _____
 Received by: (Signature) _____ Date/Time _____

APPENDIX B

REPORT OF LABORATORY ANALYSIS

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Method 8290 Blank Analysis Results

Client - ESS Laboratory

Lab Sample ID	BLANK-10089	Matrix	Water
Filename	F60706A_09	Dilution	NA
Total Amount Extracted	939 mL	Extracted	07/03/2006
ICAL Date	05/31/2006	Analyzed	07/06/2006 18:26
CCal Filename(s)	F60706A_04 & F60706A_20	Injected By	SMT

Native Isomers	Conc pg/L	EMPC pg/L	LRL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	2.1	2,3,7,8-TCDF-13C	2.00	98
Total TCDF	ND	----	2.1	2,3,7,8-TCDD-13C	2.00	92
				1,2,3,7,8-PeCDF-13C	2.00	88
2,3,7,8-TCDD	ND	----	2.1	2,3,4,7,8-PeCDF-13C	2.00	88
Total TCDD	ND	----	2.1	1,2,3,7,8-PeCDD-13C	2.00	101
				1,2,3,4,7,8-HxCDF-13C	2.00	90
1,2,3,7,8-PeCDF	ND	----	11.0	1,2,3,6,7,8-HxCDF-13C	2.00	86
2,3,4,7,8-PeCDF	ND	----	11.0	2,3,4,6,7,8-HxCDF-13C	2.00	88
Total PeCDF	ND	----	11.0	1,2,3,7,8,9-HxCDF-13C	2.00	96
				1,2,3,4,7,8-HxCDD-13C	2.00	91
1,2,3,7,8-PeCDD	ND	----	11.0	1,2,3,6,7,8-HxCDD-13C	2.00	79
Total PeCDD	ND	----	11.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	69
				1,2,3,4,7,8,9-HpCDF-13C	2.00	65
1,2,3,4,7,8-HxCDF	ND	----	11.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	77
1,2,3,6,7,8-HxCDF	ND	----	11.0	OCDD-13C	4.00	71
2,3,4,6,7,8-HxCDF	ND	----	11.0			
1,2,3,7,8,9-HxCDF	ND	----	11.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----	11.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	11.0	2,3,7,8-TCDD-37Cl4	0.20	102
1,2,3,6,7,8-HxCDD	ND	----	11.0			
1,2,3,7,8,9-HxCDD	ND	----	11.0			
Total HxCDD	ND	----	11.0			
1,2,3,4,6,7,8-HpCDF	ND	----	11.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	----	11.0	Equivalence: 0.29 pg/L		
Total HpCDF	ND	----	11.0	(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	18	----	11.0 J			
Total HpCDD	30	----	11.0 J			
OCDF	ND	----	21.0			
OCDD	110	----	21.0 J			

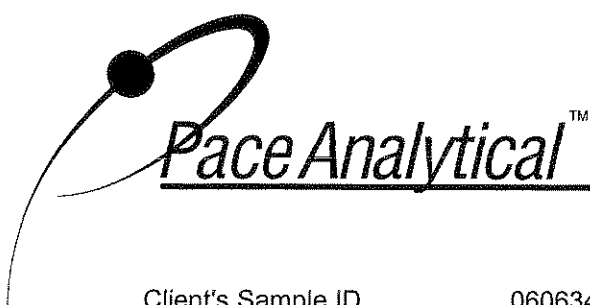
Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
LRL = Lower Reporting Limit
J = Concentration detected is below the calibration range
P = Recovery outside of target range
A = Detection Limit based on signal-to-noise measurement

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

Report No.....1034230

REPORT OF LABORATORY ANALYSIS

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Method 8290 Analysis Results

Client - ESS Laboratory

Client's Sample ID	0606346-02		
Lab Sample ID	1034230001-R		
Filename	F60705A_08		
Injected By	SMT		
Total Amount Extracted	970 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	06/21/2006
ICAL Date	05/31/2006	Received	06/23/2006
CCal Filename(s)	F60705A_03 & F60705A_18	Extracted	07/03/2006
Method Blank ID	BLANK-10089	Analyzed	07/05/2006 15:44

