



SEVERN  
TRENT

STL

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## ANALYTICAL REPORT



PROJECT NO. 100 BC PIPELINE

B05-004

Lot #: F5G130274  
SDG #: W04705

Joan Kessner

Bechtel Hanford, Inc.  
3190 George Washington Way  
MSIN H9-02  
Richland, WA 99352

SEVERN TRENT LABORATORIES, INC.

A handwritten signature in black ink, appearing to read "Melania Harris". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Melania Harris  
Project Manager

August 2, 2005

**Case Narrative**  
**LOT NUMBER: F5G130274**

This report contains the analytical results for the sample received under chain of custody by STL St. Louis on July 13, 2005. This sample is associated with your B05-004 project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted on the following page.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by STL St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of this report.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise.  
Observations/Nonconformances

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

**Metals method 6010B**

The MS (MSD) recovery for Silicon, Titanium, Iron, and Manganese is outside the established QC limits. The said analyte concentration in the original sample is greater than 4 times the amount spiked, making the percent recovery information ineffective. Method performance is demonstrated by acceptable LCS recovery.

**Affected Samples:**

F5G130274 (1): J03NB2

The MS (MSD) recovery for Phosphorus, Zirconium, Cadmium, and Antimony is outside the established QC limits. The RPD is within method acceptance criteria indicating possible matrix interference. Method performance is demonstrated by acceptable LCS recovery.

**Affected Samples:**

F5G130274 (1): J03NB2

**SAMPLE SUMMARY**

F5G130274

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLED DATE</u>	<u>SAMP TIME</u>
HFD3F	001	J03NB2	07/07/05	13:45

**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.

**METHODS SUMMARY**

F5G130274

<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	SW846 3050B

**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.





# STL

Lot No(s) F5G130274

(Note all associated lot No's)

**Condition Upon Receipt Form  
St. Louis Laboratory**

Client: STL R. d. land COC/RFA No: 805-004 Date: 7/19/05  
 Quote No: 63148 Initiated By: BA Time: 0845

**Shipping Information**

Shipper Name: FE Multiple Packages: Y N N/A  
 Shipper No(s):\* 1. 791675793274 Sample Temperature(s):\*\* 1. 15  
 2. \_\_\_\_\_ 2. \_\_\_\_\_  
 3. \_\_\_\_\_ 3. \_\_\_\_\_  
 4. \_\_\_\_\_ 4. \_\_\_\_\_  
 5. \_\_\_\_\_ 5. \_\_\_\_\_

\*Numbered shipping lines correspond to Numbered Sample Temp lines.

\*\*Sample must be received at 4°C ± 2°C. If not, note contents below.  
 Temperature variance does NOT affect the following analysis/matrix: Metals-Liquid  
 Rad tests - Liquids or Solids.

**Condition/Variance (Circle "Y" for yes, "N" for no and "N/A" for not applicable):**

1.	<input checked="" type="radio"/> Y <input type="radio"/> N	Sample received in undamaged condition?	7.	<input checked="" type="radio"/> Y <input type="radio"/> N	Sample received with Chain of Custody?
2.	<input type="radio"/> Y <input type="radio"/> N <input checked="" type="radio"/> N/A	Sample received with proper pH <sup>1</sup> ? (N/A for soil samples)	8.	<input checked="" type="radio"/> Y <input type="radio"/> N	Chain of Custody matches sample IDs on container(s)?
3.	<input type="radio"/> Y <input checked="" type="radio"/> N	If N/A- Was pH taken by original STL Lab?	9.	<input checked="" type="radio"/> Y <input type="radio"/> N <input type="radio"/> N/A	Custody seal received intact?
4.	<input checked="" type="radio"/> Y <input type="radio"/> N	Sample received in proper containers?	10.	<input type="radio"/> Y <input checked="" type="radio"/> N <input type="radio"/> N/A	Custody seal tamper evident?
5.	<input checked="" type="radio"/> Y <input type="radio"/> N	Sample volume sufficient for analysis?	11.	<input checked="" type="radio"/> Y <input type="radio"/> N <input type="radio"/> N/A	Custody seal on bottles intact?
6.	<input type="radio"/> Y <input type="radio"/> N <input checked="" type="radio"/> N/A	Headspace in VOA or TOX liquid samples? (If yes, note sample ID's below)	12.	<input type="radio"/> Y <input checked="" type="radio"/> N <input type="radio"/> N/A	Custody seal tamper evident?
<sup>1</sup> For DOE-AL (Pantex, LANL, Sandia) sites, verify pH of all containers received, EXCEPT VOA, TOX, and soils.			13.	<input type="radio"/> Y <input type="radio"/> N <input checked="" type="radio"/> N/A	Was Internal COC/CUR rec'd?

