0079261

SAF-RC-030
Remaining Sites Confirmation Sampling - Other Solid
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 10/31/08
INITIAL/DATE

COMMENTS:

SDG K1337 **SAF-RC-030**

Rad only X Chem only Rad & Chem

X Complete Partial

RECEIVED
NOV 07 2008
EDMC

Waste Site: 100-D-78

LIONVILLE LABORATORY INC.

27 October 2008

RECEIVED
OCT 2008

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 #	0809L123
SDG #	K1337
SAF #	RC-030
Date Received	9/17/08
# Samples	1
Matrix	OTHER
Volatiles	
Semivolatiles	
Pest/PCB	
Glycols	
DRO/KRO/GRO	
GC Alcohols	
Herbicides	
Metals	X
Inorganics	

The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,
Lionville Laboratory Incorporated

Orlette S. Johnson
Project Manager
r:\group\pm\orlette\hanford\data\b_ltrs.doc

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

RECEIVED
OCT 2008

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-030 K1337

DATE RECEIVED: 09/17/08 LVL LOT # :0809L123

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J17FN5						
SILVER, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
SILVER, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
SILVER, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
ALUMINUM, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
ALUMINUM, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
ALUMINUM, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
ARSENIC, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
ARSENIC, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
ARSENIC, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
BORON, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
BORON, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
BORON, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
BARIUM, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
BARIUM, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
BARIUM, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
BERYLLIUM, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
BERYLLIUM, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
BERYLLIUM, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
CALCIUM, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
CALCIUM, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
CALCIUM, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
CADMIUM, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
CADMIUM, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
CADMIUM, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
COBALT, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
COBALT, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
COBALT, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
CHROMIUM, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
CHROMIUM, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
CHROMIUM, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
COPPER, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
COPPER, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
COPPER, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
IRON, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
IRON, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-030 K1337

DATE RECEIVED: 09/17/08 LVL LOT # :0809L123

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
IRON, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
MERCURY, TOTAL	001	SO	08C0171	09/15/08	09/25/08	09/26/08
MERCURY, TOTAL	001 REP	SO	08C0171	09/15/08	09/25/08	09/26/08
MERCURY, TOTAL	001 MS	SO	08C0171	09/15/08	09/25/08	09/26/08
POTASSIUM, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
POTASSIUM, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
POTASSIUM, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
MAGNESIUM, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
MAGNESIUM, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
MAGNESIUM, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
MANGANESE, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
MANGANESE, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
MANGANESE, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
MOLYBDENUM, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
MOLYBDENUM, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
MOLYBDENUM, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
SODIUM, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
SODIUM, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
SODIUM, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
NICKEL, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
NICKEL, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
NICKEL, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
LEAD, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
LEAD, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
LEAD, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
ANTIMONY, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
ANTIMONY, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
ANTIMONY, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
SELENIUM, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
SELENIUM, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
SELENIUM, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
SILICON, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
SILICON, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
SILICON, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
VANADIUM, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08
VANADIUM, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
VANADIUM, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08
ZINC, TOTAL	001	SO	08L0355	09/15/08	09/29/08	10/12/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-030 K1337

DATE RECEIVED: 09/17/08 LVL LOT # :0809L123

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ZINC, TOTAL	001 REP	SO	08L0355	09/15/08	09/29/08	10/12/08
ZINC, TOTAL	001 MS	SO	08L0355	09/15/08	09/29/08	10/12/08

LAB QC:

SILVER LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
SILVER, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
ALUMINUM LABORTORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
ALUMINUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
ARSENIC LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
ARSENIC, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
BORON LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
BORON, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
BARIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
BARIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
BERYLLIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
BERYLLIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
CALCIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
CALCIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
CADMIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
CADMIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
COBALT LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
COBALT, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
CHROMIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
CHROMIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
COPPER LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
COPPER, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
IRON LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
IRON, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
MERCURY LABORATORY	LC1 BS	S	08C0171	N/A	09/25/08	09/26/08
MERCURY, TOTAL	MB1	S	08C0171	N/A	09/25/08	09/26/08
POTASSIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
POTASSIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
MAGNESIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
MAGNESIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
MANGANESE LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
MANGANESE, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
MOLYBDENUM LABORATOR	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
WC-HANFORD RC-030 K1337

DATE RECEIVED: 09/17/08 LVL LOT # :0809L123

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MOLYBDENUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
SODIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
SODIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
NICKEL LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
NICKEL, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
LEAD LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
LEAD, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
ANTIMONY LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
ANTIMONY, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
SELENIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
SELENIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
SILICON LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
SILICON, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
VANADIUM LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
VANADIUM, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08
ZINC LABORATORY	LC1 BS	S	08L0355	N/A	09/29/08	10/10/08
ZINC, TOTAL	MB1	S	08L0355	N/A	09/29/08	10/10/08

LIONVILLE LABORATORY INC.

