0096299

SAF-RC-207
Remedial Action of the 100-C-7 & 100-C-7:1 Waste Sites – In-Process
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 5/12/11
INITIAL/DATE

RECEIVED
MAY 16 2011
EDMC

COMMENTS:

SDG KP0043 SAF-RC-207

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location: 100-C-7:1 (discolored soil)

LIONVILLE LABORATORY
A Division of Eberline Analytical Corporation

[illegible] Walnut Grove Road
Blue Bell, Pennsylvania [illegible]
Phone (610) 280-3000
Fax (610) 280-3041

4 May 2011

Joan Kessner
WC-Hanford, Inc.
2620 Fermi Avenue
MSIN H9-03
Richland, WA 99354

Subject: Analytical Data Package

Dear Ms. Kessner:

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

LvLI Batch #	1104069
SDG #	KP0043
SAF #	RC-207
Date Received	04/19/11
# Samples	2
Matrix	SOIL
Volatiles	
Semivolatiles	
Pest/PCB	
Glycols	
DRO/KRO/GRO	
PAHs	
Herbicides	
Metals	X
Inorganics	X

The electronic data deliverable (EDD) has been emailed. 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

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-207 Project Number: KP0043 Project Manager: Joan Kessner	**Reported:** 04/28/2011 10:31

Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1FHN4	1104069-01	Soil	04/14/2011 13:00	04/19/2011 09:55
J1HHD3	1104069-02	Soil	04/14/2011 13:10	04/19/2011 09:55

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Case Narrative

Client: WC-HANFORD RC-207
LVL#: 1104069
SDG/SAF#: KP0043/RC-207

W.O.#: 60049-001-001-0001-00
Date Received: 04-19-11

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.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise.

1. This narrative covers the analyses of 2 soil samples and 2 TCLP leachate samples.

2. The samples were prepared and analyzed in accordance with methods listed on the data report forms.

   The TCLP leachate samples were run and reported with 5-fold dilutions for ICP metals due to sample matrix.

3. All analyses were performed within the required holding times.

4. Please refer to the Sample Receipt Check List for any 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). There were more than ten samples analyzed between CCV5 and CCV6 in file ICP042511B. Please refer to SDR#: 11MR030A. All sample results contained in this report were surrounded by QC within control.

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 Standard Reference Material (SRM) analytes were within the Prediction Interval control limits supplied by the manufacturer. All laboratory control samples (LCS) were within the 80-120% control limits.

10. The soil matrix spike (MS) recoveries for 14 analytes were outside the 75-125% control limits.

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 25 pages.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J1FHN4	Aluminum	22,000	95.0
	Antimony	100	90.2
	Calcium	20,800	85.0
	Chromium	100	93.4
	Cobalt	100	88.7
	Copper	100	91.0
	Iron	42,000	81.1
	Lead	100	85.4
	Magnesium	21,600	86.3
	Manganese	1,000	88.8
	Nickel	100	86.9
	Silicon	4,100	115.1
	Vanadium	1,000	88.7
	Zinc	100	84.4

12. All soil duplicate analyses were within the 20% Relative Percent Difference (RPD) control limit critieria. The ± 20% RPD control limit applies to sample results greater than ten times the MDL.

13. The TCLP leachate duplicate analyses were within the 20% Relative Percent Difference (RPD) control limit critieria. The ± 20% RPD control limit applies to sample results greater than ten times the MDL.

14. The TCLP extract from sample J1FHN4 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

15. For the purposes of this report, the data have 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.

16. 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.

17. 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

5/4/11
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 11M1203OA

Initiator: G Mathurin
Date: 4/27/11
Client: WC - Hanford

Batch: 1104069
Samples: 01, 12, 5, 2
Method: SW846/MCAWW/CLP/

Parameter: ICP
Matrix: Soil
Prep Batch: 104302

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

more than 10 samples were analyzed between CCV5 and CCV6.
in file ICP042511B3

2. Known or Probable Causes(s)

analyst added too many samples between CCV5 and CCV6

3. Discussion and Proposed Action

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description:

narrate

4. Project Manager Instructions...signature/date: [signature] 4/27/11

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: _____

Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA for diposition.

Route
__ Lab Manager: Daniels
__ Project Mgr (circle): Johnson / Stone
__ Sample Prep (circle): Ford
__ Log-in: King

Route
__ Metals: Welsh / _____
__ Inorganic: Perrone / _____
__ GC/LC: Carey / _____
__ MS VOA: Rubino / _____
__ MS BNA: Carden / _____
__ Other: _____

QA-139-A-0208

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-207 Project Number: KP0043 Project Manager: Joan Kessner	**Reported:** 04/28/2011 10:31

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

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2620 Fermi Avenue	Project Number: KP0043	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	04/28/2011 10:31

J1FHN4

1104069-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**11800**		5.07	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Antimony	**0.382**	B	0.608	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Arsenic	**6.30**		1.01	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Barium	**89.3**		0.507	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Beryllium	**0.471**		0.203	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Boron	**1.48**	B	2.03	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Cadmium	**0.125**	B	0.203	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Calcium	**11500**		101	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Chromium	**41.1**		0.203	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Cobalt	**8.59**		2.03	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Copper	**19.0**		1.01	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Iron	**26400**		20.3	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Lead	**8.77**		0.507	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Magnesium	**6940**		76.1	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Manganese	**437**		5.07	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Molybdenum	**0.440**	B	2.03	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Nickel	**13.3**		4.06	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Potassium	**2070**		406	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Selenium	0.304	U	0.304	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Silicon	**541**		2.03	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Silver	0.203	U	0.203	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Sodium	**646**		50.7	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Vanadium	**60.7**		2.54	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Zinc	**53.8**		10.1	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Mercury	0.0308	U	0.0308	mg/kg dry	1	L104285	04/20/2011	04/20/2011	7471A