Native Isomers	Conc pg/L	EMPC pg/L	LRL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	3.9 A	2,3,7,8-TCDF-13C	2.00	96
Total TCDF	ND	-----	2.1	2,3,7,8-TCDD-13C	2.00	97
				1,2,3,7,8-PeCDF-13C	2.00	90
2,3,7,8-TCDD	ND	-----	8.1 A	2,3,4,7,8-PeCDF-13C	2.00	97
Total TCDD	ND	-----	2.1	1,2,3,7,8-PeCDD-13C	2.00	112
				1,2,3,4,7,8-HxCDF-13C	2.00	81
1,2,3,7,8-PeCDF	ND	-----	10.0	1,2,3,6,7,8-HxCDF-13C	2.00	76
2,3,4,7,8-PeCDF	ND	-----	10.0	2,3,4,6,7,8-HxCDF-13C	2.00	80
Total PeCDF	ND	-----	10.0	1,2,3,7,8,9-HxCDF-13C	2.00	85
				1,2,3,4,7,8-HxCDD-13C	2.00	82
1,2,3,7,8-PeCDD	ND	-----	10.0	1,2,3,6,7,8-HxCDD-13C	2.00	78
Total PeCDD	ND	-----	10.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	77
				1,2,3,4,7,8,9-HpCDF-13C	2.00	73
1,2,3,4,7,8-HxCDF	ND	-----	10.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	86
1,2,3,6,7,8-HxCDF	ND	-----	10.0	OCDD-13C	4.00	84
2,3,4,6,7,8-HxCDF	ND	-----	10.0			
1,2,3,7,8,9-HxCDF	ND	-----	10.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	10.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	10.0	2,3,7,8-TCDD-37Cl4	0.20	114
1,2,3,6,7,8-HxCDD	ND	-----	10.0			
1,2,3,7,8,9-HxCDD	ND	-----	10.0			
Total HxCDD	ND	-----	10.0			
1,2,3,4,6,7,8-HpCDF	ND	-----	10.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	10.0	Equivalence: 0.42 pg/L		
Total HpCDF	12	-----	10.0 J	(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	24	-----	10.0 BJ			
Total HpCDD	43	-----	10.0 BJ			
OCDF	ND	-----	21.0			
OCDD	180	-----	21.0 B			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers)
EMPC = Estimated Maximum Possible Concentration
A = Detection Limit based on signal-to-noise measurement
J = Concentration detected is below the calibration range
B = Less than 10 times higher than method blank level
P = Recovery outside of target range
Nn = Value obtained from additional analysis

LRL = Lower Reporting Limit
I = Interference
E = PCDE Interference
S = Saturated signal
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion

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Method 8290 Analysis Results

Client - ESS Laboratory

Client's Sample ID	0606346-03		
Lab Sample ID	1034230002-R		
Filename	F60705A_09		
Injected By	SMT		
Total Amount Extracted	986 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	06/21/2006
ICAL Date	05/31/2006	Received	06/23/2006
CCal Filename(s)	F60705A_03 & F60705A_18	Extracted	07/03/2006
Method Blank ID	BLANK-10089	Analyzed	07/05/2006 16:34

Native Isomers	Conc pg/L	EMPC pg/L	LRL pg/L	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	----	2.0	2,3,7,8-TCDF-13C	2.00	99
Total TCDF	3.4	----	2.0 J	2,3,7,8-TCDD-13C	2.00	88
				1,2,3,7,8-PeCDF-13C	2.00	88
2,3,7,8-TCDD	ND	----	2.0	2,3,4,7,8-PeCDF-13C	2.00	96
Total TCDD	ND	----	2.0	1,2,3,7,8-PeCDD-13C	2.00	110
				1,2,3,4,7,8-HxCDF-13C	2.00	80
1,2,3,7,8-PeCDF	ND	----	10.0	1,2,3,6,7,8-HxCDF-13C	2.00	75
2,3,4,7,8-PeCDF	ND	----	10.0	2,3,4,6,7,8-HxCDF-13C	2.00	75
Total PeCDF	ND	----	10.0	1,2,3,7,8,9-HxCDF-13C	2.00	82
				1,2,3,4,7,8-HxCDD-13C	2.00	76
1,2,3,7,8-PeCDD	ND	----	10.0	1,2,3,6,7,8-HxCDD-13C	2.00	75
Total PeCDD	ND	----	10.0	1,2,3,4,6,7,8-HpCDF-13C	2.00	76
				1,2,3,4,7,8,9-HpCDF-13C	2.00	72
1,2,3,4,7,8-HxCDF	ND	----	10.0	1,2,3,4,6,7,8-HpCDD-13C	2.00	83
1,2,3,6,7,8-HxCDF	ND	----	10.0	OCDD-13C	4.00	82
2,3,4,6,7,8-HxCDF	ND	----	10.0			
1,2,3,7,8,9-HxCDF	ND	----	10.0	1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	----	10.0	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	----	10.0	2,3,7,8-TCDD-37Cl4	0.20	95
1,2,3,6,7,8-HxCDD	ND	----	10.0			
1,2,3,7,8,9-HxCDD	ND	----	10.0			
Total HxCDD	ND	----	10.0			
1,2,3,4,6,7,8-HpCDF	ND	----	10.0	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	----	10.0	Equivalence: 0.75 pg/L		
Total HpCDF	21.0	----	10.0 J	(Using ITE Factors)		
1,2,3,4,6,7,8-HpCDD	43.0	----	10.0 BJ			
Total HpCDD	72.0	----	10.0 B			
OCDF	ND	----	20.0			
OCDD	320.0	----	20.0 B			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers)
 EMPC = Estimated Maximum Possible Concentration
 A = Detection Limit based on signal-to-noise measurement
 J = Concentration detected is below the calibration range
 B = Less than 10 times higher than method blank level
 P = Recovery outside of target range
 Nn = Value obtained from additional analysis