Analytical Report

Client: WC-HANFORD RC-030
LVL#: 0809L123
SDG/SAF#: K1337/RC-030

W.O.#: 60049-001-001-0001-00
Date Received: 09-17-08

METALS CASE NARRATIVE

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvLI) 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 analysis of 1 solid sample.

2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.

   The sample consisted of fairly large gray rock-like material. The pieces were broken down into smaller pieces prior to metals preparation.

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

4. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

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

6. The preparation/method blank for 1 analyte was outside method criteria. {less than the Limit of Quantitation (3-10X the LOD), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB result for Sodium was greater than the Limit of Quantitation (LOQ) {3-10x the (LOD) Limit of Detection} and all samples read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

7. All ICP Interference Check Standards were within 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 19 pages.

8. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon at 37.2%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low for Silicon.

9. The matrix spike (MS) recoveries for 4 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

10. 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
J17FN5	Aluminum	2,000	91.5
	Barium	100	97.3
	Iron	22,000	102.5
	Silicon	2,100	94.6

11. The duplicate analyses for 11 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

12. 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.

13. LvLI 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.

14. 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 Incorporated

10/21/09
Date

jjw/m09-123

LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within th

Lot#: 0809L123

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A __3010A __3015 __3020A X3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	X6010B		__200.7				__99
Antimony	X6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	X6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	X6010B		__200.7				__99
Beryllium	X6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	X6010B		__200.7				__99
Cadmium	X6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	X6010B		__200.7				__99
Chromium	X6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	X6010B		__200.7				__99
Copper	X6010B	__7211 [5]	__200.7	__220.2			__99
Iron	X6010B		__200.7				__99
Lead	X6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	X6010B		__200.7				__99
Manganese	X6010B		__200.7				__99
Mercury	__7470A [3]	X7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	X6010B		__200.7				__99
Nickel	X6010B		__200.7				__99
Potassium	X6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	X6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	X6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	X6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	X6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2	__200.9		__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	X6010B		__200.7				__99
Zinc	X6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other: Method: _____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, approximately 0.3 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Flame AA.

4. Graphite Furnace AA.

L-WI-033/N-04/98

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 10/15/08

CLIENT: WC-HANFORD RC-030 K1337 LVL LOT #: 0809L123

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J17FN5	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	357	MG/KG	2.9	1.0
		Arsenic, Total	0.63	MG/KG	0.37	1.0
		Boron, Total	0.37 u	MG/KG	0.37	1.0
		Barium, Total	7.9	MG/KG	0.07	1.0
		Beryllium, Total	0.04 u	MG/KG	0.04	1.0
		Calcium, Total	729	MG/KG	2.9	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Cobalt, Total	0.35	MG/KG	0.15	1.0
		Chromium, Total	1.0	MG/KG	0.15	1.0
		Copper, Total	2.3	MG/KG	0.15	1.0
		Iron, Total	1000	MG/KG	3.3	1.0
		Mercury, Total	0.04	MG/KG	0.009	1.0
		Potassium, Total	76.2	MG/KG	2.9	1.0
		Magnesium, Total	167	MG/KG	1.8	1.0
		Manganese, Total	12.6	MG/KG	0.03	1.0
		Molybdenum, Total	0.22 u	MG/KG	0.22	1.0
		Sodium, Total	47.0	MG/KG	1.5	1.0
		Nickel, Total	1.1	MG/KG	0.15	1.0
		Lead, Total	0.91	MG/KG	0.22	1.0
		Antimony, Total	0.22 u	MG/KG	0.22	1.0
		Selenium, Total	0.44 u	MG/KG	0.44	1.0
		Silicon, Total	179	MG/KG	2.9	1.0
		Vanadium, Total	2.4	MG/KG	0.10	1.0
		Zinc, Total	3.9	MG/KG	0.44	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/15/08