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2620 Fermi Avenue	Project Number: KP0043	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	04/28/2011 10:31

J1FHN4

1104069-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
TCLP Metals by SW846 1311 6000/7000 series									
Arsenic	0.0750	U	0.0750	mg/L	5	L104401	04/26/2011	04/27/2011	6010
Barium	**0.171**		0.00500	mg/L	5	L104401	04/26/2011	04/27/2011	6010
Cadmium	0.0150	U	0.0150	mg/L	5	L104401	04/26/2011	04/27/2011	6010
Chromium	**0.516**		0.0250	mg/L	5	L104401	04/26/2011	04/27/2011	6010
Lead	0.0500	U	0.0500	mg/L	5	L104401	04/26/2011	04/27/2011	6010
Selenium	0.100	U	0.100	mg/L	5	L104401	04/26/2011	04/27/2011	6010
Silver	0.0300	U	0.0300	mg/L	5	L104401	04/26/2011	04/27/2011	6010
Mercury	0.000200	U	0.000200	mg/L	1	L104396	04/26/2011	04/27/2011	7470

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-207 Project Number: KP0043 Project Manager: Joan Kessner	Reported: 04/28/2011 10:31

J1HHD3

1104069-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	**9050**		4.58	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Antimony	**0.574**		0.550	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Arsenic	**3.21**		0.916	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Barium	**77.6**		0.458	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Beryllium	**0.383**		0.183	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Boron	**1.03**	B	1.83	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Cadmium	**0.136**	B	0.183	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Calcium	**8080**		91.6	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Chromium	**204**		0.183	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Cobalt	**8.86**		1.83	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Copper	**17.1**		0.916	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Iron	**28000**		18.3	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Lead	**5.53**		0.458	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Magnesium	**5890**		68.7	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Manganese	**415**		4.58	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Molybdenum	**0.502**	B	1.83	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Nickel	**10.8**		3.66	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Potassium	**1510**		366	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Selenium	0.275	U	0.275	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Silicon	**441**		1.83	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Silver	0.183	U	0.183	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Sodium	**585**		45.8	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Vanadium	**67.8**		2.29	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Zinc	**53.1**		9.16	mg/kg dry	1	L104302	04/21/2011	04/25/2011	6010B
Mercury	0.0259	U	0.0259	mg/kg dry	1	L104285	04/20/2011	04/20/2011	7471A

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WC-Hanford, Inc.	Project: RC-207	
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Richland WA, 99354	Project Manager: Joan Kessner	04/28/2011 10:31

J1HHD3

1104069-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
TCLP Metals by SW846 1311 6000/7000 series									
Arsenic	0.0750	U	0.0750	mg/L	5	L104401	04/26/2011	04/27/2011	6010
Barium	**0.223**		0.00500	mg/L	5	L104401	04/26/2011	04/27/2011	6010
Cadmium	**0.00154**	B	0.0150	mg/L	5	L104401	04/26/2011	04/27/2011	6010
Chromium	**4.65**		0.0250	mg/L	5	L104401	04/26/2011	04/27/2011	6010
Lead	**0.0140**	B	0.0500	mg/L	5	L104401	04/26/2011	04/27/2011	6010
Selenium	0.100	U	0.100	mg/L	5	L104401	04/26/2011	04/27/2011	6010
Silver	0.0300	U	0.0300	mg/L	5	L104401	04/26/2011	04/27/2011	6010
Mercury	0.000200	U	0.000200	mg/L	1	L104396	04/26/2011	04/27/2011	7470

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WC-Hanford, Inc.	Project: RC-207	
2620 Fermi Avenue	Project Number: KP0043	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	04/28/2011 10:31

Metals by SW846 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 L104285 - SW 7471A Prep										
Blank (L104285-BLK1)				Prepared & Analyzed: 04/20/2011						
Mercury	0.0281	U	0.0281	mg/kg wet						
Duplicate (L104285-DUP3)		**Source: 1104069-01**		Prepared & Analyzed: 04/20/2011						
Mercury	0.0282	U	0.0282	mg/kg dry		0.0308 U				20
Matrix Spike (L104285-MS3)		**Source: 1104069-01**		Prepared & Analyzed: 04/20/2011						
Mercury	0.171		0.0290	mg/kg dry	0.16107	0.0308 U	106	75-125		20
Reference (L104285-SRM1)				Prepared & Analyzed: 04/20/2011						
Mercury	1.20		0.0290	mg/kg wet	1.2900		92.6	62.6-138		
Batch L104302 - SW 3050B										
Blank (L104302-BLK1)				Prepared: 04/21/2011 Analyzed: 04/25/2011						
Aluminum	3.33	U	3.33	mg/kg wet						
Antimony	0.400	U	0.400	mg/kg wet						
Arsenic	0.667	U	0.667	mg/kg wet						
Barium	0.333	U	0.333	mg/kg wet						
Beryllium	0.133	U	0.133	mg/kg wet						
Boron	1.33	U	1.33	mg/kg wet						
Cadmium	0.133	U	0.133	mg/kg wet						
Calcium	66.7	U	66.7	mg/kg wet						
Chromium	0.133	U	0.133	mg/kg wet						
Cobalt	1.33	U	1.33	mg/kg wet						
Copper	0.667	U	0.667	mg/kg wet						
Iron	13.3	U	13.3	mg/kg wet						
Lead	0.333	U	0.333	mg/kg wet						
Magnesium	50.0	U	50.0	mg/kg wet						
Manganese	3.33	U	3.33	mg/kg wet						
Molybdenum	1.33	U	1.33	mg/kg wet						
Nickel	2.67	U	2.67	mg/kg wet						
Potassium	267	U	267	mg/kg wet						
Selenium	0.200	U	0.200	mg/kg wet						
Silicon	1.33	U	1.33	mg/kg wet						
Silver	0.133	U	0.133	mg/kg wet						
Sodium	33.3	U	33.3	mg/kg wet						
Vanadium	1.67	U	1.67	mg/kg wet						
Zinc	6.67	U	6.67	mg/kg wet						