Notes: Samples rec. out of temp

Corrective Action:  
 Client's Name: Jan Kessner Informed by: UMA By: Email  
 Sample(s) processed "as is"  
 Sample(s) on hold until: \_\_\_\_\_ If released, notify: \_\_\_\_\_

Project Management Review: [Signature] Date: 7/19/05  
 THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

# METALS

## Bechtel Hanford, Inc.

Client Sample ID: J03NB2

## TOTAL Metals

Lot-Sample #...: F5G130274-001

Matrix.....: SOLID

Date Sampled...: 07/07/05

Date Received...: 07/13/05

% Moisture.....: 0.66

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch #...	5195079					
Phosphorus	1340 J	50.3	mg/kg	SW846 6010B	07/14-07/18/05	HFD3F1AA
		Dilution Factor: 1		MDL.....: 1.9		
Titanium	1180 J	5.0	mg/kg	SW846 6010B	07/14/05	HFD3F1AC
		Dilution Factor: 1		MDL.....: 0.079		
Zirconium	169	10.1	mg/kg	SW846 6010B	07/14-07/18/05	HFD3F1AD
		Dilution Factor: 1		MDL.....: 0.088		
Antimony	0.85 B	1.0	mg/kg	SW846 6010B	07/14/05	HFD3F1AK
		Dilution Factor: 1		MDL.....: 0.33		
Arsenic	3.4	1.0	mg/kg	SW846 6010B	07/14/05	HFD3F1AF
		Dilution Factor: 1		MDL.....: 0.13		
Barium	82.6	20.1	mg/kg	SW846 6010B	07/14/05	HFD3F1AG
		Dilution Factor: 1		MDL.....: 0.080		
Beryllium	0.56	0.50	mg/kg	SW846 6010B	07/14/05	HFD3F1AH
		Dilution Factor: 1		MDL.....: 0.038		
Boron	5.1 B,J	20.1	mg/kg	SW846 6010B	07/14/05	HFD3F1AJ
		Dilution Factor: 1		MDL.....: 0.50		
Cadmium	ND	0.50	mg/kg	SW846 6010B	07/14/05	HFD3F1AK
		Dilution Factor: 1		MDL.....: 0.13		
Calcium	6310 J	503	mg/kg	SW846 6010B	07/14/05	HFD3F1AL
		Dilution Factor: 1		MDL.....: 1.0		
Chromium	7.4	1.0	mg/kg	SW846 6010B	07/14/05	HFD3F1AM
		Dilution Factor: 1		MDL.....: 0.19		
Cobalt	10.3	5.0	mg/kg	SW846 6010B	07/14/05	HFD3F1AN
		Dilution Factor: 1		MDL.....: 0.18		
Copper	14.8	2.5	mg/kg	SW846 6010B	07/14/05	HFD3F1AP
		Dilution Factor: 1		MDL.....: 0.23		
Iron	22200 J	10.1	mg/kg	SW846 6010B	07/14/05	HFD3F1AQ
		Dilution Factor: 1		MDL.....: 1.2		

(Continued on next page)