CLIENT: WC-HANFORD RC-030 K1337 LVL LOT #: 0809L123

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	08L0355-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Aluminum, Total	4.0 u	MG/KG	4.0	1.0
		Arsenic, Total	0.50 u	MG/KG	0.50	1.0
		Boron, Total	0.50 u	MG/KG	0.50	1.0
		Barium, Total	0.24	MG/KG	0.10	1.0
		Beryllium, Total	0.05 u	MG/KG	0.05	1.0
		Calcium, Total	13.1	MG/KG	4.0	1.0
		Cadmium, Total	0.05 u	MG/KG	0.05	1.0
		Cobalt, Total	0.20 u	MG/KG	0.20	1.0
		Chromium, Total	0.20 u	MG/KG	0.20	1.0
		Copper, Total	0.59	MG/KG	0.20	1.0
		Iron, Total	9.3	MG/KG	4.5	1.0
		Potassium, Total	4.0 u	MG/KG	4.0	1.0
		Magnesium, Total	3.4	MG/KG	2.5	1.0
		Manganese, Total	0.04 u	MG/KG	0.04	1.0
		Molybdenum, Total	0.30 u	MG/KG	0.30	1.0
		Sodium, Total	15.2	MG/KG	2.0	1.0
		Nickel, Total	0.35	MG/KG	0.20	1.0
		Lead, Total	0.30 u	MG/KG	0.30	1.0
		Antimony, Total	0.30 u	MG/KG	0.30	1.0
		Selenium, Total	0.60 u	MG/KG	0.60	1.0
		Silicon, Total	4.0 u	MG/KG	4.0	1.0
		Vanadium, Total	0.14 u	MG/KG	0.14	1.0
		Zinc, Total	0.94	MG/KG	0.60	1.0
BLANK1	08C0171-MB1	Mercury, Total	0.01 u	MG/KG	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 10/15/08

CLIENT: WC-HANFORD RC-030 K1337 LVL LOT #: 0809L123

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J17FN5	Silver, Total	3.3	0.07u	3.5	94.3	1.0
		Aluminum, Total	642	357	140	203.0	1.0
		Arsenic, Total	128	0.63	140	90.8	1.0
		Boron, Total	62.3	0.37u	70.1	88.9	1.0
		Barium, Total	90.9	7.9	140	59.2	1.0
		Beryllium, Total	3.4	0.04u	3.5	97.1	1.0
		Calcium, Total	2420	729	1750	96.4	1.0
		Cadmium, Total	3.3	0.04u	3.5	94.3	1.0
		Cobalt, Total	33.8	0.35	35.1	95.3	1.0
		Chromium, Total	14.5	1.0	14.0	96.4	1.0
		Copper, Total	19.3	2.3	17.5	97.1	1.0
		Iron, Total	1460	1000	70.1	650.1*	1.0
		Mercury, Total	0.18	0.04	0.15	99.3	1.0
		Potassium, Total	1700	76.2	1750	92.4	1.0
		Magnesium, Total	1820	167	1750	94.6	1.0
		Manganese, Total	48.7	12.6	35.1	102.8	1.0
		Molybdenum, Total	64.9	0.22u	70.1	92.6	1.0
		Sodium, Total	1620	47.0	1750	89.8	1.0
		Nickel, Total	34.5	1.1	35.1	95.2	1.0
		Lead, Total	33.1	0.91	35.1	91.7	1.0
		Antimony, Total	29.0	0.22u	35.1	82.6	1.0
		Selenium, Total	115	0.44u	140	82.0	1.0
		Silicon, Total	209	179	70.1	42.7	1.0
		Vanadium, Total	36.6	2.4	35.1	97.4	1.0
		Zinc, Total	38.4	3.9	35.1	98.3	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 10/15/08

