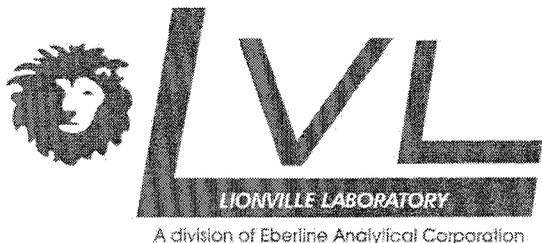


FEBRUARY 26, 2013



264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

26 February 2013

Mr. Scot Fitzgerald
CH2M Hill Plateau Remediation Company
P.O. Box 1600
Mail Stop - B6-06
Richland, WA 99352

Subject: Contract No. 630 - Analytical Data Package

Dear Mr. Fitzgerald:

Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvL Batch #	1302024
SDG #	L0054
SAF #	L13-012
Date Received	02/07/2013
# Samples	3
Matrix	Other Solid
Volatiles	
Semivolatiles	
Pest/PCB	
DRO/GRO/KRO	
PAH	
Acrylamide	
Metals	X
Inorganics	

The electronic data deliverable (EDD) has been uploaded to EDDPro. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,

Lionville Laboratory
(A Division of Eberline Analytical Corporation)


Orlette S. Johnson
Project Manager

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 26 pages.

FEBRUARY 26, 2013

CHAIN OF CUSTODY

000000002

1302084

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS



Client: CHPR SAFE L13-012

Est. Final Proj. Sampling Date

Project#

Project Contact/Phone#

Lionville Laboratory Project Manager

QC SD Del SWL TAT 15

Date Rec'd 2-7-13 Date Due 2-22-13

MATRIX CODES:

W Water

WW Waste Water

GW Groundwater

WST Waste

WI Wipe

SO Soil

S Soil

SL Sludge

SE Sediment

PC Paint Chips

O Oil

NAL Non-Aqueous

L Leachate

L Leachate

A Air

T Tissue

F Fish

Lab ID	Client ID/Description	Matrix Chosen (✓)	MS	MSD	Matrix	Date Collected	Time Collected	Refrigerator #				ORGANIC	Metal	INDORG	TCLP metals	
								#/Type Container	Liquid	Solid	Volume					Liquid
01	BZMT74				SD	2-5-13	1003								X	TCLP metals
02	I 75				I	I	1015								X	
03	I 76				I	I	1016								X	

Special Instructions:

Special Instructions:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Relinquished by	Received by	Date	Time
<u>COB</u>	<u>[Signature]</u>	<u>2-7-13</u>	<u>0930</u>

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

000000003

FEBRUARY 26, 2013

CH2MHill PI Remediation Company		CHAIN OF CUSTODY/SA ANALYSIS REQUEST		L13-012-001	PAGE 1
COLLECTOR <i>Bob Quader</i>	COMPANY CONTACT BOWMAN, MW	TELEPHONE NO. 373-9379	PROJECT COORDINATOR	PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days
SAMPLING LOCATION 2025 E	PROJECT DESIGNATION ETF Powder Sampling FY2013	FIELD LOGBOOK NO. 13-01 Pg 47	ACTUAL SAMPLE DEPTH	SAF NO. L13-012	AIR QUALITY <input type="checkbox"/>
ICE CHEST NO. 2025E-24	OFFSITE PROPERTY NO.	BILL OF LADING/AIR BILL NO.	METHOD OF SHIPMENT Commercial Carrier		
SPECIAL HANDLING AND/OR STORAGE		<p>MATRIX* OL = OTHER LIQUID OS = OTHER SOLID S = SOIL W = WATER</p> <p>Possible Sample Hazards/ Remarks **Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.**</p>			
SAMPLE NO. B2MT74	LAB ID	MATRIX* OS	SAMPLE DATE 2/5/13	SAMPLE TIME 1003	NO./TYPE CONTAINER(S) 1X125ml aG
ANALYSIS			TCLP RCRA metals for ETF powder (Ag, As, Ba, Cd, Cr, Hg, Ni, Pb, Sb, Se);		
HOLDING TIME 28/28 Days			PRESERVATION None		