## Bechtel Hanford, Inc.

Client Sample ID: J03NB2

## TOTAL Metals

Lot-Sample #...: F5G130274-001

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Lead	3.9	0.50	mg/kg	SW846 6010B Dilution Factor: 1 MDL.....: 0.051	07/14/05	HFD3F1AR
Lithium	8.3 J	5.0	mg/kg	SW846 6010B Dilution Factor: 1 MDL.....: 0.24	07/14/05	HFD3F1AT
Magnesium	4500 J	503	mg/kg	SW846 6010B Dilution Factor: 1 MDL.....: 4.7	07/14/05	HFD3F1AU
Manganese	337	1.5	mg/kg	SW846 6010B Dilution Factor: 1 MDL.....: 0.21	07/14/05	HFD3F1AV
Molybdenum	ND	4.0	mg/kg	SW846 6010B Dilution Factor: 1 MDL.....: 0.46	07/14/05	HFD3F1AW
Nickel	10	4.0	mg/kg	SW846 6010B Dilution Factor: 1 MDL.....: 0.099	07/14/05	HFD3F1AX
Potassium	1470 J	503	mg/kg	SW846 6010B Dilution Factor: 1 MDL.....: 61.2	07/14/05	HFD3F1A0
Selenium	0.53	0.50	mg/kg	SW846 6010B Dilution Factor: 1 MDL.....: 0.16	07/14/05	HFD3F1A1
Silicon	947 J	50.3	mg/kg	SW846 6010B Dilution Factor: 1 MDL.....: 0.53	07/14/05	HFD3F1A2
Silver	ND	1.0	mg/kg	SW846 6010B Dilution Factor: 1 MDL.....: 0.26	07/14/05	HFD3F1A3
Sodium	703 J	503	mg/kg	SW846 6010B Dilution Factor: 1 MDL.....: 7.6	07/14/05	HFD3F1A4
Strontium	32.0	5.0	mg/kg	SW846 6010B Dilution Factor: 1 MDL.....: 0.053	07/14/05	HFD3F1A5
Thallium	1.6	1.0	mg/kg	SW846 6010B Dilution Factor: 1 MDL.....: 0.55	07/14/05	HFD3F1A6
Tin	ND	10.1	mg/kg	SW846 6010B Dilution Factor: 1 MDL.....: 5.6	07/14/05	HFD3F1A7

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Bechtel Hanford, Inc.

Client Sample ID: J03NB2

TOTAL Metals

Lot-Sample #...: F5G130274-001

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Uranium	ND	50.3	mg/kg	SW846 6010B Dilution Factor: 1 MDL.....: 7.4	07/14/05	HFD3F1A8
Vanadium	41.8	5.0	mg/kg	SW846 6010B Dilution Factor: 1 MDL.....: 0.15	07/14/05	HFD3F1A9
Zinc	39.5 J	2.0	mg/kg	SW846 6010B Dilution Factor: 1 MDL.....: 0.22	07/14/05	HFD3F1CA
Prep Batch #...: 5202342						
Mercury	ND	0.034	mg/kg	SW846 7471A Dilution Factor: 1 MDL.....: 0.0072	07/21/05	HFD3F1CC

**NOTE (S) :**

Results and reporting limits have been adjusted for dry-weight.

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

B Estimated result. Result is less than RL.