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Metals by SW846 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 L104302 - SW 3050B										
Duplicate (L104302-DUP1)		**Source: 1104069-01**		Prepared: 04/21/2011 Analyzed: 04/25/2011						
Aluminum	11400		4.35	mg/kg dry		11800			3	20
Antimony	0.522	U	0.522	mg/kg dry		0.382				20
Arsenic	7.04		0.869	mg/kg dry		6.30			11	20
Barium	87.2		0.435	mg/kg dry		89.3			2	20
Beryllium	0.457		0.174	mg/kg dry		0.471			3	20
Boron	1.59	B	1.74	mg/kg dry		1.48			7	20
Cadmium	0.130	B	0.174	mg/kg dry		0.125			4	20
Calcium	10600		86.9	mg/kg dry		11500			8	20
Chromium	38.8		0.174	mg/kg dry		41.1			6	20
Cobalt	8.74		1.74	mg/kg dry		8.59			2	20
Copper	18.2		0.869	mg/kg dry		19.0			4	20
Iron	26100		17.4	mg/kg dry		26400			1	20
Lead	8.01		0.435	mg/kg dry		8.77			9	20
Magnesium	6830		65.2	mg/kg dry		6940			2	20
Manganese	441		4.35	mg/kg dry		437			0.9	20
Molybdenum	0.425	B	1.74	mg/kg dry		0.440			4	20
Nickel	13.5		3.48	mg/kg dry		13.3			2	20
Potassium	2050		348	mg/kg dry		2070			1	20
Selenium	0.261	U	0.261	mg/kg dry		0.304 U				20
Silicon	546		1.74	mg/kg dry		541			1	20
Silver	0.174	U	0.174	mg/kg dry		0.203 U				20
Sodium	656		43.5	mg/kg dry		646			2	20
Vanadium	60.4		2.17	mg/kg dry		60.7			0.6	20
Zinc	51.8		8.69	mg/kg dry		53.8			4	20
Matrix Spike (L104302-MS1)		**Source: 1104069-01**		Prepared: 04/21/2011 Analyzed: 04/25/2011						
Aluminum	12000		3.56	mg/kg dry	142.25	11800	177*	75-125		20
Antimony	13.1		0.427	mg/kg dry	35.562	0.382	36*	75-125		20
Arsenic	119		0.711	mg/kg dry	142.25	6.30	79	75-125		20
Barium	196		0.356	mg/kg dry	142.25	89.3	75	75-125		20
Beryllium	3.24		0.142	mg/kg dry	3.5562	0.471	78	75-125		20
Boron	54.5		1.42	mg/kg dry	71.123	1.48	75	75-125		20
Cadmium	2.83		0.142	mg/kg dry	3.5562	0.125	76	75-125		20
Calcium	11600		71.1	mg/kg dry	1778.1	11500	8*	75-125		20
Chromium	48.4		0.142	mg/kg dry	14.225	41.1	52*	75-125		20
Cobalt	35.0		1.42	mg/kg dry	35.562	8.59	74*	75-125		20
Copper	31.2		0.711	mg/kg dry	17.781	19.0	69*	75-125		20

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-207 Project Number: KP0043 Project Manager: Joan Kessner	**Reported:** 04/28/2011 10:31

Metals by SW846 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 L104302 - SW 3050B									
Matrix Spike (L104302-MS1)		**Source: 1104069-01**	Prepared: 04/21/2011 Analyzed: 04/25/2011						
Iron	26300	14.2	mg/kg dry	71.123	26400	-258*	75-125		20
Lead	33.9	0.356	mg/kg dry	35.562	8.77	71*	75-125		20
Magnesium	8040	53.3	mg/kg dry	1778.1	6940	62*	75-125		20
Manganese	445	3.56	mg/kg dry	35.562	437	22*	75-125		20
Molybdenum	55.9	1.42	mg/kg dry	71.123	0.440	78	75-125		20
Nickel	38.8	2.84	mg/kg dry	35.562	13.3	72*	75-125		20
Potassium	3490	284	mg/kg dry	1778.1	2070	80	75-125		20
Selenium	106	0.213	mg/kg dry	142.25	0.304 U	75	75-125		20
Silicon	395	1.42	mg/kg dry	71.123	541	-205*	75-125		20
Silver	2.66	0.142	mg/kg dry	3.5562	0.203 U	75	75-125		20
Sodium	2190	35.6	mg/kg dry	1778.1	646	87	75-125		20
Vanadium	87.0	1.78	mg/kg dry	35.562	60.7	74*	75-125		20
Zinc	78.5	7.11	mg/kg dry	35.562	53.8	70*	75-125		20
Reference (L104302-SRM1)			Prepared: 04/21/2011 Analyzed: 04/25/2011						
Aluminum	9490	12.3	mg/kg wet	6670.0		142	0-200.89		
Antimony	73.0	1.48	mg/kg wet	53.000		138	0-235.8		
Arsenic	110	2.46	mg/kg wet	114.00		97	82.8-117.54		
Barium	301	1.23	mg/kg wet	307.00		98	79.8-120.2		
Beryllium	102	0.492	mg/kg wet	108.00		95	82.8-117.6		
Boron	79.1	4.92	mg/kg wet	85.100		93	67.5-132.8		
Cadmium	219	0.492	mg/kg wet	225.00		97	83.6-116.4		
Calcium	3200	246	mg/kg wet	3360.0		95	83.3-116.9		
Chromium	80.5	0.492	mg/kg wet	77.200		104	73.3-126.4		
Cobalt	157	4.92	mg/kg wet	166.00		95	80.7-118.7		
Copper	250	2.46	mg/kg wet	271.00		92	80.8-119.2		
Iron	8340	49.2	mg/kg wet	8420.0		99	78.6-121.1		
Lead	186	1.23	mg/kg wet	190.00		98	81.6-118.4		
Magnesium	8160	184	mg/kg wet	8570.0		95	83.2-116.7		
Manganese	956	12.3	mg/kg wet	965.00		99	69.3-130.5		
Molybdenum	236	4.92	mg/kg wet	235.00		100	76.2-123.8		
Nickel	213	9.84	mg/kg wet	221.00		96	79.6-120.8		
Potassium	14100	984	mg/kg wet	14400		98	81.9-118.1		
Selenium	178	0.738	mg/kg wet	187.00		95	75.9-124.6		
Silicon	700	4.92	mg/kg wet	807.00		87	0-219.3		
Silver	80.4	0.492	mg/kg wet	83.500		96	82.7-117.1		
Sodium	8940	123	mg/kg wet	9730.0		92	82.5-117.2		