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	OPS: Order 125-ml or 150-ml wide mouth bottles.	
<i>A.E. Drake William Drake</i>	2/5/13 1118	<i>W. Doremus</i>	2-5-13 1118	OPS: Fill bottles with 25 to 30 grams of powder. Refer to work package for specific instructions.	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	Drum number <u>0081435</u>	
<i>W. Doremus</i>	2-6-13 0650	<i>Kevin Patterson</i>	2-6-13 0650	Lionville: TCLP for RCRA metals, including antimony and nickel.	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
<i>Kevin Patterson</i>	FEB 06 2013 0850	<i>Kevin Patterson</i>	FEB 06 2013 0850		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
<i>Kevin Patterson</i>	FEB 06 2013 1400	<i>Kevin Patterson</i>	FEB 06 2013 1400		
LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME		
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		

FEBRUARY 26, 2013

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST (continued)

C.O.C. No. **LI3-012-001**
 Page **2** of **2**

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Feb E			2-7-13 0930	YORR HERNANDEZ			2-7-13 0930
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time

FEBRUARY 26, 2013

CH2M Hill pr. Remediation Company		CHAIN OF CUSTODY/SA ANALYSIS REQUEST		L13-012-003	PAGE 1 OF 2				
COLLECTOR <i>BOB AVOOR</i>	COMPANY CONTACT BOWMAN, MW	TELEPHONE NO. 373-9379	PROJECT COORDINATOR	PRICE CODE 9C	DATA TURNAROUND 15 Days / 15 Days				
SAMPLING LOCATION 2025E	PROJECT DESIGNATION ETF Powder Sampling FY2013	FIELD LOGBOOK NO. 13-01 Pg 47	ACTUAL SAMPLE DEPTH	AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT Commercial Carrier				
ICE CHEST NO. 2025E-24	OFFSITE PROPERTY NO.	BILL OF LADING/AIR BILL NO.							
SHIPPED TO Lionville Laboratory Incorporated	<p>SPECIAL HANDLING AND/OR STORAGE</p> <p>MATRIX* OL = OTHER LIQUID OS = OTHER SOLID S = SOIL W = WATER</p> <p>POSSIBLE SAMPLE HAZARDS/ REMARKS **Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.**</p>								
SAMPLE NO. B2M76	LAB ID	MATRIX* OS	SAMPLE DATE 2/5/13	SAMPLE TIME 1010	NO./TYPE CONTAINER(S) 1X125ml AG	ANALYSIS	TCLP RCRA metals for ETF powder (Ag, As, Ba, Cd, Cr, Hg, Ni, Pb, Sb, Se);	HOLDING TIME 28/28 Days	PRESERVATION None

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM <i>A.E. Avoor</i>	DATE/TIME 2/5/13	RECEIVED BY/STORED IN <i>W. Doremus</i>	DATE/TIME 2/5/13	<p>OPS: Order 125-ml or 150-ml wide mouth bottles.</p> <p>OPS: Fill bottles with 25 to 30 grams of powder. Refer to work package for specific instructions.</p> <p>Drum number <u>0082346</u></p> <p>Lionville: TCLP for RCRA metals, including antimony and nickel.</p>	
RELINQUISHED BY/REMOVED FROM <i>W. Doremus</i>	DATE/TIME 2-6-13	RECEIVED BY/STORED IN <i>Ben Kershup</i>	DATE/TIME 2-6-13		
RELINQUISHED BY/REMOVED FROM <i>Ben Kershup</i>	DATE/TIME FEB 06 2013	RECEIVED BY/STORED IN <i>Kevin Patterson</i>	DATE/TIME FEB 06 2013		
RELINQUISHED BY/REMOVED FROM <i>Kevin Patterson</i>	DATE/TIME FEB 06 2013	RECEIVED BY/STORED IN <i>FEDER</i>	DATE/TIME 1400		
LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME		
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		

FEBRUARY 26, 2013

Lionville Laboratory
SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: CHPRC
Project/SAE/SOW/Release #: L13-012

Date: 2/7/13

LvL Batch #: 1302024

Sample Custodian: [Signature]

