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**TestAmerica**

THE LEADER IN ENVIRONMENTAL TESTING

**ANALYTICAL REPORT**

F08-031

Lot #: F8E070358

SDG #: W05398

Steve Trent

Fluor Hanford Inc  
PO Box 1000 T6-03  
Richland, WA 99352

TESTAMERICA LABORATORIES, INC.



Michael C. Franks  
Project Manager

June 16, 2008

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## CASE NARRATIVE

Fluor Hanford, Inc.  
 P.O. Box 1000  
 MSIN E6-35  
 Richland, Washington 99352  
 June 16, 2008  
 Attention: Steve Trent

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SDG	: W05398
Number of Samples	: sample
Sample Matrix	: solid
Data Deliverable	: Summary
Date SDG Closed	: May 7, 2008

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### II. Introduction

On May 7, 2008, one solid sample was received by TestAmerica - St. Louis for chemical analysis. The samples were received within temperature criteria. See the COC and CUR forms for documentation of any variations on receipt conditions and temperature. Upon receipt, the samples were given laboratory Ids to correspond with specific client Ids. Please refer to the Sample Summary sheets attached to this case narrative. This report is incomplete without the narrative.

### III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits. All results are based upon samples as they were received, i.e. wet weight, unless otherwise noted on the data sheets. See the attached Methods Summary Form for the methods used in this SDG.

Deviation from Request: None

### IV. Definitions

QCBLK-	Quality Control Blank, Method Blank
QCLCS-	Quality Control Laboratory Control Sample, Blank Spike
DUP-	Laboratory Duplicate
MS-	Matrix Spike
MSD-	Matrix Spike Duplicate

### V. Comments

#### General

The following SAFs are associated with this SDG: F08-031

The term "Detection Limit" used in the analytical data report refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

MS/MSD/Dup analysis was done per the client requirements. Analytical batches that did not contain matrix QC were analyzed with a LCS/LCS duplicate.

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ***Fluor Hanford Inc.***

June 16, 2008

SDG: W05398

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### ICP Metals

Batch 8133042:

The MS and/or MSD recovery for Copper and Zinc are outside the established QC limits. The RPD is within method acceptance criteria indicating a possible matrix interference. Method performance is demonstrated by acceptable LCS recovery.

**Affected Samples:**

F8E070358 (1): B1TFR9

The samples were analyzed at a dilution due to high concentrations of interfering elements. The reporting limit has been adjusted for the dilution.

### Mercury

Batch 8135058:

The hold time for Mercury had expired prior to sample receipt.

**Affected Samples:**

F8E070358 (1): B1TFR9

I certify that this Summary Package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Reviewed and approved:

Michael Franks  
St. Louis Project Manager

**METHODS SUMMARY**

F8E070358

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>	<u>PREPARATION METHOD</u>
Mercury in Solid Waste (Manual Cold-Vapor)	SW846 7471A	SW846 7471A
Percent Moisture	MCAWW 160.3 MOD	MCAWW 160.3 MOD
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	

**References:**

MCAWW "Methods for Chemical Analysis of Water and Wastes",  
EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical  
Methods", Third Edition, November 1986 and its updates.

**SAMPLE SUMMARY**

F8E070358

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLED DATE</u>	<u>SAMP TIME</u>
KMQMK	001	B1TFR9	02/14/08	13:00

**NOTE (S) :**

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**

F08-031-140      PAGE 1 OF 1

PRICE CODE 8N      DATA TURNAROUND 45 Days / 45 Days

AIR QUALITY       METHOD OF SHIPMENT FEDERAL EXPRESS

PROJECT COORDINATOR: WIDRIG, DL

SAF NO.: F08-031

COA: 123055E520

BILL OF LADING/AIR BILL NO.: 790008181987

SEE PTR

COMPANY CONTACT: TRENT, SJ

TELEPHONE NO.: 373-5869

PROJECT DESIGNATION: 216-B-55 Supplemental Characterization

FIELD LOGBOOK NO.: 27.5-30.0

ACTUAL SAMPLE DEPTH: 27.5-30.0

OFFSITE PROPERTY NO.: 27.5-1.00

SEE PTR

COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	SAF NO.	COA	BILL OF LADING/AIR BILL NO.
TRENT, SJ	373-5869	WIDRIG, DL	F08-031	123055E520	790008181987