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WC-Hanford, Inc.	Project: RC-207	
2620 Fermi Avenue	Project Number: KP0043	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	04/28/2011 10:31

Metals by SW846 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 L104302 - SW 3050B									
Reference (L104302-SRM1)			Prepared: 04/21/2011 Analyzed: 04/25/2011						
Vanadium	102	6.15	mg/kg wet	98.700		103	75.9-123.6		
Zinc	185	24.6	mg/kg wet	199.00		93	78.4-121.6		

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WC-Hanford, Inc.	Project: RC-207	
2620 Fermi Avenue	Project Number: KP0043	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	04/28/2011 10:31

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 L104396 - SW 7470A Prep										
Blank (L104396-BLK1)				Prepared: 04/26/2011 Analyzed: 04/27/2011						
Mercury	0.000200	U	0.000200	mg/L						
Blank (L104396-BLK2)				Prepared: 04/26/2011 Analyzed: 04/27/2011						
Mercury	0.000200	U	0.000200	mg/L						
LCS (L104396-BS1)				Prepared: 04/26/2011 Analyzed: 04/27/2011						
Mercury	0.00482		0.000200	mg/L	0.0050606		95.2	80-120		
Duplicate (L104396-DUP2)		Source: 1104069-01		Prepared: 04/26/2011 Analyzed: 04/27/2011						
Mercury	0.000200	U	0.000200	mg/L		0.000200 U				20
Matrix Spike (L104396-MS2)		Source: 1104069-01		Prepared: 04/26/2011 Analyzed: 04/27/2011						
Mercury	0.195	D	0.0100	mg/L	0.20212	0.000200 U	96.5	50-1000		
Batch L104401 - SW 3010A										
Blank (L104401-BLK1)				Prepared: 04/26/2011 Analyzed: 04/27/2011						
Arsenic	0.0150	U	0.0150	mg/L						
Barium	0.00100	U	0.00100	mg/L						
Cadmium	0.000201	B	0.00300	mg/L						
Chromium	0.00500	U	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						
Blank (L104401-BLK2)				Prepared: 04/26/2011 Analyzed: 04/27/2011						
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						

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WC-Hanford, Inc.	Project: RC-207	
2620 Fermi Avenue	Project Number: KP0043	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	04/28/2011 10:31

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 L104401 - SW 3010A										
LCS (L104401-BS1)				Prepared: 04/26/2011 Analyzed: 04/27/2011						
Arsenic	9.23		0.0150	mg/L	10.000		92.3	80-120		20
Barium	4.71		0.00100	mg/L	5.0000		94.2	80-120		20
Cadmium	0.232		0.00300	mg/L	0.25000		92.8	80-120		20
Chromium	0.476		0.00500	mg/L	0.50000		95.1	80-120		20
Lead	2.29		0.0100	mg/L	2.5000		91.6	80-120		20
Selenium	9.08		0.0200	mg/L	10.000		90.8	80-120		20
Silver	0.464		0.00600	mg/L	0.50000		92.8	80-120		20
Duplicate (L104401-DUP3)		**Source: 1104069-01**		Prepared: 04/26/2011 Analyzed: 04/27/2011						
Arsenic	0.0750	U	0.0750	mg/L		0.0750 U				20
Barium	0.177		0.00500	mg/L		0.171			3.56	20
Cadmium	0.0150	U	0.0150	mg/L		0.0150 U				20
Chromium	0.544		0.0250	mg/L		0.516			5.29	20
Lead	0.0500	U	0.0500	mg/L		0.0500 U				20
Selenium	0.100	U	0.100	mg/L		0.100 U				20
Silver	0.0300	U	0.0300	mg/L		0.0300 U				20
Matrix Spike (L104401-MS3)		**Source: 1104069-01**		Prepared: 04/26/2011 Analyzed: 04/27/2011						
Arsenic	5.00		0.0750	mg/L	5.0000	0.0750 U	100	50-1000		20
Barium	96.0		0.00500	mg/L	100.00	0.171	95.8	50-1000		20
Cadmium	0.998		0.0150	mg/L	1.0000	0.0150 U	99.8	50-1000		20
Chromium	5.42		0.0250	mg/L	5.0000	0.516	98.0	50-1000		20
Lead	4.74		0.0500	mg/L	5.0000	0.0500 U	94.8	50-1000		20
Selenium	0.998		0.100	mg/L	1.0000	0.100 U	99.8	50-1000		20
Silver	4.68		0.0300	mg/L	5.0000	0.0300 U	93.7	50-1000		20

Lionville Laboratory **Logbook #:** 957

SAMPLE DIGESTION RECORD

Digestion Batch #: 104302
Date/Time Initiated: 4/21/11 1105
Date/Time Completed: 4/21/11 1525
Analyst: JJS
Matrix (circle): Soil Water Other
Method (circle one): 3005A 3010A 3050 200.7 (1994)