NOTE: EXPLAIN ALL DISCREPANCIES

- 1. Samples Hand Delivered or Shipped? Carrier FLE Airbill # 794692980609
- 2. Custody Seals on coolers or shipping containers intact, signed & dated? Yes No No Seals
- 3. Outside of coolers or shipping containers are free from damage? Yes No Comments:
- 4. All expected paperwork received (coc & other client specific information) sealed in plastic bag and easily accessible? Yes No
- 5. Samples received cooled or ambient? Temp 18.7 °C Cooler # GWS-294
How was the temperature taken? IR Temp. Blank Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C) Yes No
- 6. Custody seals on sample containers intact, signed and dated? Yes No No Seals
- 7. COC (Client & LvL) signed & dated? Yes No
- 8. Sample containers are intact? Yes No
- 9. All samples on COC received? Yes No
All samples received on COC? Yes No
- 10. All sample label information matches COC? Yes No
- 11. Samples properly preserved? (If #5 is no, then this is no.) Yes No
- 12. Samples received within hold times? Short holds taken to wet lab? Yes No No N/A
- 13. VOA, TOC, TOX, RSK-175, Sulfides, Non-Halogenated VOAs (Alcohol/Glycol) free of headspace? Yes No N/A
- 14. QC stickers placed on bottles designated by client? Yes No N/A
- 15. Shipment meets LvL Sample Acceptance Policy? (Identify all bottles that do not meet the policy, which is on the reverse of this page.) Yes No
- 16. Project Manager contacted concerning any discrepancies? Yes No N/A

Person Contacted _____

Date _____

FEBRUARY 26, 2013

METALS

FEBRUARY 26, 2013



264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

CHPRC Hanford
PO Box 1600, Mail Stop - R3-60
Richland WA, 99352

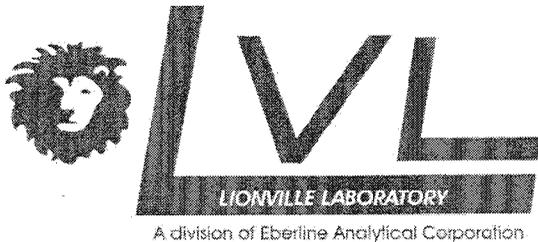
Project: L13-012
Project Number: L0054
Project Manager: Scot Fitzgerald

Reported:
02/26/2013 10:56

Analytical Report for TCLP Metals by SW846 1311 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B2MT74	1302024-01	Other Solid	02/05/2013 10:03	02/07/2013 09:30
B2MT75	1302024-02	Other Solid	02/05/2013 10:15	02/07/2013 09:30
B2MT76	1302024-03	Other Solid	02/05/2013 10:10	02/07/2013 09:30

12



264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

Case Narrative

Client: CHPRC-HANFORD L13-012
LVL#: 1302024
SDG/SAF#: L0054/L13-012

W.O.#: 60049-001-001-0001-00
Date Received: 02-07-13

METALS

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvL) certifies that all test results meet the requirements of NELAC except as noted below.

1. This narrative covers the analyses of 3 TCLP leachate samples.
2. The samples were prepared and analyzed in accordance with methods listed in the attached data report.

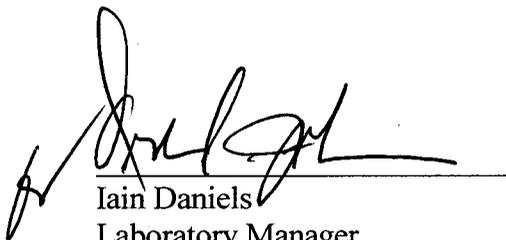
The TCLP leachates were digested with 5-fold dilutions for ICP metals, and with 10-fold dilutions for Mercury, due to the elevated radiation levels associated with the samples. RCRA action levels were still achieved for these analyses, in spite of the dilutions.

3. All analyses were performed within the required holding times.
4. Please refer to the Sample Receipt Check List for sample discrepancies in LvLI's sample acceptance policy.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the LOQ).
7. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation (3-10X the LOD), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 80-120% control limits.
10. The duplicate analyses were within the 20% Relative Percent Difference (RPD) control limit criteria. The $\pm 20\%$ RPD control limit applies to sample results greater than ten times the MDL. The duplicate results for Cadmium were less than ten times the MDL.

11. The TCLP extract from sample B2MT74 was selected for the matrix spike (MS) for this analytical batch.
12. The matrix spike for Barium was below 50% recovery (6.89%). The recovery in the TCLP Leachate was below 80-120% of the action level so standard addition was not required per Federal Register, Vol.57, No.227, Nov. 24, 1992, page 55117.