CLIENT: WC-HANFORD RC-030 K1337 LVL LOT #: 0809L123

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J17FN5	Silver, Total	0.07u	0.08u	NC	1.0
		Aluminum, Total	357	282	23.4	1.0
		Arsenic, Total	0.63	0.39u	~~NC~~ *200	1.0
		Boron, Total	0.37u	0.39u	NC	1.0
		Barium, Total	7.9	6.8	15.0	1.0
		Beryllium, Total	0.04u	0.04u	NC	1.0
		Calcium, Total	729	547	28.5	1.0
		Cadmium, Total	0.04u	0.04u	NC	1.0
		Cobalt, Total	0.35	0.24	36.1	1.0
		Chromium, Total	1.0	0.90	10.2	1.0
		Copper, Total	2.3	1.6	35.9	1.0
		Iron, Total	1000	747	29.1	1.0
		Mercury, Total	0.04	0.04	22.2	1.0
		Potassium, Total	76.2	56.2	30.2	1.0
		Magnesium, Total	167	137	19.6	1.0
		Manganese, Total	12.6	9.4	29.1	1.0
		Molybdenum, Total	0.22u	0.24u	NC	1.0
		Sodium, Total	47.0	45.4	3.5	1.0
		Nickel, Total	1.1	1.0	9.5	1.0
		Lead, Total	0.91	0.83	8.8	1.0
		Antimony, Total	0.22u	0.24u	NC	1.0
		Selenium, Total	0.44u	0.47u	NC	1.0
		Silicon, Total	179	158	12.4	1.0
		Vanadium, Total	2.4	1.8	28.6	1.0
		Zinc, Total	3.9	4.9	22.7	1.0

* corrected value PW 10/16/08

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/15/08

CLIENT: WC-HANFORD RC-030 K1337 LVL LOT #: 0809L123

WORK ORDER: 60049-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	08L0355-LC1	Silver, LCS	50.0	50.0	MG/KG	100
		Aluminum, LCS	501	500	MG/KG	100.1
		Arsenic, LCS	944	1000	MG/KG	94.4
		Boron, LCS	474	500	MG/KG	94.8
		Barium, LCS	495	500	MG/KG	99.0
		Beryllium, LCS	24.6	25.0	MG/KG	98.4
		Calcium, LCS	2510	2500	MG/KG	100.6
		Cadmium, LCS	24.0	25.0	MG/KG	96.0
		Cobalt, LCS	245	250	MG/KG	98.1
		Chromium, LCS	49.6	50.0	MG/KG	99.2
		Copper, LCS	124	125	MG/KG	99.1
		Iron, LCS	503	500	MG/KG	100.6
		Potassium, LCS	2400	2500	MG/KG	96.0
		Magnesium, LCS	2480	2500	MG/KG	99.2
		Manganese, LCS	74.8	75.0	MG/KG	99.7
		Molybdenum, LCS	488	500	MG/KG	97.7
		Sodium, LCS	2390	2500	MG/KG	95.6
		Nickel, LCS	197	200	MG/KG	98.4
		Lead, LCS	242	250	MG/KG	96.9
		Antimony, LCS	283	300	MG/KG	94.3
		Selenium, LCS	923	1000	MG/KG	92.3
		Silicon, LCS	186	500	MG/KG	37.2
		Vanadium, LCS	250	250	MG/KG	99.8
		Zinc, LCS	99.6	100	MG/KG	99.6
LCS1	08C0171-LC1	Mercury, LCS	5.1	4.7	MG/KG	109.0

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 08L0355
Date/Time Initiated: 9/29/08 1645
Date/Time Completed: 9/29/08 2030
Analyst(s): JW
Matrix: (Soil) Water Other:
Instr. Type: AA (ICP)
Parameters: see backlog

(Digested) / Undigested (circle one)
Balance #: B20
Balance Cal Verif: (Y) NA
Hot Plate Temp: 93

Method: SW (circle)
3005A
3010A
3015
3020A
7060A (As/Se)
7760A (Ag)
(3050B)
3051

DW 200.7 (1994)
200.9
3113B

MCAWW 200.7 (1982)
200 (AA)
206.2 (As/Se)

SM 3030C (NC)

CLP ILMO3.0
ILMO4.0

Other

TNU

COC Batch #	Spike Vol(s) (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/So/TC	Texture	Color/Appearance	Artifact	Turb
0809L106-001		1.32gm	100ml	<2	TO	coarse	light brown soil	rocks	RAD
001R		1.35gm							
001S	1.0ml *	1.33gm							
002		1.45gm							
003		1.50gm							
004		1.44gm							RAD
0809L122-001		1.41gm				fine	brown soil		
001R		1.38gm							
001S	1.0ml	1.42gm							
002		1.32gm					tan soil		
003		1.41gm							
004		1.35gm					brown soil		
005		1.38gm				coarse	amber/black-sandy	vegetation	
006		1.36gm				fine	grayish brown soil	rocks	
007		1.38gm					brown soil		
008		1.33gm							
0809L123-001 (*)		1.42gm				coarse	dark gray rocks	N/A	
001R		1.33gm							
001S	1.0ml	1.49gm							
0809L173-001		1.39gm				fine	brown soil	N/A	
001R		1.34gm							
001S	1.0ml	1.40gm							
08L0355-MB1		1.0gm				coarse	boiling chips		
LC1	1.0ml *	1.0gm							