## METHOD BLANK REPORT

## TOTAL Metals

Client Lot #...: F5G130274

Matrix.....: SOLID

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>
MB Lot-Sample #: F5G140000-079 Prep Batch #...: 5195079						
Phosphorus	8.8 B	50.0	mg/kg	SW846 6010B	07/14-07/18/05	HFFJG1AA
		Dilution Factor: 1				
Titanium	0.098 B	5.0	mg/kg	SW846 6010B	07/14/05	HFFJG1AC
		Dilution Factor: 1				
Zirconium	ND	10.0	mg/kg	SW846 6010B	07/14-07/18/05	HFFJG1AD
		Dilution Factor: 1				
Antimony	ND	1.0	mg/kg	SW846 6010B	07/14/05	HFFJG1AE
		Dilution Factor: 1				
Arsenic	ND	1.0	mg/kg	SW846 6010B	07/14/05	HFFJG1AF
		Dilution Factor: 1				
Barium	ND	20.0	mg/kg	SW846 6010B	07/14/05	HFFJG1AG
		Dilution Factor: 1				
Beryllium	ND	0.50	mg/kg	SW846 6010B	07/14/05	HFFJG1AH
		Dilution Factor: 1				
Boron	2.5 B	20.0	mg/kg	SW846 6010B	07/14/05	HFFJG1AJ
		Dilution Factor: 1				
Cadmium	ND	0.50	mg/kg	SW846 6010B	07/14/05	HFFJG1AK
		Dilution Factor: 1				
Calcium	11.6 B	500	mg/kg	SW846 6010B	07/14/05	HFFJG1AL
		Dilution Factor: 1				
Chromium	ND	1.0	mg/kg	SW846 6010B	07/14/05	HFFJG1AM
		Dilution Factor: 1				
Cobalt	ND	5.0	mg/kg	SW846 6010B	07/14/05	HFFJG1AN
		Dilution Factor: 1				
Copper	ND	2.5	mg/kg	SW846 6010B	07/14/05	HFFJG1AP
		Dilution Factor: 1				
Iron	2.4 B	10.0	mg/kg	SW846 6010B	07/14/05	HFFJG1AQ
		Dilution Factor: 1				
Lead	ND	0.50	mg/kg	SW846 6010B	07/14/05	HFFJG1AR
		Dilution Factor: 1				

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## METHOD BLANK REPORT

## TOTAL Metals

Client Lot #...: F5G130274

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Lithium	0.54 B	5.0	mg/kg	SW846 6010B	07/14/05	HFFJG1AT
		Dilution Factor: 1				
Magnesium	28.1 B	500	mg/kg	SW846 6010B	07/14/05	HFFJG1AU
		Dilution Factor: 1				
Manganese	ND	1.5	mg/kg	SW846 6010B	07/14/05	HFFJG1AV
		Dilution Factor: 1				
Molybdenum	ND	4.0	mg/kg	SW846 6010B	07/14/05	HFFJG1AW
		Dilution Factor: 1				
Nickel	ND	4.0	mg/kg	SW846 6010B	07/14/05	HFFJG1AX
		Dilution Factor: 1				
Potassium	79.7 B	500	mg/kg	SW846 6010B	07/14/05	HFFJG1A0
		Dilution Factor: 1				
Selenium	ND	0.50	mg/kg	SW846 6010B	07/14/05	HFFJG1A1
		Dilution Factor: 1				
Silicon	15.6 B	50.0	mg/kg	SW846 6010B	07/14/05	HFFJG1A2
		Dilution Factor: 1				
Silver	ND	1.0	mg/kg	SW846 6010B	07/14/05	HFFJG1A3
		Dilution Factor: 1				
Sodium	133 B	500	mg/kg	SW846 6010B	07/14/05	HFFJG1A4
		Dilution Factor: 1				
Strontium	ND	5.0	mg/kg	SW846 6010B	07/14/05	HFFJG1A5
		Dilution Factor: 1				
Thallium	ND	1.0	mg/kg	SW846 6010B	07/14/05	HFFJG1A6
		Dilution Factor: 1				
Tin	ND	10.0	mg/kg	SW846 6010B	07/14/05	HFFJG1A7
		Dilution Factor: 1				
Uranium	ND	50.0	mg/kg	SW846 6010B	07/14/05	HFFJG1A8
		Dilution Factor: 1				
Vanadium	ND	5.0	mg/kg	SW846 6010B	07/14/05	HFFJG1A9
		Dilution Factor: 1				
Zinc	1.1 B	2.0	mg/kg	SW846 6010B	07/14/05	HFFJG1CA
		Dilution Factor: 1				