The matrix spike (MS) concentration for Mercury was equivalent to the regulatory level (200 ppb) as per SW846 method 1311. The required spike concentration is above the linear range of the instrument, resulting in a 5-fold dilution at the bench after the 10-fold dilution at the preparative step. The MS recovery was greater than 50% as per method criteria.

13. For the purposes of this report, the data has been reported to the Limit of Detection (LOD). Values between the LOD and the Limit of Quantitation (LOQ) are acquired in a region of less-certain quantification.
14. LvL is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
15. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.



Iain Daniels

Laboratory Manager
Lionville Laboratory

jjw/m07-030

2/26/13
Date

FEBRUARY 26, 2013



264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

CHPRC Hanford
PO Box 1600, Mail Stop - R3-60
Richland WA, 99352

Project: L13-012
Project Number: L0054
Project Manager: Scot Fitzgerald

Reported:
02/25/2013 10:21

Notes and Definitions

- U Analyte included in the analysis, but not detected
- J Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
- D Results reported from a dilution; related reporting limits are elevated due to the presence of an interference or a high target value.
- B Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag)
- * Value outside QC acceptance criteria
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- wet Sample results reported on a wet weight basis
- RPD Relative Percent Difference

FEBRUARY 26, 2013



264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

CHPRC Hanford PO Box 1600, Mail Stop - R3-60 Richland WA, 99352	Project: L13-012 Project Number: L0054 Project Manager: Scot Fitzgerald	Reported: 02/25/2013 10:21
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B2MT74
1302024-01 (Other Solid)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
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Lionville Laboratory

TCLP Metals by SW846 1311 6000/7000 series

Arsenic	0.181		0.0750	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Barium	0.360		0.00500	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Cadmium	0.00262	B	0.0150	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Chromium	0.532		0.0250	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Lead	0.0500	U	0.0500	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Selenium	0.111		0.100	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Silver	0.0300	U	0.0300	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Antimony	0.0182	B	0.100	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Nickel	0.229		0.100	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Mercury	0.00200	U	0.00200	mg/L	1	L302127	02/18/2013	02/19/2013	7470

FEBRUARY 26, 2013



264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

CHPRC Hanford PO Box 1600, Mail Stop - R3-60 Richland WA, 99352	Project: L13-012 Project Number: L0054 Project Manager: Scot Fitzgerald	Reported: 02/25/2013 10:21
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B2MT75
1302024-02 (Other Solid)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
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Lionville Laboratory

TCLP Metals by SW846 1311 6000/7000 series

Arsenic	0.175		0.0750	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Barium	0.500		0.00500	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Cadmium	0.00225	B	0.0150	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Chromium	0.562		0.0250	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Lead	0.0500	U	0.0500	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Selenium	0.108		0.100	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Silver	0.0300	U	0.0300	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Antimony	0.100	U	0.100	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Nickel	0.222		0.100	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Mercury	0.00200	U	0.00200	mg/L	1	L302127	02/18/2013	02/19/2013	7470

FEBRUARY 26, 2013



264 Welsh Pool Road
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CHPRC Hanford
PO Box 1600, Mail Stop - R3-60
Richland WA, 99352

Project: L13-012
Project Number: L0054
Project Manager: Scot Fitzgerald

Reported:
02/26/2013 10:56

B2MT76
1302024-03 (Other Solid)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
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Lionville Laboratory

TCLP Metals by SW846 1311 6000/7000 series

Arsenic	0.188		0.0750	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Barium	0.336		0.00500	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Cadmium	0.00213	B	0.0150	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Chromium	0.532		0.0250	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Lead	0.0500	U	0.0500	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Selenium	0.123		0.100	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Silver	0.0300	U	0.0300	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Antimony	0.0184	B	0.100	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Nickel	0.249		0.100	mg/L	1	L302126	02/18/2013	02/19/2013	6010
Mercury	0.00200	U	0.00200	mg/L	1	L302127	02/18/2013	02/19/2013	7470

