0098341

SAF-RC-154
618-10 & 618-11 Field Remediation – Soil In-Process
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 7/20/11
INITIAL/DATE

COMMENTS:

SDG K3431 SAF-RC-154

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Sample Location/Waste Site: 618-10 North Excavation Stockpile "E" Soil

RECEIVED
AUG 22 2011
EDMC

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JUL 2011

15 July 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 #	1106100
SDG #	K3431
SAF #	RC-154
Date Received	06/24/11
# Samples	5
Matrix	SOIL
Volatiles	
Semivolatiles	
Pest/PCB	
Glycols	
DRO/KRO/GRO	
PAHs	
Herbicides	
Metals	X
Inorganics	

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

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JUL 2011

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-154 Project Number: K3431 Project Manager: Joan Kessner	Reported: 07/05/2011 16:19

Analytical Report for Metals by SW846 6000/7000 series

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
J1JW38	1106100-01	Soil	06/21/2011 08:39	06/24/2011 09:55
J1JW39	1106100-02	Soil	06/21/2011 08:42	06/24/2011 09:55
J1JW40	1106100-03	Soil	06/21/2011 08:48	06/24/2011 09:55
J1JW41	1106100-04	Soil	06/21/2011 08:55	06/24/2011 09:55
J1JW42	1106100-05	Soil	06/21/2011 08:58	06/24/2011 09:55

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Case Narrative

Client: WC-HANFORD RC-154
LVL#: 1106100
SDG/SAF#: K3431/RC-154

W.O.#: 60049-001-001-0001-00
Date Received: 06-24-11

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 5 soil samples.

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

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).

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the LOQ).

7. The preparation/method blank L106246-BLK1 for 1 analyte was outside method criteria. {less than the Limit of Quantitation, samples greater than 20X MB value}.

   a). The MB result for Selenium was greater than the Limit of Quantitation (LOQ), however the preparation/method blank L106246-BLK1 and the sample results for Selenium were below the client requested limit.

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.

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 19 pages.

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

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J1JW38	Aluminum	22,000	81.5
	Antimony	100	95.9
	Calcium	20,800	55.3
	Chromium	100	83.3
	Cobalt	100	88.9
	Iron	22,000	15.4
	Lead	100	83.5
	Magnesium	21,600	53.5
	Nickel	100	88.2
	Silicon	2,100	122.2

12. The duplicate analysis for 1 analyte was outside 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. 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.

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

7/15/11
Date

alm/m06-100

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WC-Hanford, Inc.	Project: RC-154	
2620 Fermi Avenue	Project Number: K3431	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	07/05/2011 16:19

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).
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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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-154 Project Number: K3431 Project Manager: Joan Kessner	Reported: 07/05/2011 16:19

J1JW38
1106100-01 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	4930		3.57	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Antimony	0.428	U	0.428	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Arsenic	2.41		0.713	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Barium	53.9		0.357	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Beryllium	0.194		0.143	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Boron	0.431	B	1.43	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Cadmium	0.121	B	0.143	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Calcium	4990		71.3	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Chromium	5.51		0.143	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Cobalt	6.96		1.43	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Copper	12.5		0.713	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Iron	22400		14.3	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Lead	2.46		0.357	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Magnesium	4010		53.5	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Manganese	291		3.57	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Molybdenum	0.354	B	1.43	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Nickel	7.34		2.85	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Potassium	619		285	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Selenium	0.214	U	0.214	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Silicon	234		1.43	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Silver	0.143	U	0.143	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Sodium	263		35.7	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Vanadium	65.0		1.78	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Zinc	41.7		7.13	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Zirconium	22.0		3.57	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Mercury	0.0267	U	0.0267	mg/kg dry	1	L106283	06/29/2011	07/01/2011	7471A

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WC-Hanford, Inc.	Project: RC-154	
2620 Fermi Avenue	Project Number: K3431	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	07/05/2011 16:19

J1JW39
1106100-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	4690		3.35	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Antimony	0.402	U	0.402	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Arsenic	1.87		0.669	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Barium	71.9		0.335	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Beryllium	0.197		0.134	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Boron	0.399	B	1.34	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Cadmium	0.110	B	0.134	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Calcium	5430		66.9	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Chromium	4.55		0.134	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Cobalt	6.86		1.34	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Copper	11.9		0.669	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Iron	21100		13.4	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Lead	2.33		0.335	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Magnesium	3490		50.2	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Manganese	321		3.35	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Molybdenum	0.355	B	1.34	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Nickel	6.36		2.68	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Potassium	640		268	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Selenium	0.201	U	0.201	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Silicon	258		1.34	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Silver	0.134	U	0.134	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Sodium	276		33.5	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Vanadium	65.4		1.67	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Zinc	42.6		6.69	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Zirconium	23.7		3.35	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Mercury	0.0103	B	0.0260	mg/kg dry	1	L106283	06/29/2011	07/01/2011	7471A