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METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F5G130274

Matrix.....: SOLID

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>
MB Lot-Sample #: F5G210000-342 Prep Batch #...: 5202342						
Mercury	ND	0.033	mg/kg	SW846 7471A	07/21/05	HF0971AA
		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 #...: F5G130274

Matrix.....: SOLID

<u>PARAMETER</u>	<u>SPIKE AMOUNT</u>	<u>MEASURED AMOUNT</u>	<u>UNITS</u>	<u>PERCNT RECVRY</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>	
LCS Lot-Sample#: F5G140000-079 Prep Batch #...: 5195079								
Phosphorus	1000	1010	mg/kg	101	SW846 6010B	07/14-07/18/05	HFFJG1CC	
			Dilution Factor: 1					
Titanium	310	263	mg/kg	85	SW846 6010B	07/14/05	HFFJG1CD	
			Dilution Factor: 1					
Zirconium	200	185	mg/kg	93	SW846 6010B	07/14-07/18/05	HFFJG1CE	
			Dilution Factor: 1					
Antimony	60.9	43.6	mg/kg	72	SW846 6010B	07/14/05	HFFJG1CF	
			Dilution Factor: 1					
Arsenic	161	177	mg/kg	110	SW846 6010B	07/14/05	HFFJG1CG	
			Dilution Factor: 1					
Barium	252	278	mg/kg	110	SW846 6010B	07/14/05	HFFJG1CH	
			Dilution Factor: 1					
Beryllium	94.4	103	mg/kg	109	SW846 6010B	07/14/05	HFFJG1CJ	
			Dilution Factor: 1					
Boron	97.4	102	mg/kg	105	SW846 6010B	07/14/05	HFFJG1CK	
			Dilution Factor: 1					
Cadmium	128	139	mg/kg	109	SW846 6010B	07/14/05	HFFJG1CL	
			Dilution Factor: 1					
Calcium	3320	3560	mg/kg	107	SW846 6010B	07/14/05	HFFJG1CM	
			Dilution Factor: 1					
Chromium	69.5	69.6	mg/kg	100	SW846 6010B	07/14/05	HFFJG1CN	
			Dilution Factor: 1					
Cobalt	35.2	36.5	mg/kg	104	SW846 6010B	07/14/05	HFFJG1CP	
			Dilution Factor: 1					
Copper	148	153	mg/kg	103	SW846 6010B	07/14/05	HFFJG1CQ	
			Dilution Factor: 1					
Iron	11200	9890	mg/kg	88	SW846 6010B	07/14/05	HFFJG1CR	
			Dilution Factor: 1					

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## LABORATORY CONTROL SAMPLE DATA REPORT

## TOTAL Metals

Client Lot #...: F5G130274

Matrix.....: SOLID

<u>PARAMETER</u>	<u>SPIKE AMOUNT</u>	<u>MEASURED AMOUNT</u>	<u>UNITS</u>	<u>PERCNT RECVRY</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>	
Lead	142	152	mg/kg	107	SW846 6010B	07/14/05	HFFJG1CT	
			Dilution Factor: 1					
Lithium	200	210	mg/kg	105	SW846 6010B	07/14/05	HFFJG1CU	
			Dilution Factor: 1					
Magnesium	2040	2050	mg/kg	100	SW846 6010B	07/14/05	HFFJG1CV	
			Dilution Factor: 1					
Manganese	408	429	mg/kg	105	SW846 6010B	07/14/05	HFFJG1CW	
			Dilution Factor: 1					
Molybdenum	84.1	93.4	mg/kg	111	SW846 6010B	07/14/05	HFFJG1CX	
			Dilution Factor: 1					
Nickel	147	156	mg/kg	106	SW846 6010B	07/14/05	HFFJG1C0	
			Dilution Factor: 1					
Potassium	1920	1940	mg/kg	101	SW846 6010B	07/14/05	HFFJG1C1	
			Dilution Factor: 1					
Selenium	64.2	69.3	mg/kg	108	SW846 6010B	07/14/05	HFFJG1C2	
			Dilution Factor: 1					
Silicon	754	1250	mg/kg	165	SW846 6010B	07/14/05	HFFJG1C3	
			Dilution Factor: 1					
Silver	130	149	mg/kg	114	SW846 6010B	07/14/05	HFFJG1C4	
			Dilution Factor: 1					
Sodium	445	619	mg/kg	139	SW846 6010B	07/14/05	HFFJG1C5	
			Dilution Factor: 1					
Strontium	84.0	94.6	mg/kg	113	SW846 6010B	07/14/05	HFFJG1C6	
			Dilution Factor: 1					
Thallium	84.0	88.8	mg/kg	106	SW846 6010B	07/14/05	HFFJG1C7	
			Dilution Factor: 1					
Tin	61.0	64.9	mg/kg	106	SW846 6010B	07/14/05	HFFJG1C8	
			Dilution Factor: 1					
Uranium	200	207	mg/kg	104	SW846 6010B	07/14/05	HFFJG1C9	
			Dilution Factor: 1					