Digested / Undigested (circle one)
Balance #: B14
Balance Cal Verification: ✓ NA
Temp: 95
BLOCK 1 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/ TC	Texture	Color / Appearance	Artifact	Turb
1104069-01		0.54	50		TO	Fine	Brown	Roots	N/A
-Dup1		0.63	50						
-MS1	0.5	0.77	50						
-02		0.58	50			Fine	Brown	Roots	
L104302 BLK1		0.75	50			Coarse	Boiling chips		
SPM1		0.61	50			Fine	dusty pink sand		
								JJS 4/21/11	

Spiking IDs / Expiration Date:
MS#: 1001843
LCS#: 1100103

Reagent IDs:
HNO_3 K09041
HCl K12046
H_2O_2 J52101
1:1 HNO_3 677-04105
1:1 HCl

File ID#:

Data Review By / Date: 4/22/11

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Page #:

Lionville Laboratory **Logbook #:** 957

SAMPLE DIGESTION RECORD

Digestion Batch #: L104901
Date/Time Initiated: 4/27/11 0145
Date/Time Completed: 4/27/11 1020
Analyst: JJS
Matrix (circle): Soil Water Other
Method (circle one): 3005A 3010A 3050 200.7 (1994)

Digested / Undigested (circle one)
Balance #: N/A
Balance Cal Verification: Y NA
Temp: 97
BLOCK 1 2 (circle one)

NOTE: All temperatures are recorded as corrected temperatures

C/C=clear/colorless

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/TC	Texture	Color / Appearance	Artifact	Turb
L104042-01		10	50	<2	TC	N/A	C/C	N/A	N/A
-Dp1		10	50	<2					
-MS1	0.5	10	50						
L104043-03		50	50	<2			C/C		
+ -Dp2		50	50	<2					
-MS2	0.5	50	50						
04		50	50	<2			C/C		
06		50	50	<2			C/C		
08		50	50	<2			C/C		
L104064-01		50	50	<2			C/C		
+ -Dp3		50	50	<2					
-MS3	0.5	50	50						
-02		50	50	<2			Pale yellow		
L104901-BLK1		50	50				C/C		
BS1	0.5	50	50				C/C		
+ BLK2		50	50	<2			C/C		
~~BS2 BLK3~~									
+ JE	Qem	4/28/11							JJS 4/03/11

Spiking IDs / Expiration Date:
MS#: 1100338
1100217

LCS#: 1100240

Reagent IDs:
HNO_3 1109041
HCl
H_2O_2
1:1 HNO_3
1:1 HCl 637-042-01

File ID#:

Data Review By / Date: Qem 4/28/11

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+: Associated with L104388.

Page #:

Lionville Laboratory

MERCURY PREPARATION

Logbook # 924

Analyst: [illegible]
Date 4/20/14
Start Time/Temp: 1510/95°
End Time/Temp: 1540/97°

Instrument ID: HG3.2
Balance # B29 /NA
Pipette Calibration (Daily) (Y)

Prep Batch: L104285
Worksheet: HG042002
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				10ml	50	
0.2 ug/l		0.100		10ml	50	
1.0 ug/l		0.500		10ml	50	
2.0 ug/l		1.000		10ml	50	
5.0 ug/l		2.500		10ml	50	
10.0 ug/l		5.000		10ml	50	
ICV		0.125	2.5	10ml	50	
CCV		0.250	5.0	10ml	50	
ICB/CCB				10ml	50	
L104285-BLK1				0.32	50	
SRM1		(A)	(A)	0.31	50	
1104036-01				0.37	50	
L104285-DUP1				0.35	50	
MS1		0.500	1.0	0.36	50	
1104036-02				0.38	50	
03				0.38	50	
04				0.38	50	
05				0.37	50	
06				0.38	50	
07				0.33	50	
1104052-01				0.35	50	
L104285-DUP2				0.37	50	
MS2		0.500	1.0	0.35	50	
1104069-01				0.32	50	
L104285-DUP3				0.35	50	
MS3		0.500	1.0	0.34	50	
1104069-02				0.37	50	

Standard:	ID	Prep Date/Time
ICAL/MS	RI 1001785B	
ICV/CCV/LCS	I.V. 1001781A	

Reviewed By/Date: [illegible] 4/26/14

se book # 9368 for std traceability information

Soil LCS True Value = 1.29 mg/Kg
Standard # 1100103 (A)

Water Matrix Spiking Solution Concentration = 0.1 µg/ml
after LCS Spiking Concentration: 1.0 µg/ml

Lionville Laboratory

MERCURY PREPARATION

Logbook # 924

Analyst: [illegible]
Date 4/26/11
Start Time/Temp: 1445/95°
End Time/Temp: 1645/97°

Instrument ID: Hg 3.1
Balance # (NA)
Pipette Calibration (Daily) (Y)

Prep Batch: L104396
Worksheet: HG042701
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				33	33	
0.2 ug/l		0.0667		33	33	
1.0 ug/l		0.333		33	33	
2.0 ug/l		0.667		33	33	
5.0 ug/l		1.667		33	33	
10.0 ug/l		3.333		33	33	
IEV		0.0835	2.5	33	33	
CCV		0.167	5.0	33	33	
ICB/CCB				33	33	
L104396-BLK1				33	33	
~~BLK2~~ M.I.A MW 4/26/11				—	—	~~L104332~~ M.I.A MW 4/26/11
BLK32 MW 4/26/11	<			33	33	L104388
BS1 MW 4/26/11		0.167	5.0	33	33	
1104042-01	<			3.3	33	RAD
L104396-DUP1	<			3.3	33	↓
MS1		0.133	40(200)	33	33	- 10x dil of sample spiked.
1104056-01	<			33	33	
03	<			33	33	
04	<			33	33	
1104069-01	<			33	33	
L104396-~~DUP1~~	+ 2 <			33	33	
~~1104069-01~~ L104396-MS1		0.667	200	33	33	
1104069-02	<			33	33	
+ IE aem 4/28/11	MW 4/26/11					