PREPARATION	COOLING	TYPE OF CONTAINER	NO. OF CONTAINER(S)	VOLUME	SAMPLE ANALYSIS
1	Cool-to-4C	aG	1	120ml	SEE ITEM (1) IN PCS - 8082; SPECIAL INSTRUCTIONS
1	Cool-to-4C	aG	1	120ml	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SAMPLE DATE	SAMPLE TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
2-14-08	13:00	024875	B-55 STE	2-14-08 13:50
			D. PARSONS	5-1-08 11:00
			MO 745	5-1-08
			U. Herrick	5/6/08 0730
			FED EX	5/6/08 1000

**SPECIAL HANDLING AND/OR STORAGE**  
Radioactive Tie to B1TFM3

**POSSIBLE SAMPLE HAZARDS/ REMARKS**  
Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

**RECEIVED BY/STORED IN**  
B-55 STE 2-14-08 13:50  
D. PARSONS 5-1-08 11:00  
MO 745 5-1-08  
U. Herrick 5/6/08 0730  
FED EX 5/6/08 1000

**CHAIN OF POSSESSION**

RELINQUISHED BY/REMOVED FROM: ELKAV... 2-14-08 13:50

RELINQUISHED BY/REMOVED FROM: B-55 STE 5-1-08 11:00

RELINQUISHED BY/REMOVED FROM: D. PARSONS 5-1-08

RELINQUISHED BY/REMOVED FROM: MO 745 REF #1 5/6/08 0730

RELINQUISHED BY/REMOVED FROM: U. Herrick 5/6/08 1000

RELINQUISHED BY/REMOVED FROM: FED EX 5/6/08 1000

**SPECIAL INSTRUCTIONS**  
\*\* Analytical batch QC must be run on a sample associated with this SAF.  
\*\* All VOA samples will be collected using EPA Method 5035A.  
\*\* The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.  
(1) TPH-Diesel Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range},  
(2) ICP Metals - 6010B (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver} ICP Metals - 6010B (Supertrace Add-On) {Beryllium, Copper, Nickel, Zinc} Mercury - 7471 - (CV);

Track Shipments/FedEx Kinko's Orders  
Detailed Results

**Tracking number** 790008181987  
**Signed for by** B.DANIELS  
**Ship date** May 6, 2008  
**Delivery date** May 7, 2008 9:22 AM

**Reference** PTR21475 122612  
**Destination** ES10  
**Delivered to** EARTH CITY, MO  
**Service type** Shipping/Receiving  
**Weight** Priority Overnight  
 7.0 lbs.

**Status** Delivered

**Signature image available** [Yes](#)

Date/Time	Activity	Location
<b>May 7, 2008</b>	9:22 AM <b>Delivered</b>	EARTH CITY, MO
	7:30 AM On FedEx vehicle for delivery	EARTH CITY, MO
	7:23 AM At local FedEx facility	EARTH CITY, MO
	5:12 AM At dest sort facility	BERKELEY, MO
	4:50 AM Departed FedEx location	MEMPHIS, TN
<b>May 6, 2008</b>	12:52 AM Arrived at FedEx location	MEMPHIS, TN
	5:24 PM Left origin	PASCO, WA
	3:24 PM Picked up	PASCO, WA
	11:34 AM Package data transmitted to FedEx	

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Subscribe to tracking updates (optional)

Your name:

Your e-mail address:

E-mail address	Language	Exception updates
	English	<input type="checkbox"/>

Select format:  HTML  Text  Wireless

Add personal message:

Not available for Wireless or non-English characters.