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-154 Project Number: K3431 Project Manager: Joan Kessner	Reported: 07/05/2011 16:19

J1JW40
1106100-03 (Soil)

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	4730		3.47	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Antimony	0.416	U	0.416	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Arsenic	1.92		0.693	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Barium	59.6		0.347	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Beryllium	0.187		0.139	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Boron	0.393	B	1.39	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Cadmium	0.114	B	0.139	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Calcium	4840		69.3	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Chromium	4.03		0.139	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Cobalt	6.04		1.39	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Copper	11.5		0.693	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Iron	20000		13.9	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Lead	2.30		0.347	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Magnesium	3230		52.0	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Manganese	292		3.47	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Molybdenum	0.318	B	1.39	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Nickel	5.62		2.77	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Potassium	734		277	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Selenium	0.208	U	0.208	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Silicon	214		1.39	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Silver	0.139	U	0.139	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Sodium	278		34.7	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Vanadium	60.2		1.73	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Zinc	41.2		6.93	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Zirconium	22.5		3.47	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Mercury	0.0243	U	0.0243	mg/kg dry	1	L106283	06/29/2011	07/01/2011	7471A

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-154 Project Number: K3431 Project Manager: Joan Kessner	Reported: 07/05/2011 16:19

J1JW41
1106100-04 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	4790		4.30	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Antimony	0.515	U	0.515	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Arsenic	2.10		0.859	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Barium	56.6		0.430	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Beryllium	0.192		0.172	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Boron	1.72	U	1.72	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Cadmium	0.132	B	0.172	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Calcium	5660		85.9	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Chromium	4.70		0.172	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Cobalt	7.10		1.72	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Copper	12.3		0.859	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Iron	21900		17.2	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Lead	2.45		0.430	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Magnesium	3630		64.4	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Manganese	290		4.30	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Molybdenum	0.446	B	1.72	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Nickel	7.93		3.44	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Potassium	633		344	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Selenium	0.258	U	0.258	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Silicon	302		1.72	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Silver	0.172	U	0.172	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Sodium	321		43.0	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Vanadium	69.3		2.15	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Zinc	43.7		8.59	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Zirconium	24.6		4.30	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Mercury	0.0252	U	0.0252	mg/kg dry	1	L106283	06/29/2011	07/01/2011	7471A

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WC-Hanford, Inc.	Project: RC-154	
2620 Fermi Avenue	Project Number: K3431	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	07/05/2011 16:19

J1JW42
1106100-05 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	**5160**		3.99	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Antimony	0.479	U	0.479	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Arsenic	**1.96**		0.799	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Barium	**58.8**		0.399	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Beryllium	**0.207**		0.160	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Boron	**0.519**	B	1.60	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Cadmium	**0.123**	B	0.160	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Calcium	**4880**		79.9	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Chromium	**4.82**		0.160	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Cobalt	**6.38**		1.60	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Copper	**11.3**		0.799	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Iron	**21000**		16.0	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Lead	**2.39**		0.399	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Magnesium	**3340**		59.9	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Manganese	**342**		3.99	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Molybdenum	**0.351**	B	1.60	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Nickel	**6.51**		3.19	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Potassium	**680**		319	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Selenium	**0.258**		0.240	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Silicon	**260**		1.60	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Silver	0.160	U	0.160	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Sodium	**270**		39.9	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Vanadium	**62.9**		2.00	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Zinc	**41.1**		7.99	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Zirconium	**22.6**		3.99	mg/kg dry	1	L106246	06/27/2011	06/29/2011	6010B
Mercury	0.0260	U	0.0260	mg/kg dry	1	L106283	06/29/2011	07/01/2011	7471A

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

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

WC-Hanford, Inc.	Project: RC-154	
2620 Fermi Avenue	Project Number: K3431	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	07/05/2011 16:19