Standard:	ID	Prep Date/Time
ICAL/MS	RI 1001785B	4/26/11 1120
ICV/CCV/LCS	I.V. 1001781A	↓

Reviewed By/Date: aem 4/28/11

se book # 9368 for std traceability information

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

Water Matrix Spiking Solution Concentration = 0.1 µg/ml
Soil LCS Spiking Concentration: 1.0 µg/ml

Lionville Laboratory

TCLP EXTRACTION RECORD
(NON-VOLATILES)

LOGBOOK # 816

Start Date: 4/25/11 Start Time: 2056 Analyst: WJ SOP: SPI-1311.1	End Date: 4/26/11 End Time: 1418 Analyst: WJ Method: 1311.1	Tumbler Speed: 30 RPM Leachate Batch #: L104388 Leachate Page: 1 of 2 Room Temp. (°C): Start 21 /Finish 21 Acceptance Criteria: 23°C ± 2°

LvL #: BLANKL104388 Client ID#: pH After 5 Min: pH After Acid/Heat: Extraction Fluid/pH: 4.91 Sample Wt.(g): NA Extract Fluid Vol.(mL): 1000 pH After Extraction:	Initial Filtration Data and Comments: Solids: ____% / NA BLANK Initial Filtrate Added:
LvL #: 1104043-003 Client ID#: pH After 5 Min: 9.13 pH After Acid/Heat: 1.54 Extraction Fluid/pH: 4.91 Sample Wt.(g): 50 Extract Fluid Vol.(mL): 1000 pH After Extraction: 7.23	Initial Filtration Data and Comments: Solids: ____% / NA 003 Initial Filtrate Added:
LvL # 1104043-004 Client ID#: pH After 5 Min: 5.98 pH After Acid/Heat: 1.07 Extraction Fluid/pH: 4.91 Sample Wt.(g): 50 Extract Fluid Vol.(mL): 100 pH After Extraction: 5.73	Initial Filtration Data and Comments: Solids: ____% / NA 004 Rocks Initial Filtrate Added:
LvL #: 1104043-6 Client ID#: pH After 5 Min: 5.29 pH After Acid/Heat: 1.27 Extraction Fluid/pH: #1 4.92 Sample Wt.(g): 100 Extract Fluid Vol.(mL): 2000 pH After Extraction: 4.18	Initial Filtration Data and Comments: Solids: ____% / NA 006 Rocks Initial Filtrate Added:

Standard	ID	Prep Date	Expir Date
MS			

Reviewed By/Date RCS 5/3/11

SPI-1311.1-A-0310

Page #

Lionville Laboratory

TCLP EXTRACTION RECORD
(NON-VOLATILES)

LOGBOOK # 516

Start Date: 4/25/11 Start Time: 2056 Analyst: [illegible] SOP: SPI-1311.1	End Date: 4/26/11 End Time: 1418 Analyst: [illegible] Method: 1311	Tumbler Speed: 30 RPM Leachate Batch #: L104388 Leachate Page: 2 of 2 Room Temp. (°C): Start 21 /Finish 2. Acceptance Criteria: 23°C ± 2°

LvL #: 1104043 -5 Client ID#: pH After 5 Min: 8.28 pH After Acid/Heat: 1.11 Extraction Fluid/pH: 1 # 4.91 Sample Wt.(g): 50 Extract Fluid Vol.(mL): 100 pH After Extraction: 2.35	Initial Filtration Data and Comments: 008 Solids: _____% / NA Initial Filtrate Added:
LvL #: 1104069 -001 Client ID#: pH After 5 Min: 8.60 pH After Acid/Heat: 1.33 Extraction Fluid/pH: #1 4.91 Sample Wt.(g): 50 Extract Fluid Vol.(mL): 100 pH After Extraction: 2.42	Initial Filtration Data and Comments: 001 Solids: _____% / NA Initial Filtrate Added:
LvL # 1104069 -002 Client ID#: pH After 5 Min: 8.65 pH After Acid/Heat: 1.46 Extraction Fluid/pH: #1 4.91 Sample Wt.(g): 50 Extract Fluid Vol.(mL): 100 pH After Extraction: 2.93	Initial Filtration Data and Comments: 002 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
MS			

Reviewed By/Date [illegible] 5/3/11

SPI-1311.1-A-0310

Page #

Lionville Laboratory Use Only

1104069

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Lionville Laboratory
A Division of Eberline Analytical Corporation

Client W.C. Hanford SAF# RC-207

Est. Final Proj. Sampling Date

Project#

Project Contact/Phone#

Lionville Laboratory Project Manager Arlette Johnson

QC SW Del STD TAT 7 Days

Date Rec'd 4-19-11 Date Due 4-26-11

		A	B	C
Refrigerator #		1	1	1
#/Type Container	Liquid			
	Solid	1pl	1aql	1pl
Volume	Liquid			
	Solid	125	125	125
Preservatives		—	—	—
ANALYSES REQUESTED →		ORGANIC: VOA, BNA, Pest/PCB, Herb	INORG: (1) Metal + Hg; CN	(3) TCLP Metals + Hg; Cr+6
Lionville Laboratory Use Only			MET	TCLP RCRA + Hg; CRC

MATRIX CODES:
W Water
WW Waste Water
GW Groundwater
WST Waste
WI Wipe
SO Solid
S Soil
SL Sludge
SE Sediment
PC Paint Chips
O Oil
NAL Non-Aqueous Liquid
L Leachate
A Air
T Tissue
F Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Metal + Hg	CN	TCLP Metals + Hg	Cr+6
01	J1FHN4			S	4-14-11	1300	X		X	X
02	J1HHD3			↓	↓	1310	X		X	X

Special Instructions: Run Matrix QC

Special Instructions:
1.
2.
3.
4.
5.
6.