By selecting this check box and the Submit button, I agree to these [Terms and Conditions](#)



# METALS

Fluor Hanford Inc

Client Sample ID: B1TFR9

TOTAL Metals

Lot-Sample #...: F8E070358-001  
 Date Sampled...: 02/14/08  
 % Moisture.....: 8.2

Date Received...: 05/07/08

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 8133043						
Silver	ND D	2.2	mg/kg	SW846 6010B	05/12/08	KMQMK1AG
		Dilution Factor: 2		MDL.....: 0.51		
Arsenic	0.81 B,C,D	2.2	mg/kg	SW846 6010B	05/12/08	KMQMK1AJ
		Dilution Factor: 2		MDL.....: 0.47		
Barium	45.2 C,D	10.9	mg/kg	SW846 6010B	05/12/08	KMQMK1AK
		Dilution Factor: 2		MDL.....: 0.32		
Beryllium	ND D	1.1	mg/kg	SW846 6010B	05/12/08	KMQMK1AL
		Dilution Factor: 2		MDL.....: 0.37		
Cadmium	0.12 B,C,D	1.1	mg/kg	SW846 6010B	05/12/08	KMQMK1AD
		Dilution Factor: 2		MDL.....: 0.094		
Chromium	4.6 C,D	2.2	mg/kg	SW846 6010B	05/12/08	KMQMK1AH
		Dilution Factor: 2		MDL.....: 0.67		
Copper	11.0 C,D,N	5.4	mg/kg	SW846 6010B	05/12/08	KMQMK1AE
		Dilution Factor: 2		MDL.....: 0.87		
Nickel	5.2 B,C,D	8.7	mg/kg	SW846 6010B	05/12/08	KMQMK1AM
		Dilution Factor: 2		MDL.....: 0.49		
Lead	3.9 D	2.2	mg/kg	SW846 6010B	05/12/08	KMQMK1AF
		Dilution Factor: 2		MDL.....: 0.37		
Selenium	ND D	3.3	mg/kg	SW846 6010B	05/12/08	KMQMK1AN
		Dilution Factor: 2		MDL.....: 0.63		
Zinc	33.6 D,N	10.9	mg/kg	SW846 6010B	05/12/08	KMQMK1AP
		Dilution Factor: 2		MDL.....: 4.3		
Prep Batch #...: 8135058						
Mercury	ND	36.3	ug/kg	SW846 7471A	05/14/08	KMQMK1AQ
		Dilution Factor: 1		MDL.....: 12.5		

(Continued on next page)

Fluor Hanford Inc

Client Sample ID: B1TFR9

TOTAL Metals

Lot-Sample #...: F8E070358-001

Matrix.....: SOLID

**NOTE (S) :**

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Results and reporting limits have been adjusted for dry weight.

D Result was obtained from the analysis of a dilution.

B Estimated result. Result is less than RL.

C Method blank contamination. The associated method blank contains the target analyte at a reportable level.

N Spiked analyte recovery is outside stated control limits.