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 L106246 - SW 3050B										
Blank (L106246-BLK1)				Prepared: 06/27/2011 Analyzed: 06/29/2011						
Aluminum	3.79	U	3.79	mg/kg wet						
Antimony	0.455	U	0.455	mg/kg wet						
Arsenic	0.758	U	0.758	mg/kg wet						
Barium	0.379	U	0.379	mg/kg wet						
Beryllium	0.152	U	0.152	mg/kg wet						
Boron	1.52	U	1.52	mg/kg wet						
Cadmium	0.152	U	0.152	mg/kg wet						
Calcium	75.8	U	75.8	mg/kg wet						
Chromium	0.152	U	0.152	mg/kg wet						
Cobalt	1.52	U	1.52	mg/kg wet						
Copper	0.758	U	0.758	mg/kg wet						
Iron	15.2	U	15.2	mg/kg wet						
Lead	0.379	U	0.379	mg/kg wet						
Magnesium	56.8	U	56.8	mg/kg wet						
Manganese	3.79	U	3.79	mg/kg wet						
Molybdenum	1.52	U	1.52	mg/kg wet						
Nickel	3.03	U	3.03	mg/kg wet						
Potassium	303	U	303	mg/kg wet						
Selenium	0.259		0.227	mg/kg wet						
Silicon	1.52	U	1.52	mg/kg wet						
Silver	0.152	U	0.152	mg/kg wet						
Sodium	37.9	U	37.9	mg/kg wet						
Vanadium	1.89	U	1.89	mg/kg wet						
Zinc	7.58	U	7.58	mg/kg wet						
Zirconium	0.187	B	3.79	mg/kg wet						
Duplicate (L106246-DUP1)		Source: 1106100-01		Prepared: 06/27/2011 Analyzed: 06/29/2011						
Aluminum	5480		4.05	mg/kg dry		4930			10.5	20
Antimony	0.486	U	0.486	mg/kg dry		0.428 U				20
Arsenic	2.07		0.811	mg/kg dry		2.41			14.9	20
Barium	59.1		0.405	mg/kg dry		53.9			9.14	20
Beryllium	0.215		0.162	mg/kg dry		0.194			10.1	20
Boron	0.420	B	1.62	mg/kg dry		0.431			2.67	20
Cadmium	0.123	B	0.162	mg/kg dry		0.121			1.70	20
Calcium	5710		81.1	mg/kg dry		4990			13.5	20
Chromium	5.99		0.162	mg/kg dry		5.51			8.29	20
Cobalt	7.05		1.62	mg/kg dry		6.96			1.25	20

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-154 Project Number: K3431 Project Manager: Joan Kessner	Reported: 07/05/2011 16:19

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 L106246 - SW 3050B										
Duplicate (L106246-DUP1)		**Source: 1106100-01**		**Prepared: 06/27/2011 Analyzed: 06/29/2011**						
Copper	12.2		0.811	mg/kg dry		12.5			1.99	20
Iron	23700		16.2	mg/kg dry		22400			6.05	20
Lead	2.86		0.405	mg/kg dry		2.46			14.8	20
Magnesium	3910		60.8	mg/kg dry		4010			2.62	20
Manganese	313		4.05	mg/kg dry		291			7.31	20
Molybdenum	0.371	B	1.62	mg/kg dry		0.354			4.52	20
Nickel	7.28		3.24	mg/kg dry		7.34			0.778	20
Potassium	686		324	mg/kg dry		619			10.2	20
Selenium	0.243	U	0.243	mg/kg dry		0.214 U				20
Silicon	301		1.62	mg/kg dry		234			24.9*	20
Silver	0.162	U	0.162	mg/kg dry		0.143 U				20
Sodium	309		40.5	mg/kg dry		263			16.3	20
Vanadium	72.2		2.03	mg/kg dry		65.0			10.5	20
Zinc	46.1		8.11	mg/kg dry		41.7			10.2	20
Zirconium	25.7		4.05	mg/kg dry		22.0			15.5	20
Matrix Spike (L106246-MS1)		**Source: 1106100-01**		**Prepared: 06/27/2011 Analyzed: 06/29/2011**						
Aluminum	6020		3.34	mg/kg dry	133.74	4930	813*	75-125		20
Antimony	16.7		0.401	mg/kg dry	33.436	0.428 U	49.9*	75-125		20
Arsenic	108		0.669	mg/kg dry	133.74	2.41	79.3	75-125		20
Barium	174		0.334	mg/kg dry	133.74	53.9	89.9	75-125		20
Beryllium	2.72		0.134	mg/kg dry	3.3436	0.194	75.7	75-125		20
Boron	50.9		1.34	mg/kg dry	66.871	0.431	75.5	75-125		20
Cadmium	2.70		0.134	mg/kg dry	3.3436	0.121	77.3	75-125		20
Calcium	7100		66.9	mg/kg dry	1671.8	4990	126*	75-125		20
Chromium	14.6		0.134	mg/kg dry	13.374	5.51	68.1*	75-125		20
Cobalt	31.7		1.34	mg/kg dry	33.436	6.96	74.0*	75-125		20
Copper	25.4		0.669	mg/kg dry	16.718	12.5	77.5	75-125		20
Iron	22500		13.4	mg/kg dry	66.871	22400	291*	75-125		20
Lead	25.7		0.334	mg/kg dry	33.436	2.46	69.6*	75-125		20
Magnesium	4940		50.2	mg/kg dry	1671.8	4010	55.3*	75-125		20
Manganese	331		3.34	mg/kg dry	33.436	291	118	75-125		20
Molybdenum	53.0		1.34	mg/kg dry	66.871	0.354	78.7	75-125		20
Nickel	30.6		2.67	mg/kg dry	33.436	7.34	69.7*	75-125		20
Potassium	2020		267	mg/kg dry	1671.8	619	83.5	75-125		20
Selenium	102		0.201	mg/kg dry	133.74	0.214 U	76.6	75-125		20
Silicon	426		1.34	mg/kg dry	66.871	234	286*	75-125		20