See SRS

Relinquished by	Received by	Date	Time
[signature]	[signature]	4.19.11	0955

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN			

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-207-005	Page 1 of 1

Collector T. Welch-Koelling/A. Dunnum	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH	Price Code ~~8L~~ 8J	Data Turnaround ~~21~~ 7 Days
Project Designation Remedial Action of the 100-C-7 & 100-C-7:1 Waste Sites - I	Sampling Location 100-C-7:1 (discolored soil)		SAF No. RC-207		
Ice Chest No. RCC-07-008	Field Logbook No. EL-1655	COA R100C72600	Method of Shipment Fed Ex	04/14/11	04/14/11
Shipped To EBERLINE SERVICES/LIONVILLE	Offsite Property No. A100723		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool, 4 degrees Centigrade

Preservation	Cool 4C	None	Cool 4C								
Type of Container	G/P	aG	G/P								
No. of Container(s)	1	1	1								
Volume	125mL	125mL	125mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196								

Sample No.	Matrix *	Sample Date	Sample Time										
J1FHN4	SOIL	04/14/11	1300	X	X	X							
J1HHD3	Soil	04/14/11	1310	X	X	X							

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: A. Dunnum	4-14-11 13:40	A. Martinez/C. Martinez	1340 04/14/11
Relinquished By/Removed From: C. Martinez/C. Martinez	1705 04/14/11	Received By/Stored In: A. Freier A. Freier	1705 04-14-11
Relinquished By/Removed From: WCH A. Freier A. Freier	0825 4-18-11	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex	4.19.11/0955	Received By/Stored In: D.S.M.	4.19.11/0955
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury (TCLP) - 1311/7470 {Mercury}

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

KP0043

REVIEWED BY JEB DATE 4-18-11

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC. Hanford

Project/SAF/SOW/Release #: RC-207

Date: 4.19.11

LvL Batch #: 1104069

Sample Custodian: D. Jones

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FedEx		Airbill # 7970 0051 6369
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 plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 3.2	°C	Cooler # RCC-07-008
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?	☑ Yes	☐ No	
Short holds taken to wet lab?	☐ Yes	☐ No	☑ N/A
13. VOA, TOC, TOX 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 _____

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

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-207 Project Number: KP0043 Project Manager: Joan Kessner	**Reported:** 04/27/2011 18:25

Analytical Report for Wet Chemistry

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1FHN4	1104069-01	Soil	04/14/2011 13:00	04/19/2011 09:55
J1HHD3	1104069-02	Soil	04/14/2011 13:10	04/19/2011 09:55

LIONVILLE LABORATORY
Analytical Testing Laboratory

24 Thelma Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

Case Narrative

Client: WC-HANFORD RC-207 KP0043
LVL#: 1104069

Date Received: 04-19-11

INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 soil samples.

2. The samples were prepared and analyzed in accordance with the methods indicated on the data summary report.

   Lionville Lab (LvL) is NELAP accredited by the State of Pennsylvania. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager. LvL certifies that all test results meet the requirements of NELAC with any exception noted in the following statements.

3. Sample holding times as required by the method and/or contract were met.

4. The results presented in this report are derived from samples that met LvL's sample acceptance policy.

5. The method blank for Hexavalent Chromium (Cr^{6+}) was within the method criteria.

6. The Laboratory Control Samples (LCS) for Cr^{6+} were within the laboratory control limits and method criteria.

7. The matrix spike (MS) recovery for L104310-MS6 (Insoluble Cr^{6+}) was within the 75-125% control limits however MS recovery for L104310-MS5 (Soluble Cr^{6+}) was below the control limits at 56% that may be attributed to high background concentration of the target analytes and low spike level.

8. The replicate analysis for Cr^{6+} was within the 20% Relative Percent Difference (RPD) control limit.

9. Results for soil samples are reported on a dry weight basis.

10. 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 package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory

4/28/11
Date

njp\i04-069

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 8 pages.

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

WC-Hanford, Inc.	Project: RC-207	
2620 Fermi Avenue	Project Number: KP0043	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	04/27/2011 18:25

Notes and Definitions

U	Analyte included in the analysis, but not detected
D	Results reported from a dilution; related reporting limits are elevated due to the presence of an interference or a high target value.
*	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
LOD	Limit of Detection (LOD): the minimum estimated concentration of a target analyte that can be detected reliably. Concentrations at the LOD or between the LOD and LOQ are flagged estimated with either a 'J' qualifier or client-specific qualifier.
LOQ	Limit of Quantitation (LOQ): the minimum concentration of a target analyte that can be quantified reliably

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

WC-Hanford, Inc.	Project: RC-207	
2620 Fermi Avenue	Project Number: KP0043	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	04/27/2011 18:25

Wet Chemistry
Lionville Laboratory

Analyte	Result and Qualifier	LOD	LOQ	Units	Dilution	Batch	Prepared	Analyzed	Method
J1FHN4 (1104069-01) Soil									
%Solids	**91.3**	0.1	0.1	% by Weight	1	L104356	04/25/2011	04/25/2011	SM2540G
Hexavalent Chromium	**19.2**	0.22	0.55	mg/kg dry	1	L104310	04/21/2011	04/22/2011	SW846 7196A
J1HHD3 (1104069-02) Soil									
%Solids	**94.1**	0.1	0.1	% by Weight	1	L104356	04/25/2011	04/25/2011	SM2540G
Hexavalent Chromium	**145** D	4.25	10.6	mg/kg dry	20	L104310	04/21/2011	04/22/2011	SW846 7196A