LRL = Lower Reporting Limit
 I = Interference
 E = PCDE Interference
 S = Saturated signal
 ND = Not Detected
 NA = Not Applicable
 NC = Not Calculated
 * = See Discussion

Report No.....1034230

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Method 8290 Laboratory Control Spike Results

Client - ESS Laboratory

Lab Sample ID	LCS-10090	Matrix	Water
Filename	F60706A_05	Dilution	NA
Total Amount Extracted	909 mL	Extracted	07/03/2006
ICAL Date	05/31/2006	Analyzed	07/06/2006 15:07
CCal Filename(s)	F60706A_04 & F60706A_20	Injected By	SMT
Method Blank ID	BLANK-10089		

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.21	107	2,3,7,8-TCDF-13C	2.00	89
				2,3,7,8-TCDD-13C	2.00	89
				1,2,3,7,8-PeCDF-13C	2.00	83
2,3,7,8-TCDD	0.20	0.21	104	2,3,4,7,8-PeCDF-13C	2.00	80
				1,2,3,7,8-PeCDD-13C	2.00	93
				1,2,3,4,7,8-HxCDF-13C	2.00	73
1,2,3,7,8-PeCDF	1.00	1.19	119	1,2,3,6,7,8-HxCDF-13C	2.00	70
2,3,4,7,8-PeCDF	1.00	1.07	107	2,3,4,6,7,8-HxCDF-13C	2.00	75
				1,2,3,7,8,9-HxCDF-13C	2.00	82
1,2,3,7,8-PeCDD	1.00	0.99	99	1,2,3,4,7,8-HxCDD-13C	2.00	70
				1,2,3,6,7,8-HxCDD-13C	2.00	62
				1,2,3,4,6,7,8-HpCDF-13C	2.00	55
				1,2,3,4,7,8,9-HpCDF-13C	2.00	56
1,2,3,4,7,8-HxCDF	1.00	1.00	100	1,2,3,4,6,7,8-HpCDD-13C	2.00	66
1,2,3,6,7,8-HxCDF	1.00	1.08	108	OCDD-13C	4.00	64
2,3,4,6,7,8-HxCDF	1.00	1.06	106			
1,2,3,7,8,9-HxCDF	1.00	1.04	104	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.11	111	2,3,7,8-TCDD-37Cl4	0.20	104
1,2,3,6,7,8-HxCDD	1.00	1.17	117			
1,2,3,7,8,9-HxCDD	1.00	1.30	130			
1,2,3,4,6,7,8-HpCDF	1.00	1.18	118			
1,2,3,4,7,8,9-HpCDF	1.00	1.20	120			
1,2,3,4,6,7,8-HpCDD	1.00	1.06	106			
OCDF	2.00	2.26	113			
OCDD	2.00	3.15	157 P			

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
P = Recovery outside of target range
X = Background subtracted value
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

Report No.....1034230

REPORT OF LABORATORY ANALYSIS

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Method 8290 Laboratory Control Spike Results

Client - ESS Laboratory

Lab Sample ID	LCSD-10091	Matrix	Water
Filename	F60706A_06	Dilution	NA
Total Amount Extracted	940 mL	Extracted	07/03/2006
ICAL Date	05/31/2006	Analyzed	07/06/2006 15:56
CCal Filename(s)	F60706A_04 & F60706A_20	Injected By	SMT
Method Blank ID	BLANK-10089		