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WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-154 Project Number: K3431 Project Manager: Joan Kessner	Reported: 07/05/2011 16:19

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 L106246 - SW 3050B									
Matrix Spike (L106246-MS1)		**Source: 1106100-01**		**Prepared: 06/27/2011 Analyzed: 06/29/2011**					
Silver	2.58	0.134	mg/kg dry	3.3436	0.143 U	77.2	75-125		20
Sodium	1850	33.4	mg/kg dry	1671.8	263	95.0	75-125		20
Vanadium	96.7	1.67	mg/kg dry	33.436	65.0	94.7	75-125		20
Zinc	71.1	6.69	mg/kg dry	33.436	41.7	87.9	75-125		20
Zirconium	273	3.34	mg/kg dry	334.36	22.0	75.2	75-125		20
Reference (L106246-SRM1)				**Prepared: 06/27/2011 Analyzed: 06/29/2011**					
Aluminum	10200	10.0	mg/kg wet	6670.0		153	0-200.89		
Antimony	64.6	1.20	mg/kg wet	53.000		122	0-235.8		
Arsenic	112	2.00	mg/kg wet	114.00		98.6	82.8-117.54		
Barium	301	1.00	mg/kg wet	307.00		98.1	79.8-120.2		
Beryllium	98.5	0.400	mg/kg wet	108.00		91.2	82.8-117.6		
Boron	77.9	4.00	mg/kg wet	85.100		91.5	67.5-132.8		
Cadmium	214	0.400	mg/kg wet	225.00		95.3	83.6-116.4		
Calcium	2920	200	mg/kg wet	3360.0		86.8	83.3-116.9		
Chromium	74.7	0.400	mg/kg wet	77.200		96.8	73.3-126.4		
Cobalt	153	4.00	mg/kg wet	166.00		92.4	80.7-118.7		
Copper	258	2.00	mg/kg wet	271.00		95.1	80.8-119.2		
Iron	7780	40.0	mg/kg wet	8420.0		92.4	78.6-121.1		
Lead	170	1.00	mg/kg wet	190.00		89.5	81.6-118.4		
Magnesium	7240	150	mg/kg wet	8570.0		84.5	83.2-116.7		
Manganese	809	10.0	mg/kg wet	965.00		83.8	69.3-130.5		
Molybdenum	234	4.00	mg/kg wet	235.00		99.7	76.2-123.8		
Nickel	209	8.00	mg/kg wet	221.00		94.5	79.6-120.8		
Potassium	13500	800	mg/kg wet	14400		93.8	81.9-118.1		
Selenium	182	0.600	mg/kg wet	187.00		97.2	75.9-124.6		
Silicon	418	4.00	mg/kg wet	807.00		51.7	0-219.3		
Silver	77.9	0.400	mg/kg wet	83.500		93.3	82.7-117.1		
Sodium	8970	100	mg/kg wet	9730.0		92.2	82.5-117.2		
Vanadium	97.6	5.00	mg/kg wet	98.700		98.9	75.9-123.6		
Zinc	184	20.0	mg/kg wet	199.00		92.4	78.4-121.6		