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

WC-Hanford, Inc.	Project: RC-207	
2620 Fermi Avenue	Project Number: KP0043	**Reported:**
Richland WA, 99354	Project Manager: Joan Kessner	04/27/2011 18:25

Wet Chemistry - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	LOD	LOQ	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L104310 - SW 3060A										
Blank (L104310-BLK1)				Prepared: 04/21/2011 Analyzed: 04/22/2011						
Hexavalent Chromium	0.20 U	0.20	0.50	mg/kg wet						
LCS (L104310-BS1)				Prepared: 04/21/2011 Analyzed: 04/22/2011						
Hexavalent Chromium	4.17	0.20	0.50	mg/kg wet	4.0000		104	80-120		
LCS (L104310-BS2)				Prepared: 04/21/2011 Analyzed: 04/22/2011						
Hexavalent Chromium	985 D	20.0	50.0	mg/kg wet	1069.0		92	80-120		
Duplicate (L104310-DUP3)	**Source: 1104069-01**			Prepared: 04/21/2011 Analyzed: 04/22/2011						
Hexavalent Chromium	18.4	0.22	0.55	mg/kg dry		19.2			4	20
Matrix Spike (L104310-MS5)	**Source: 1104069-01**			Prepared: 04/21/2011 Analyzed: 04/22/2011						
Hexavalent Chromium	21.7 D	4.38	11.0	mg/kg dry	4.3812	19.2	56*	75-125		
Matrix Spike (L104310-MS6)	**Source: 1104069-01**			Prepared: 04/21/2011 Analyzed: 04/22/2011						
Hexavalent Chromium	1120 D	21.9	54.8	mg/kg dry	1248.5	19.2	88	75-125		

Lionville Laboratory Use Only

1104069

Custody Transfer Record/Lab Work Request

Page 1 of 1

Lionville Laboratory
A Division of Eberline Analytical Corporation

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client W.C. Hanford SAF# RC-207

Est. Final Proj. Sampling Date

Project#

Project Contact/Phone#

Lionville Laboratory Project Manager Arlette Johnson

QC SW Del STD TAT 7 Days

Date Rec'd 4-19-11 Date Due 4-26-11

		A		B		C
Refrigerator #		1		1		1
#/Type Container	Liquid					
	Solid	1pl		1aql		1pl
Volume	Liquid					
	Solid	125		125		125
Preservatives		—		—		—
ANALYSES REQUESTED		ORGANIC		INORG		
		VOA	BNA	Pest/PCB	Herb	Metal + Hg	CN	TCLP Metals	+ Hg	Cr+6
		Lionville Laboratory Use Only								
						Metal		TCLP RCRA	+ Hg	CR6

MATRIX CODES:
W Water
WW Waste Water
GW Groundwater
WST Waste
WI Wipe
SO Solid
S Soil
SL Sludge
SE Sediment
PC Paint Chips
O Oil
NAL Non-Aqueous Liquid
L Leachate
A Air
T Tissue
F Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Metal		TCLP RCRA	+ Hg	CR6
01	J1FHN4			S	4-14-11	1300	X		X	X	X
02	J1HHD3			↓	↓	1310	X		X	X	X

Special Instructions: Run Matrix QC

Special Instructions:
1.
2.
3.
4.
5.
6. See SRG

Relinquished by	Received by	Date	Time
[signature]	[signature]	4.19.11	0955

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN			

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-207-005	Page 1 of 1

Collector T. Welch-Koelling/A. Dunnum	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH	Price Code ~~8L~~ 85	Data Turnaround ~~21~~ 7 Days
Project Designation Remedial Action of the 100-C-7 & 100-C-7:1 Waste Sites - I	Sampling Location 100-C-7:1 (discolored soil)		SAF No. RC-207		
Ice Chest No. RCC-07-008	Field Logbook No. EL-1655	COA R100C72600	Method of Shipment Fed Ex	04/14/11	04/14/11
Shipped To EBERLINE SERVICES/LIONVILLE	Offsite Property No. A100723		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Cool, 4 degrees Centigrade

Preservation				Cool 4C	None	Cool 4C					
Type of Container				G/P	aG	G/P					
No. of Container(s)				1	1	1					
Volume				125mL	125mL	125mL					
SAMPLE ANALYSIS				See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196					
Sample No.	Matrix *	Sample Date	Sample Time								
J1FHN4	SOIL	04/14/11	1300	X	X	X					
J1HHD3	Soil	04/14/11	1310	X	X	X					

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Akane Dunnum	Date/Time 4-14-11 13:40	Received By/Stored In C. Martinez/C. Martinez	Date/Time 1340 04/14/11
Relinquished By/Removed From C. Martinez/C. Martinez	Date/Time 1705 04/14/11	Received By/Stored In A. Freier A. Freier	Date/Time 1705 04-14-11
Relinquished By/Removed From WCH A. Freier A. Freier	Date/Time 0825 4-18-11	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time 4-19-11/0955	Received By/Stored In DSM-15	Date/Time 4-19-11/0955
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc}; Mercury - 7471 - (CV) {Mercury}

(2) Metals by ICP (TCLP) - 1311/6010 {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Mercury (TCLP) - 1311/7470 {Mercury}

KP0043

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

REVIEWED BY JEB DATE 4-18-11

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC. Hanford

Project/SAF/SOW/Release #: RC-207

Date: 4.19.11

LvL Batch #: 1104069

Sample Custodian: D. Spring

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FedEx		Airbill # 7970 0051 6369
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 plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 3.2	°C	Cooler # RCC-07-008
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?	☑ Yes	☐ No	
Short holds taken to wet lab?	☐ Yes	☐ No	☑ N/A
13. VOA, TOC, TOX 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 _____