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.21	107	2,3,7,8-TCDF-13C	2.00	95
				2,3,7,8-TCDD-13C	2.00	86
				1,2,3,7,8-PeCDF-13C	2.00	87
2,3,7,8-TCDD	0.20	0.22	110	2,3,4,7,8-PeCDF-13C	2.00	83
				1,2,3,7,8-PeCDD-13C	2.00	97
				1,2,3,4,7,8-HxCDF-13C	2.00	83
1,2,3,7,8-PeCDF	1.00	1.23	123	1,2,3,6,7,8-HxCDF-13C	2.00	79
2,3,4,7,8-PeCDF	1.00	1.09	109	2,3,4,6,7,8-HxCDF-13C	2.00	79
1,2,3,7,8-PeCDD	1.00	1.05	105	1,2,3,7,8,9-HxCDF-13C	2.00	83
				1,2,3,4,7,8-HxCDD-13C	2.00	76
				1,2,3,6,7,8-HxCDD-13C	2.00	71
1,2,3,4,7,8-HxCDF	1.00	1.04	104	1,2,3,4,6,7,8-HpCDF-13C	2.00	64
				1,2,3,4,7,8,9-HpCDF-13C	2.00	61
				OCDD-13C	4.00	67
1,2,3,6,7,8-HxCDF	1.00	1.14	114	1,2,3,4-TCDD-13C	2.00	NA
2,3,4,6,7,8-HxCDF	1.00	1.10	110			
1,2,3,7,8,9-HxCDF	1.00	1.12	112	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.23	123	2,3,7,8-TCDD-37Cl4	0.20	99
1,2,3,6,7,8-HxCDD	1.00	1.19	119			
1,2,3,7,8,9-HxCDD	1.00	1.30	130			
1,2,3,4,6,7,8-HpCDF	1.00	1.22	122			
1,2,3,4,7,8,9-HpCDF	1.00	1.25	125			
1,2,3,4,6,7,8-HpCDD	1.00	1.04	104			
OCDF	2.00	2.40	120			
OCDD	2.00	2.46	123			

Qs = Quantity Spiked
 Qm = Quantity Measured
 Rec. = Recovery (Expressed as Percent)
 P = Recovery outside of target range
 X = Background subtracted value
 Nn = Value obtained from additional analysis
 NA = Not Applicable
 * = See Discussion

Report No.....1034230

REPORT OF LABORATORY ANALYSIS

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SPIKE RECOVERY RELATIVE PERCENT DIFFERENCE (RPD) RESULTS

Client..... ESS Laboratory

SPIKE 1 ID..... LCS-10090
 SPIKE 1 Filename..... F60706A_05
 SPIKE 2 ID..... LCSD-10091
 SPIKE 2 Filename..... F60706A_06

COMPOUND	SPIKE 1 REC,%	SPIKE 2 REC,%	RPD,%
2378-TCDF	107	107	0.0
2378-TCDD	104	110	5.6
12378-PeCDF	119	123	3.3
23478-PeCDF	107	109	1.9
12378-PeCDD	99	105	5.9
123478-HxCDF	100	104	3.9
123678-HxCDF	108	114	5.4
234678-HxCDF	106	110	3.7
123789-HxCDF	104	112	7.4
123478-HxCDD	111	123	10.3
123678-HxCDD	117	119	1.7
123789-HxCDD	130	130	0.0
1234678-HpCDF	118	122	3.3
1234789-HpCDF	120	125	4.1
1234678-HpCDD	106	104	1.9
OCDF	113	120	6.0
OCDD	157	123	24.3

REC = Percent Recovered

RPD = The difference between the two values divided by the average.