## METHOD BLANK REPORT

## TOTAL Metals

Client Lot #....: F8E070358

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
<b>MB Lot-Sample #:</b> F8E120000-043 <b>Prep Batch #....:</b> 8133043						
Arsenic	0.44 B	1.0	mg/kg	SW846 6010B	05/12/08	KM1XR1AG
		Dilution Factor: 1				
Barium	0.55 B	5.0	mg/kg	SW846 6010B	05/12/08	KM1XR1AH
		Dilution Factor: 1				
Beryllium	0.48 B	0.50	mg/kg	SW846 6010B	05/12/08	KM1XR1AJ
		Dilution Factor: 1				
Cadmium	0.45 B	0.50	mg/kg	SW846 6010B	05/12/08	KM1XR1AA
		Dilution Factor: 1				
Chromium	0.41 B	1.0	mg/kg	SW846 6010B	05/12/08	KM1XR1AF
		Dilution Factor: 1				
Copper	0.44 B	2.5	mg/kg	SW846 6010B	05/12/08	KM1XR1AC
		Dilution Factor: 1				
Lead	ND	1.0	mg/kg	SW846 6010B	05/12/08	KM1XR1AD
		Dilution Factor: 1				
Nickel	0.27 B	4.0	mg/kg	SW846 6010B	05/12/08	KM1XR1AK
		Dilution Factor: 1				
Selenium	ND	1.5	mg/kg	SW846 6010B	05/12/08	KM1XR1AL
		Dilution Factor: 1				
Silver	ND	1.0	mg/kg	SW846 6010B	05/12/08	KM1XR1AE
		Dilution Factor: 1				
Zinc	ND	5.0	mg/kg	SW846 6010B	05/12/08	KM1XR1AM
		Dilution Factor: 1				
<b>MB Lot-Sample #:</b> F8E140000-058 <b>Prep Batch #....:</b> 8135058						
Mercury	ND	33.3	ug/kg	SW846 7471A	05/14/08	KM5RD1AA
		Dilution Factor: 1				

**NOTE (S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

## LABORATORY CONTROL SAMPLE DATA REPORT

## TOTAL Metals

Client Lot #...: F8E070358

Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
<b>LCS Lot-Sample#:</b> F8E120000-043 <b>Prep Batch #...</b> : 8133043							
Cadmium	182	193	mg/kg	106	SW846 6010B	05/12/08	KM1XR1AN
			Dilution Factor: 1				
Copper	132	135	mg/kg	102	SW846 6010B	05/12/08	KM1XR1AP
			Dilution Factor: 1				
Lead	72.2	74.9	mg/kg	104	SW846 6010B	05/12/08	KM1XR1AQ
			Dilution Factor: 1				
Silver	126	135	mg/kg	107	SW846 6010B	05/12/08	KM1XR1AR
			Dilution Factor: 1				
Chromium	142	142	mg/kg	100	SW846 6010B	05/12/08	KM1XR1AT
			Dilution Factor: 1				
Arsenic	280	291	mg/kg	104	SW846 6010B	05/12/08	KM1XR1AU
			Dilution Factor: 1				
Barium	520	541	mg/kg	104	SW846 6010B	05/12/08	KM1XR1AV
			Dilution Factor: 1				
Beryllium	51.0	56.7	mg/kg	111	SW846 6010B	05/12/08	KM1XR1AW
			Dilution Factor: 1				
Nickel	155	163	mg/kg	105	SW846 6010B	05/12/08	KM1XR1AX
			Dilution Factor: 1				
Selenium	165	172	mg/kg	104	SW846 6010B	05/12/08	KM1XR1A0
			Dilution Factor: 1				
Zinc	346	384	mg/kg	111	SW846 6010B	05/12/08	KM1XR1A1
			Dilution Factor: 1				
<b>LCS Lot-Sample#:</b> F8E140000-058 <b>Prep Batch #...</b> : 8135058							
Mercury	8480	8130	ug/kg	96	SW846 7471A	05/14/08	KM5RD1AC
			Dilution Factor: 10				

**NOTE(S) :**

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F8E070358

Matrix.....: SOLID

Date Sampled...: 02/14/08

Date Received...: 05/07/08

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
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MS Lot-Sample #: F8E070358-001 Prep Batch #...: 8133043

% Moisture.....: 8.2

Arsenic

0.81	109	103 D	mg/kg	94			SW846 6010B	05/12/08	KMQMK1A4
0.81	109	104 D	mg/kg	95	1.2		SW846 6010B	05/12/08	KMQMK1A5
Dilution Factor: 2									

Barium

45.2	109	154 D	mg/kg	100			SW846 6010B	05/12/08	KMQMK1A6
45.2	109	170 D	mg/kg	114	9.7		SW846 6010B	05/12/08	KMQMK1A7
Dilution Factor: 2									