(Continued on next page)

## LABORATORY CONTROL SAMPLE DATA REPORT

## TOTAL Metals

Client Lot #...: F5G130274

Matrix.....: SOLID

<u>PARAMETER</u>	<u>SPIKE AMOUNT</u>	<u>MEASURED AMOUNT</u>	<u>UNITS</u>	<u>PERCNT RECVRY</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>WORK ORDER #</u>	
Vanadium	97.3	98.0	mg/kg	101	SW846 6010B	07/14/05	HFFJG1DA	
			Dilution Factor: 1					
Zinc	165	178	mg/kg	108	SW846 6010B	07/14/05	HFFJG1DC	
			Dilution Factor: 1					
LCS Lot-Sample#: F5G210000-342 Prep Batch #...: 5202342								
Mercury	16.9	17.9	mg/kg	106	SW846 7471A	07/21/05	HF0971AC	
			Dilution Factor: 20					

**NOTE (S) :**


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

## MATRIX SPIKE SAMPLE DATA REPORT

## TOTAL Metals

Client Lot #...: F5G130274

Matrix.....: SOLID

Date Sampled...: 07/07/05

Date Received...: 07/13/05

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
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MS Lot-Sample #: F5G130274-001 Prep Batch #...: 5195079

‡ Moisture.....: 0.66

## Phosphorus

1340	1010	2110	mg/kg	77			SW846 6010B	07/14-07/18/05	HFD3F1C3
1340	1010	2070 N	mg/kg	73	1.9		SW846 6010B	07/14-07/18/05	HFD3F1C4

Dilution Factor: 1

## Titanium

1180	201	1560 N	mg/kg	189			SW846 6010B	07/14/05	HFD3F1C5
1180	201	1300 N	mg/kg	59	18		SW846 6010B	07/14/05	HFD3F1C6

Dilution Factor: 1

## Zirconium

169	201	321	mg/kg	75			SW846 6010B	07/14-07/18/05	HFD3F1C7
169	201	311 N	mg/kg	71	2.9		SW846 6010B	07/14-07/18/05	HFD3F1C8

Dilution Factor: 1

## Antimony

0.85	50.3	30.9 N	mg/kg	60			SW846 6010B	07/14/05	HFD3F1C9
0.85	50.3	29.6 N	mg/kg	57	4.2		SW846 6010B	07/14/05	HFD3F1DA

Dilution Factor: 1

## Arsenic

3.4	201	198	mg/kg	97			SW846 6010B	07/14/05	HFD3F1DC
3.4	201	198	mg/kg	97	0.02		SW846 6010B	07/14/05	HFD3F1DD

Dilution Factor: 1

## Barium

82.6	201	270	mg/kg	93			SW846 6010B	07/14/05	HFD3F1DE
82.6	201	291	mg/kg	104	7.6		SW846 6010B	07/14/05	HFD3F1DF