FEBRUARY 26, 2013



264 Welsh Pool Road
 Exton, PA 19341
 Phone: 610-280-3000
 Fax: 610-280-3041

CHPRC Hanford PO Box 1600, Mail Stop - R3-60 Richland WA, 99352	Project: L13-012 Project Number: L0054 Project Manager: Scot Fitzgerald	Reported: 02/25/2013 10:21
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TCLP Metals by SW846 1311 6000/7000 series - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L302126 - SW 3010A									
Blank (L302126-BLK1)					Prepared: 02/18/2013 Analyzed: 02/19/2013				
Arsenic	0.0150 U	0.0150	mg/L						
Barium	0.00100 U	0.00100	mg/L						
Cadmium	0.00300 U	0.00300	mg/L						
Chromium	0.000570 B	0.00500	mg/L						
Lead	0.0100 U	0.0100	mg/L						
Selenium	0.0200 U	0.0200	mg/L						
Silver	0.00600 U	0.00600	mg/L						
Antimony	0.0200 U	0.0200	mg/L						
Nickel	0.0200 U	0.0200	mg/L						
Blank (L302126-BLK2)					Prepared: 02/18/2013 Analyzed: 02/19/2013				
Arsenic	0.0750 U	0.0750	mg/L						
Barium	0.00500 U	0.00500	mg/L						
Cadmium	0.0150 U	0.0150	mg/L						
Chromium	0.0250 U	0.0250	mg/L						
Lead	0.0500 U	0.0500	mg/L						
Selenium	0.100 U	0.100	mg/L						
Silver	0.0300 U	0.0300	mg/L						
Antimony	0.100 U	0.100	mg/L						
Nickel	0.100 U	0.100	mg/L						
LCS (L302126-BS1)					Prepared: 02/18/2013 Analyzed: 02/19/2013				
Arsenic	9.83	0.0150	mg/L	10.000		98.3	80-120		
Barium	4.97	0.00100	mg/L	5.0000		99.5	80-120		
Cadmium	0.240	0.00300	mg/L	0.25000		96.0	80-120		
Chromium	0.485	0.00500	mg/L	0.50000		97.1	80-120		
Lead	2.38	0.0100	mg/L	2.5000		95.3	80-120		
Selenium	9.56	0.0200	mg/L	10.000		95.6	80-120		
Silver	0.494	0.00600	mg/L	0.50000		98.7	80-120		
Antimony	3.00	0.0200	mg/L	3.0000		100	80-120		
Nickel	1.95	0.0200	mg/L	2.0000		97.4	80-120		

FEBRUARY 26, 2013



264 Welsh Pool Road
 Exton, PA 19341
 Phone: 610-280-3000
 Fax: 610-280-3041

CHPRC Hanford PO Box 1600, Mail Stop - R3-60 Richland WA, 99352	Project: L13-012 Project Number: L0054 Project Manager: Scot Fitzgerald	Reported: 02/25/2013 10:21
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TCLP Metals by SW846 1311 6000/7000 series - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L302126 - SW 3010A										
Duplicate (L302126-DUP1)		Source: 1302024-01			Prepared: 02/18/2013 Analyzed: 02/19/2013					
Arsenic	0.176		0.0750	mg/L		0.181			2.88	20
Barium	0.368		0.00500	mg/L		0.360			2.20	20
Cadmium	0.00213	B	0.0150	mg/L		0.00262			20.9*	20
Chromium	0.531		0.0250	mg/L		0.532			0.282	20
Lead	0.0500	U	0.0500	mg/L		0.0500 U				20
Selenium	0.113		0.100	mg/L		0.111			2.36	20
Silver	0.0300	U	0.0300	mg/L		0.0300 U				20
Antimony	0.0177	B	0.100	mg/L		0.0182			2.84	20
Nickel	0.230		0.100	mg/L		0.229			0.349	20
Matrix Spike (L302126-MS1)		Source: 1302024-01			Prepared: 02/18/2013 Analyzed: 02/19/2013					
Arsenic	5.58		0.0750	mg/L	5.0000	0.181	108	50-1000		
Barium	7.25		0.00500	mg/L	100.00	0.360	6.89*	50-1000		
Cadmium	1.04		0.0150	mg/L	1.0000	0.00262	104	50-1000		
Chromium	5.32		0.0250	mg/L	5.0000	0.532	95.8	50-1000		
Lead	2.92		0.0500	mg/L	5.0000	0.0500 U	58.5	50-1000		
Selenium	1.21		0.100	mg/L	1.0000	0.111	110	50-1000		
Silver	5.61		0.0300	mg/L	5.0000	0.0300 U	112	50-1000		
Antimony	1.06		0.100	mg/L	1.0000	0.0182	104	50-1000		
Nickel	1.17		0.100	mg/L	1.0000	0.229	94.2	50-1000		
Batch L302127 - SW 7470A Prep										
Blank (L302127-BLK1)					Prepared: 02/18/2013 Analyzed: 02/19/2013					
Mercury	0.000200	U	0.000200	mg/L						
Blank (L302127-BLK2)					Prepared: 02/18/2013 Analyzed: 02/19/2013					
Mercury	0.000200	U	0.000200	mg/L						