Beryllium

ND	2.72	3.01 D	mg/kg	102			SW846 6010B	05/12/08	KMQMK1A8
ND	2.72	3.05 D	mg/kg	104	1.3		SW846 6010B	05/12/08	KMQMK1A9
Dilution Factor: 2									

Cadmium

0.12	2.72	2.63 D	mg/kg	92			SW846 6010B	05/12/08	KMQMK1A8
0.12	2.72	2.74 D	mg/kg	96	4.2		SW846 6010B	05/12/08	KMQMK1A9
Dilution Factor: 2									

Chromium

4.6	10.9	16.6 D	mg/kg	110			SW846 6010B	05/12/08	KMQMK1A2
4.6	10.9	16.3 D	mg/kg	107	2.0		SW846 6010B	05/12/08	KMQMK1A3
Dilution Factor: 2									

Copper

11.0	13.6	19.8	mg/kg	65			SW846 6010B	05/12/08	KMQMK1AU
Qualifiers: N,D									
11.0	13.6	20.9	mg/kg	73	5.3		SW846 6010B	05/12/08	KMQMK1AV
Qualifiers: N,D									
Dilution Factor: 2									

Lead

3.9	27.2	33.8 D	mg/kg	110			SW846 6010B	05/12/08	KMQMK1AW
3.9	27.2	33.5 D	mg/kg	109	1.0		SW846 6010B	05/12/08	KMQMK1AX
Dilution Factor: 2									

Nickel

5.2	27.2	31.7 D	mg/kg	98			SW846 6010B	05/12/08	KMQMK1CA
5.2	27.2	31.8 D	mg/kg	98	0.37		SW846 6010B	05/12/08	KMQMK1CC
Dilution Factor: 2									

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F8E070358  
 Date Sampled...: 02/14/08

Date Received...: 05/07/08

Matrix.....: SOLID

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Selenium									
	ND	109	117 D	mg/kg	107		SW846 6010B	05/12/08	KMQMK1CD
	ND	109	115 D	mg/kg	106	1.4	SW846 6010B	05/12/08	KMQMK1CE
Dilution Factor: 2									
Silver									
	ND	2.72	2.61 D	mg/kg	96		SW846 6010B	05/12/08	KMQMK1A0
	ND	2.72	2.91 D	mg/kg	107	11	SW846 6010B	05/12/08	KMQMK1A1
Dilution Factor: 2									
Zinc									
	33.6	27.2	66.2 D	mg/kg	120		SW846 6010B	05/12/08	KMQMK1CF
	33.6	27.2	73.4	mg/kg	146	10	SW846 6010B	05/12/08	KMQMK1CG
Qualifiers: N,D									
Dilution Factor: 2									

MS Lot-Sample #: F8E070358-001 Prep Batch #...: 8135058

% Moisture.....: 8.2

Mercury									
	ND	182	194	ug/kg	107		SW846 7471A	05/14/08	KMQMK1CH
	ND	182	177	ug/kg	98	9.2	SW846 7471A	05/14/08	KMQMK1CJ
Dilution Factor: 1									

**NOTE (S) :**

- Calculations are performed before rounding to avoid round-off errors in calculated results.
- Results and reporting limits have been adjusted for dry weight.
- D Result was obtained from the analysis of a dilution.
- N Spiked analyte recovery is outside stated control limits.

Fluor Hanford Inc

Client Sample ID: B1TFR9

General Chemistry

Lot-Sample #...: F8E070358-001    Work Order #...: KMQMK    Matrix.....: SOLID  
 Date Sampled...: 02/14/08    Date Received...: 05/07/08  
 % Moisture.....: 8.2

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Percent Moisture	8.2	0.10	%	MCAWW 160.3 MOD	05/09-05/11/08	8130039
		Dilution Factor: 1		MDL.....:		