Dilution Factor: 1

## Beryllium

0.56	5.03	5.53	mg/kg	99			SW846 6010B	07/14/05	HFD3F1DG
0.56	5.03	5.59	mg/kg	100	1.2		SW846 6010B	07/14/05	HFD3F1DH

Dilution Factor: 1

## Boron

5.1	201	199	mg/kg	96			SW846 6010B	07/14/05	HFD3F1DJ
5.1	201	201	mg/kg	97	1.0		SW846 6010B	07/14/05	HFD3F1DK

Dilution Factor: 1

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## MATRIX SPIKE SAMPLE DATA REPORT

## TOTAL Metals

Client Lot #....: F5G130274

Matrix.....: SOLID

Date Sampled....: 07/07/05

Date Received...: 07/13/05

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Cadmium									
	ND	5.03	3.76	mg/kg	75		SW846 6010B	07/14/05	HFD3F1DL
	ND	5.03	3.74 N	mg/kg	74	0.67	SW846 6010B	07/14/05	HFD3F1DM
	Dilution Factor: 1								
Calcium									
	6310	5030	10400	mg/kg	81		SW846 6010B	07/14/05	HFD3F1DN
	6310	5030	10500	mg/kg	83	0.93	SW846 6010B	07/14/05	HFD3F1DP
	Dilution Factor: 1								
Chromium									
	7.4	20.1	25.2	mg/kg	88		SW846 6010B	07/14/05	HFD3F1DQ
	7.4	20.1	27.7	mg/kg	101	9.5	SW846 6010B	07/14/05	HFD3F1DR
	Dilution Factor: 1								
Cobalt									
	10.3	50.3	56.2	mg/kg	91		SW846 6010B	07/14/05	HFD3F1DT
	10.3	50.3	57.0	mg/kg	93	1.4	SW846 6010B	07/14/05	HFD3F1DU
	Dilution Factor: 1								
Copper									
	14.8	25.2	37.9	mg/kg	92		SW846 6010B	07/14/05	HFD3F1DV
	14.8	25.2	40.3	mg/kg	102	6.2	SW846 6010B	07/14/05	HFD3F1DW
	Dilution Factor: 1								
Iron									
	22200	101	21200 N	mg/kg	0.0		SW846 6010B	07/14/05	HFD3F1DX
	22200	101	22600 N	mg/kg	347	0.0	SW846 6010B	07/14/05	HFD3F1D0
	Dilution Factor: 1								
Lead									
	3.9	50.3	49.1	mg/kg	90		SW846 6010B	07/14/05	HFD3F1D1
	3.9	50.3	49.4	mg/kg	90	0.70	SW846 6010B	07/14/05	HFD3F1D2
	Dilution Factor: 1								
Lithium									
	8.3	201	203	mg/kg	97		SW846 6010B	07/14/05	HFD3F1D3
	8.3	201	207	mg/kg	99	1.9	SW846 6010B	07/14/05	HFD3F1D4
	Dilution Factor: 1								
Magnesium									
	4500	5030	9810	mg/kg	106		SW846 6010B	07/14/05	HFD3F1D5
	4500	5030	9890	mg/kg	107	0.85	SW846 6010B	07/14/05	HFD3F1D6
	Dilution Factor: 1								

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MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F5G130274  
 Date Sampled...: 07/07/05