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WC-Hanford, Inc.	Project: RC-154	
2620 Fermi Avenue	Project Number: K3431	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	07/05/2011 16:19

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 L106283 - SW 7471A Prep										
Blank (L106283-BLK1)				Prepared: 06/29/2011 Analyzed: 07/01/2011						
Mercury	0.0281	U	0.0281	mg/kg wet						
Duplicate (L106283-DUP6)		Source: 1106100-01		Prepared: 06/29/2011 Analyzed: 07/01/2011						
Mercury	0.0244	B	0.0267	mg/kg dry		0.0267 U				20
Matrix Spike (L106283-MS6)		Source: 1106100-01		Prepared: 06/29/2011 Analyzed: 07/01/2011						
Mercury	0.181		0.0260	mg/kg dry	0.14459	0.0267 U	125	75-125		20
Reference (L106283-SRM1)				Prepared: 06/29/2011 Analyzed: 07/01/2011						
Mercury	1.31		0.0290	mg/kg wet	1.2900		101	62.6-138		

Lionville Laboratory

Logbook #: 971

SAMPLE DIGESTION RECORD

Digestion Batch #: L106296
Date/Time Initiated: 6/27/11 1215
Date/Time Completed: 6/27/11 1805
Analyst: JJS
Matrix (circle): Soil Water Other
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 #: B19
Balance Cal Verification ✓ NA
Temp: 96
BLOCK 1 3 (circle one)

Work Order #	Spike Vol (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/Sol/TC	Texture	Color / Appearance	Artifact	Turb
L106100-01		0.25	50		TO	coarse	Brown	N/A	N/A
L106296-Bg1		0.66	50						
-MS1	0.5	0.80	50						
L106100-02		0.80	50			Coarse	Brown		
-03		0.76	50			coarse	Brown		
-04		0.62	50			coarse	Brown		
-05		0.67	50			Coarse	Brown		
L106296-BLK1		0.66	50			coarse	Boiling Chips		
-SRM1	✓	0.75	50			Coarse	dusty pink sand		

JJS
6/27/11

Spiking IDs / Expiration Date:
MS#: 1006893

LCS#: ✓ 1100103

Reagent IDs:
HNO_3 K14036
HCl K14059
H_2O_2 K07411
1:1 HNO_3 637-09-09
1:1 HCl

File ID#:

Data Review By/Date: 6/28/11

R:\group\QA\SOP\
Signed\SPI\Metals Digestion log.doc

* 6072-09-12 8.50 ml

Page #:

Lionville Laboratory

MERCURY PREPARATION

Logbook # 968

Analyst: [illegible]
Date 6/29/11 – 6/30/11
Start Time/Temp: 1115/95°
End Time/Temp: 1150/98°

Instrument ID: ~~#61.5~~ #63.3 W.E. [illegible] 7/1/11
Balance # B29 /NA
Pipette Calibration (Daily) (Y)

Prep Batch: L106283
Worksheet: HG070103
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	
L106283-DUP1				0.32	50	
SRM1				0.31	50	
1106067-01				0.36	50	
L106283-DUP1				0.38	50	
MS1		0.500	1.0	0.37	50	
1106067-02				0.35	50	
03				0.36	50	
04				0.33	50	
1106096-01				0.32	50	
L106283-DUP2				0.31	50	
MS2		0.500	1.0	0.32	50	
1106097-01				0.34	50	
L106283-DUP3				0.33	50	
MS3		0.500	1.0	0.33	50	
1106097-02				0.36	50	
1106098-01				0.38	50	
L106283-DUP4				0.37	50	
MS4		0.500	1.0	0.35	50	

Standard:	ID	Prep Date/Time
ICAL/MS	RT 1001785B	6/30/11 1000
ICV/CCV/LCS	I.V. 1001781A	↓

Reviewed By/Date: [illegible] 7/5/11

se book # 9368 for std traceability information

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

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

ME-HgCVAA-Prep0910

Page #:

Lionville Laboratory

MERCURY PREPARATION

Logbook # 968

Analyst: [illegible]
Date 6/29/11 - 6/30/11
Start Time/Temp: [illegible] 059
End Time/Temp: [illegible]

Instrument ID: HG3.3
Balance # 627 /NA
Pipette Calibration (Daily) (Y) ____

Prep Batch: L106283
Worksheet: HG070103
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.
1106099-01				0.36	50	
L106283-DUP5				0.34	50	
MS5		0.500	1.0	0.35	50	
1106100-01				0.36	50	RAD
L106283-DUP6				0.36	50	
MS6		0.500	1.0	0.37	50	
1106100-02				0.37	50	
03				0.39	50	
04				0.38	50	
05				0.37	50	