000000020

FEBRUARY 26, 2013



264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

CHPRC Hanford PO Box 1600, Mail Stop - R3-60 Richland WA, 99352	Project: L13-012 Project Number: L0054 Project Manager: Scot Fitzgerald	Reported: 02/25/2013 10:21
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TCLP Metals by SW846 1311 6000/7000 series - Quality Control
Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L302127 - SW 7470A Prep									
Blank (L302127-BLK3) Prepared: 02/18/2013 Analyzed: 02/19/2013									
Mercury	0.000200 U	0.000200	mg/L						
Blank (L302127-BLK4) Prepared: 02/18/2013 Analyzed: 02/19/2013									
Mercury	0.000200 U	0.000200	mg/L						
LCS (L302127-BS1) Prepared: 02/18/2013 Analyzed: 02/19/2013									
Mercury	0.00535	0.000200	mg/L	0.0050000		107	80-120		
Duplicate (L302127-DUP2) Source: 1302024-01 Prepared: 02/18/2013 Analyzed: 02/19/2013									
Mercury	0.00200 U	0.00200	mg/L		0.00200 U				20
Matrix Spike (L302127-MS2) Source: 1302024-01 Prepared: 02/18/2013 Analyzed: 02/19/2013									
Mercury	0.222 D	0.0100	mg/L	0.20000	0.00200 U	111	50-1000		

Start Date: <u>2/13/13</u> Start Time: <u>1356</u> Analyst: <u>WA</u> SOP: <u>SPI-1311.1</u>	End Date: <u>2/14/13</u> End Time: _____ Analyst: <u>WA</u> Method: <u>1311.1</u>	Tumbler Speed: <u>30 RPM</u> Leachate Batch #: <u>L302106</u> Leachate Page: <u>1</u> of <u>2</u> Room Temp. (°C): Start <u>21</u> / Finish <u>21</u> Room Temp. Acceptance Criteria: <u>23°C ± 2°</u>
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Lvl #: <u>L302106-LB1</u> Client ID#: _____ pH After 5 Min: _____ pH After Acid/Heat: <u>NA</u> Extraction Fluid/pH: <u>#2 2.90</u> Sample Wt.(g): <u>NA</u> Extract Fluid Vol.(mL): <u>500mL</u> pH After Extraction: <u>2.90</u>	Initial Filtration Data and Comments: Solids: _____ % / NA <p style="text-align: right; font-size: 1.5em;">LB1</p> Initial Filtrate Added: _____
---	--

Lvl #: <u>1302017-001</u> Client ID#: _____ pH After 5 Min: <u>5</u> pH After Acid/Heat: <u>2</u> Extraction Fluid/pH: <u>#1</u> Sample Wt.(g): _____ Extract Fluid Vol.(mL): _____ pH After Extraction: _____	Initial Filtration Data and Comments: Solids: _____ % / NA <p style="font-size: 1.5em; text-align: center;">PH is lower than 5 sample more to extraction batch TUP Fluid is #1</p> Initial Filtrate Added: _____
---	--

Lvl # <u>1302024-001</u> Client ID#: _____ pH After 5 Min: <u>10</u> pH After Acid/Heat: <u>8</u> Extraction Fluid/pH: <u>#2 2.90</u> Sample Wt.(g): <u>15.32</u> Extract Fluid Vol.(mL): <u>301</u> pH After Extraction: <u>8</u>	Initial Filtration Data and Comments: Solids: _____ % / NA <p style="font-size: 1.5em; text-align: center;">RAD III</p> <p style="text-align: right;">001 pH performed w/ strip range 1-12</p> Initial Filtrate Added: _____
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Lvl #: <u>1302024-002</u> Client ID#: _____ pH After 5 Min: <u>10</u> pH After Acid/Heat: <u>8</u> Extraction Fluid/pH: <u>#2 2.90</u> Sample Wt.(g): <u>15.02</u> Extract Fluid Vol.(mL): <u>300.4</u> pH After Extraction: <u>8</u>	Initial Filtration Data and Comments: Solids: _____ % / NA <p style="font-size: 1.5em; text-align: center;">RAD III</p> <p style="text-align: right;">002 pH performed w/ strip range 1-12</p> Initial Filtrate Added: _____
--	--