NA = Not Applicable

Report No..... 1034230

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ESS Laboratory
 Division of Thielsch Engineering, Inc.
 185 Frances Avenue, Cranston, RI 02910-2211
 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

Reporting Limits	ESS LAB PROJECT ID	0606346
Electronically Deliverable	Yes	No
Format: Excel Access PDF Other		

Turn Time	Standard	Other	Other
If faster than 5 days, prior approval by laboratory is required #			
State where samples were collected from:			
MA	RI	CT	NH NI NY ME Other
Is this project for any of the following:			
MA-MCP	Navy	USACE	Other

Co. Name MACTEC	Project #	Project Name (20 Char. or less) Garham	USACE	Other
Contact Person Chris Riccardi	Address	Sample Identification (20 Char. or less)	Pres	Code
City	State	Zip	PO#	Email Address
Telephone # 207 775 5401	Fax #	MATRIX	GRAB	COMP

ESS LAB Sample #	Date	Collection Time	Matrix	GRAB	COMP	MATRIX	GRAB	COMP	Type of Containers	Number of Containers
1	6-21-06	1145	X SW	X		SW10			7	7
2	"	1253	X SW	X		SW11			13	13
3	"	1330	X SW	X		SW19			13	13
4	"	1350	K SW	K		SW27			7	7
5	"	1416	X SW	X		SW12			7	7
6	"	1429	X SW	X		SW16			7	7
7	"	1444	X SW	X		SW18			7	7
8	"	1454	X SW	X		SW21			7	7
9	"	1505	K SW	K		SW22			7	7
10	"	1515	K SW	K		SW23			7	7

Cooler Present	Cooler Intact	Cooler Temp: 5.5	S-Sterile	V-VOA	M-Matrix	S-Soil	SD-Solid	D-Sludge	WW-Waste Water	GW-Ground Water	SW-Surface Water	PW-Drinking Water	O-Oil	W-Wipes	F-Filters
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>														

Preservation Code: 1- NP, 2- HCl, 3- H₂SO₄, 4- HNO₃, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9-
 Sampled by: **Mark Padover**
 Comments: _____

Relinquished by: (Signature) <i>[Signature]</i>	Date/Time 6-21-06 1824	Received by: (Signature) <i>[Signature]</i>	Date/Time 6-21-06 1824
Relinquished by: (Signature) <i>[Signature]</i>	Date/Time	Received by: (Signature)	Date/Time

*By circling MA-MCP, client acknowledges samples were collected. Please fax all changes to Chain of Custody in writing.

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CHAIN OF CUSTODY

Turn Time: Standard Other
 If faster than 5 days, prior approval by laboratory is required #
 State where samples were collected from:
 MA RI CT NH NY ME Other
 Is this project for any of the following:
 MA-MCP Navy USACE Other

Co. Name MACTEC		Project #				Project Name (20 Char. or less) Garhan Site		ESS LAB PROJECT ID 0606346	
Contact Person Chris Ricard		Address				Electronic Deliverable Yes <input type="checkbox"/> No <input type="checkbox"/>		Reporting Limits	
City		State		Zip		PC#		Format: Excel <input type="checkbox"/> Access <input type="checkbox"/> PDF <input type="checkbox"/> Other <input type="checkbox"/>	
Telephone # 207 775 5401		Fax #				Email Address		Circle and/or Write Required Analysis	
ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Type of Containers	Number of Containers
11	6-21-06	1525	X	SW	SW24	SW24		Plain	4
12	"	1536	X	SW	SW27	SW27		"	13
13	"	1548 1609 PM	X	SW	SW26	SW26		"	7
14	"	1609	X	SW	SW20	SW20		"	7
15	"	1618	X	SW	SW17	SW17		"	7
	"				TD	TD		"	3

801	808	608	608	8270	PAH	8270	PAH	SVQA	625	PAH	RCRAS	RCRA8	PP13	TAL23	TC1P-RCRA8	NBC7	MCP-METALS (13)	MCP-METALS (3)	MCP-METALS (3)	MCP-METALS (3)	VOA (MCI)	PAH	Pesticides	PCB	PP13 Metals (Heavy)
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Container Type: P-Poly G-Glass S-Sterile V-VOA Matrix: S-Soil SD-Solid D-Sludge W-Waste Water GW-Ground Water SW-Surface Water DS-Drinking Water O-Oil W-Wipes F-Filters
 Cooler Present: Yes No Seals Intact: Yes No NA: [] Pickup [] Technicians
 Cooler Temp: **55**
 Preservation Code: 1- NP, 2- HCl, 3- H2SO4, 4- HNO3, 5- NaOH, 6- MeOH, 7- Ascorbic Acid, 8- ZnAc2, 9-
 Sampled by: **Mark Pasolun**
 Comments:

Relinquished by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time
<i>[Signature]</i>	6-21-06 1024	<i>[Signature]</i>	6/20/18 24		
Relinquished by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time

*By circling MA-MCP, client acknowledges samples were collected
 Please fax all changes to Chain of Custody in writing.