Date Received...: 07/13/05

Matrix.....: SOLID

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
<b>Manganese</b>									
	337	50.3	361 N	mg/kg	49		SW846 6010B	07/14/05	HFD3F1D7
	337	50.3	455 N	mg/kg	236	23	SW846 6010B	07/14/05	HFD3F1D8
Dilution Factor: 1									
<b>Molybdenum</b>									
	ND	101	98.7	mg/kg	98		SW846 6010B	07/14/05	HFD3F1D9
	ND	101	98.4	mg/kg	98	0.29	SW846 6010B	07/14/05	HFD3F1EA
Dilution Factor: 1									
<b>Nickel</b>									
	10	50.3	55.1	mg/kg	90		SW846 6010B	07/14/05	HFD3F1EC
	10	50.3	57.5	mg/kg	95	4.2	SW846 6010B	07/14/05	HFD3F1ED
Dilution Factor: 1									
<b>Potassium</b>									
	1470	5030	5960	mg/kg	89		SW846 6010B	07/14/05	HFD3F1CE
	1470	5030	6260	mg/kg	95	4.9	SW846 6010B	07/14/05	HFD3F1CF
Dilution Factor: 1									
<b>Selenium</b>									
	0.53	201	190	mg/kg	94		SW846 6010B	07/14/05	HFD3F1CG
	0.53	201	189	mg/kg	94	0.43	SW846 6010B	07/14/05	HFD3F1CH
Dilution Factor: 1									
<b>Silicon</b>									
	947	201	1430 N	mg/kg	240		SW846 6010B	07/14/05	HFD3F1CJ
	947	201	1800 N	mg/kg	423	23	SW846 6010B	07/14/05	HFD3F1CK
Dilution Factor: 1									
<b>Silver</b>									
	ND	5.03	5.64	mg/kg	112		SW846 6010B	07/14/05	HFD3F1CL
	ND	5.03	5.62	mg/kg	112	0.50	SW846 6010B	07/14/05	HFD3F1CM
Dilution Factor: 1									
<b>Sodium</b>									
	703	5030	5260	mg/kg	91		SW846 6010B	07/14/05	HFD3F1CN
	703	5030	5240	mg/kg	90	0.44	SW846 6010B	07/14/05	HFD3F1CP
Dilution Factor: 1									
<b>Strontium</b>									
	32.0	101	133	mg/kg	100		SW846 6010B	07/14/05	HFD3F1CQ
	32.0	101	137	mg/kg	105	3.4	SW846 6010B	07/14/05	HFD3F1CR
Dilution Factor: 1									

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## MATRIX SPIKE SAMPLE DATA REPORT

## TOTAL Metals

Client Lot #....: F5G130274

Matrix.....: SOLID

Date Sampled....: 07/07/05

Date Received...: 07/13/05

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Thallium									
	1.6	201	181	mg/kg	89		SW846 6010B	07/14/05	HFD3F1CT
	1.6	201	180	mg/kg	89	0.39	SW846 6010B	07/14/05	HFD3F1CU
Dilution Factor: 1									
Tin									
	ND	201	197	mg/kg	98		SW846 6010B	07/14/05	HFD3F1CV
	ND	201	196	mg/kg	97	0.74	SW846 6010B	07/14/05	HFD3F1CW
Dilution Factor: 1									
Uranium									
	ND	201	176	mg/kg	87		SW846 6010B	07/14/05	HFD3F1CX
	ND	201	176	mg/kg	87	0.26	SW846 6010B	07/14/05	HFD3F1CO
Dilution Factor: 1									
Vanadium									
	41.8	50.3	86.8	mg/kg	90		SW846 6010B	07/14/05	HFD3F1C1
	41.8	50.3	85.6	mg/kg	87	1.4	SW846 6010B	07/14/05	HFD3F1C2
Dilution Factor: 1									
Zinc									
	39.5	50.3	89.9	mg/kg	100		SW846 6010B	07/14/05	HFD3F1EE
	39.5	50.3	95.7	mg/kg	112	6.2	SW846 6010B	07/14/05	HFD3F1EF
Dilution Factor: 1									

MS Lot-Sample #: F5G130274-001 Prep Batch #....: 5202342

% Moisture.....: 0.66

Mercury

ND	0.168	0.166	mg/kg	99		SW846 7471A	07/21/05	HFD3F1EG	
ND	0.168	0.171	mg/kg	102	3.1	SW846 7471A	07/21/05	HFD3F1EH	
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.

N Spiked analyte recovery is outside stated control limits.