Standard	ID	Prep Date	Expir Date	pH Acceptance Criteria
Fluid #1	_____	_____	_____	4.93 ± 0.05
Fluid #2	<u>1300169</u>	<u>2/13/13</u>	<u>8/13/13</u>	2.88 ± 0.05 <u>2.90</u>

Start Date: <u>2/13/13</u> Start Time: <u>1356</u> Analyst: <u>WJ</u> SOP: <u>SPI-1311.1</u>	End Date: <u>2/14/13</u> End Time: <u>1200</u> Analyst: <u>WJ</u> Method: <u>1311.1</u>	Tumbler Speed: <u>30</u> RPM Leachate Batch #: <u>L302106</u> Leachate Page: <u>2</u> of <u>2</u> Room Temp. (°C): Start <u>21°C</u> / Finish <u>21°C</u> Room Temp. Acceptance Criteria: <u>23°C ± 2°</u>
---	--	--

LVL #: <u>1302024-003</u> Client ID#: _____ pH After 5 Min: <u>10</u> pH After Acid/Heat: <u>8</u> Extraction Fluid/pH: <u>#2.290</u> Sample Wt.(g): <u>15.04</u> Extract Fluid Vol.(mL): <u>300.8</u> pH After Extraction: <u>8</u>	Initial Filtration Data and Comments: Solids: _____ % / NA <u>003</u> <div style="font-size: 2em; font-family: cursive;">RAD III</div> pH Done w/STRIP RANGE 1 → 12 Initial Filtrate Added: _____
---	--

LVL #: _____ Client ID#: _____ pH After 5 Min: _____ pH After Acid/Heat: _____ Extraction Fluid/pH: _____ Sample Wt.(g): _____ Extract Fluid Vol.(mL): _____ pH After Extraction: _____	Initial Filtration Data and Comments: Solids: _____ % / NA Initial Filtrate Added: _____
--	--

LVL #: _____ Client ID#: _____ pH After 5 Min: _____ pH After Acid/Heat: _____ Extraction Fluid/pH: _____ Sample Wt.(g): _____ Extract Fluid Vol.(mL): _____ pH After Extraction: _____	Initial Filtration Data and Comments: Solids: _____ % / NA Initial Filtrate Added: _____
--	--

LVL #: _____ Client ID#: _____ pH After 5 Min: _____ pH After Acid/Heat: _____ Extraction Fluid/pH: _____ Sample Wt.(g): _____ Extract Fluid Vol.(mL): _____ pH After Extraction: _____	Initial Filtration Data and Comments: Solids: _____ % / NA Initial Filtrate Added: _____
--	--

Standard	ID	Prep Date	Expir Date	pH Acceptance Criteria
Fluid #1	—	—	—	4.93 ± 0.05
Fluid #2	<u>1300669</u>	<u>2/13/13</u>	<u>8/13/13</u>	2.88 ± 0.05 <u>2.90</u>

SAMPLE DIGESTION RECORD

Digestion Batch #: L302126

Date/Time Initiated: 2/18/13 1130

Date/Time Completed: 2/19/13 1210

Analyst: YW

Matrix (circle one): Soil Water Other TC

Method (circle one): 3005A 3010A 3050 200.7 (1994)

pH/Turbidity: N/A for Solids.