MW 6/29/11

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

Reviewed By/Date: [illegible] 7/5/11

se book # 9368 for std traceability information

Soil LCS True Value = [illegible] mg/Kg
Standard # [illegible]

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

ME-HgCVAA-Prep0910

Page #:

Lionville Laboratory Use Only

1106 100

Custody Transfer Record/Lab Work Request

Page 1 of 1

Lionville Laboratory
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FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

000000017

Client: WRHanford SAF# RC-154
Est. Final Proj. Sampling Date:
Project#:
Project Contact/Phone#:
Lionville Laboratory Project Manager: O'Johnson
QC: SW Del: SH TAT: 15
Date Rec'd: 6/24/11 Date Due: 7/9/11

Refrigerator #																							
#/Type Container	Liquid																						
	Solid																						
Volume	Liquid																						
	Solid																						
Preservatives																							
ANALYSES REQUESTED →								ORGANIC							INORG								
								VOA	BNA	Pest/PCB	Herb				Metal	CN	TCLP met	TCLP Hg					
								Lionville Laboratory Use Only															
															metals		TCLP metals						
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																
	01	TIJW38			S	6/21/11	0839								X		X	X					
	02	39					0842								X		X	X					
	03	40					0848								X		X	X					
	04	41					0855								X		X	X					
	05	42					0858								X		X	X					

Special Instructions:

Special Instructions: 6/24/11 1. TCLP Metals are lead and hold
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	6/24/11	0950

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-154-063	Page 1 of 1

Collector Blankingship, M.	Company Contact Joan Kessner	Telephone No. 509-375-4688	Project Coordinator KESSNER, JH
Price Code ~~8L~~ 8K RTL 6/21/11	Data Turnaround ~~21 Days~~ 15 Day RTL 6/21/11		
Project Designation 618-10 & 618-11 Field Remediation - Soil In-Process	Sampling Location 618-10 North Excavation Stockpile "E" Soil	SAF No. RC-154	
Ice Chest No. WCH-11-010	Field Logbook No. EL-1648-01	COA 5418DT8100 6-21-11	Method of Shipment Fed Ex
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A100767	Bill of Lading/Air Bill No. SEE CSPC RTL 6/21/11	

POSSIBLE SAMPLE HAZARDS/REMARKS

Potential RAD

Special Handling and/or Storage

Cool 4°C
RTL 6/21/11

Preservation	Cool 4C	None	None								
Type of Container	nG	nG	Snap Vial								
No. of Container(s)	0	1	1								
Volume	250mL	250mL	60mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	RCF GEA Shipping Screen								

Sample No.	Matrix *	Sample Date	Sample Time										RCF
J1JW38	SOIL	6-21-11	0879	X	X								28863
J1JW39	SOIL	6-21-11	0842	X	X								28864
J1JW40	SOIL	6-21-11	0848	X	X								28865
J1JW41	SOIL	6-21-11	0855	X	X								28866
J1JW42	SOIL	6-21-11	0858 6-21-11	X	X								28867

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From [illegible]	0950 6-21-11	Received By/Stored In [illegible] Doug Bowers Bowers	6-21-11 0950
Relinquished By/Removed From [illegible] Doug Bowers Bowers	6-21-11 1625	Received By/Stored In 1060 #2 A. PORTER [illegible]	6-21-11 1625
Relinquished By/Removed From 1060 #2 A. PORTER [illegible]	WCH 6-23-11 0940	Received By/Stored In Fed Ex	
Relinquished By/Removed From Fed Ex	6-24-11 0925	Received By/Stored In VICTOR HERNANDEZ	6-24-11 0925
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

**Please Leach and Hold TCLP per Joan Kessner

(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, Zirconium); Mercury - 7471 - (CV) (Mercury)

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

Pull all ICP from the one container 6-21-11

REVIEWED BY JRE
DATE 6-23-11

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

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

WCH-EE-011

000000018

Lionville Laboratory

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: WC Hanford
Project/SAF/SOW/Release #: RC-154

Date: 6-24-11

LvL Batch #: 1106100

Sample Custodian: [illegible]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier Fed Ex		Airbill # 79490124 1628
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 2.9	°C	Cooler # WCH-11-010
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 _____