NOTE: All temperatures are recorded as corrected temperatures

Digested / Undigested (circle one)

Balance #:

Balance Cal Verification: Y NA

Temp: 94

BLOCK 1 2 (circle one)

3

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <	Type: To/Sol/TC	Texture	Color / Appearance	Artifact	Turb
L302024-01		10	50	<	TC		clear / yellow		
L302126-DPI		10	50	<					
MS1	0.100	10	50						
L302024-02		10	50	<			clear / yellow		
03		10	50	<			clear / yellow		
L302126-BU4		50	50				clear / colorless		
B51	0.500	50	50						
BK2		50	50	<					

YW 2/18/13

Spiking IDs / Expiration Date:

MS#: 1201195
1200388

LCS#: 1201583

Reagent IDs:

HNO₃ 0000003390
HCl
H₂O₂
1:1 HNO₃
1:1 HCl 637-000-01

File ID#:

Data Review By/Date:

2/19/13

R:\group\QAISOP\ Signed\SPINMetals Digestion log.doc

* add 0.01ml 1201415 (Sb)
1201428 (Ni)

Page #:

FEBRUARY 26, 2013

Lionville Laboratory

MERCURY PREPARATION

Analyst: M. H. H. S.
 Date: 2/18/13
 Start Time/Temp: 1500/94°
 End Time/Temp: 1700/97°

Instrument ID: H031
 Balance #: NA
 Pipette Calibration (Daily): Y

Logbook # 1198
 Prep Batch: L302127-
 Worksheet: H021901
 SOP No. ME-HgCVAA
 BLOCK 1 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures.

Lvl Work Order#	pH < 2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol. (g or mL)	Final Sample Vol (mL)	Comments, % Solids, etc.
Blank				35	35	
0.2 µg/L		0.070		35	35	
1.0 µg/L		0.350		35	35	
2.0 µg/L		0.700		35	35	
5.0 µg/L		1.750		35	35	
10.0 µg/L		3.500		35	35	
ICV		0.0875	2.5	35	35	
CCV		0.175	5.0	35	35	
ICB/CCB				35	35	
L302127-BLK1				35	35	
BS1		0.175	5.0	35	35	
BLK23	<			35	35	(L302106)
BLK24	<			35	35	(L302107)
W.E. M. 2/14/13 1701302017-01	<			35	35	
L302127-DWP1	<			3.5	35	RAW prep'd & dil. due to matrix
MS1		0.070	20(w)*	3.5	35	
1302024-01	<			3.5	35	
L302127-DWP2	<			3.5	35	
MS2		0.070	20(w)*	3.5	35	
1302024-02	<			3.5	35	
03	<			3.5	35	
1302028-01	<			35	35	
L302127-DWP3	<			35	35	
MS3		0.350	100(w)*	387.5	35	
1702028-02	<			35	35	
03	<			35	35	
04	<			35	35	

Standard: ID _____ Prep Date/Time _____
 ICAL/MS RI 1201235 2/18/13 0940
 ICV/CCV/LCS (I.V. 1201411) N/A

Reviewed By/Date: RAV/2/13

Soil LCS True Value = N/A mg/Kg
 Standard # _____

see book # 1198 for std traceability information.
 Water Matrix Spiking Solution Concentration = 0.1 µg/ml
 after LCS Spiking Concentration: 1.0 µg/ml

1201234 (10 µg/ml)

00000045
 000000025

FEBRUARY 26, 2013

Lionville Laboratory

MERCURY PREPARATION

Analyst: M. Miller
Date: 2/18/13
Start Time/Temp: keep 046
End Time/Temp: keep 046

Instrument ID: HG3.1
Balance #: (NA)
Pipette Calibration (Daily) Y

Logbook # 1198
Prep Batch: L302127
Worksheet: HG021901
SOP No. ME-HgCVAA
BLOCK 1 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures.

Lvl Work Order#	pH < 2 (Liq)	Spike Vol (mL)	Spike Conc. (µg/L)	Initial Wt. or Vol. (g or mL)	Final Sample Vol (mL)	Comments, % Solids, etc.
1302032-01				35	35	
L302127-DUP4 200m				35	35	
MS4 1034-03		0.700	200µ	35	35	
1302033-01				35	35	
1302034-01				35	35	
L302127-BK4 X2				35	35	(L302083)
1302028-05 w.e. 10/1/13				35	35	
M. Miller 2/18/13						

Standard:	ID	Prep Date/Time
ICAL/MS		
ICV/CCV/LCS		

Reviewed By/Date: M. Miller

Soil LCS True Value = keep 046 mg/Kg
Standard # keep 046

se book # 1198 for std traceability information
Water Matrix Spiking Solution Concentration = 0.1 µg/ml
after LCS Spiking Concentration: 1.0 µg/ml