— end of batch JW 9/29/08 —

Spiking IDs:
MS #: 8100-04-01
02
03
6072-78-07
LCS #: 08
09
10
11

Reagent IDs:
HNO_3 G11022
HCL G26054
H_2O_2 G15A18
1:1 HNO_3 9789-083-08
1:1 HCL

File ID#: IC035501 IC0355 IC035502 IC0355

LIMS Transfer: (Y) N updated

Data Review By/Date: [signature] 10/7/08

(*) rocks broken up into smaller pieces prior to aliquotting.

Lionville Laboratory Incorporated

MERCURY PREPARATION

Logbook # 498

Analyst: UB
Date 9/25/08
Start Time/Temp: 1435 / 95°
End Time/Temp: 1505 / 95°

Instrument ID HG2.1
Balance #: B29 /NA
Pipette Calibration (Daily) Y ✓

Prep Batch: 08C0171
Worksheet: HG092601
SOP No. ME-HgCVAA, Rev. 02

pH < 2 for Liquids? __ Yes NA No (If no: designate affected samples in Comments column, and initiate an SDR)

NOTE: **The Inital/Final Volume for water samples = 33mL, unless otherwise noted.**
The Final volume for soil samples = 50mL, unless otherwise noted.

LvLI Batch #	Container Number	Spike Volume (mL)	Spike Conc. (µg/L)	Initial Wt. or Volume (g or mL)	Final Sample Volume (mL)	Comments, % Solids, etc.
Blank	297			10mL	50mL	
0.2 µg/L	C15	0.100				
1.0	857	0.500				
2.0	I4	1.000				
5.0	WN	2.500				
10.0	KX	5.000				
ICV	R	0.125	2.5			
CCV	2I	0.250	5.0			
ICB/CCB	B6					% SOL
MB1	CB2			0.30		PBS171 100.0
LC1	OF	*	*	0.30		LCSS171 ⊥
0809L106-001	C9			0.35		R 99.9
001R	3			0.31		⊥
001S	UT	0.500	1.0	0.35		⊥
002	L53			0.33		99.90
003	95			0.38		99.91
004	X0			0.33		R 99.87
0809L122-001	92			0.34		95.21
001R	1721			0.37		⊥
001S	2B	0.500	1.0	0.33		⊥
002	G12			0.37		98.67
003	886			0.35		98.14
004	35			0.38		92.0
005	X5			0.31		95.8
006	500			0.36		99.5
007	LV			0.38		96.5
008	C8			0.33		94.8

Standard:	ID	Prep Date/Time
ICAL/MS	RI 6072-78-14B	9/25/08 0950
ICV/CCV/LCS	US 6072-78-15A	⊥

Reviewed By/Date: [signature] 10/8/08

see book # 9368 for std traceability information

Soil LCS =US Metals in soil No.3; True Value = 4.70 mg/Kg
Catalogue #1RM-021, Lot # E021

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

Lionville Laboratory Incorporated

MERCURY PREPARATION

Logbook # 498

Analyst: EA
Date: 9/25/08
Start Time/Temp:
End Time/Temp: See page 040

Instrument ID: HG3.1
Balance #: B29 ✓ /NA
Pipette Calibration (Daily) Y ✓

Prep Batch: 08C0171
Worksheet: H0092601
SOP No. ME-HgCVAA, Rev. 02

pH < 2 for Liquids? __ Yes NA No (If no: designate affected samples in Comments column, and initiate an SDR)

NOTE: The Inital/Final Volume for water samples = 33mL, unless otherwise noted.
The Final volume for soil samples = 50mL, unless otherwise noted.

LvLI Batch #	Container Number	Spike Volume (mL)	Spike Conc. (µg/L)	Initial Wt. or Volume (g or mL)	Final Sample Volume (mL)	Comments, % Solids, etc.
0809L123-001	401			0.34	50mL	
001R	H3			0.32		
001S	F2	0.500	1.0	0.34		
0809L141-021	JS			0.36		R 85.98
022	HR			0.35		L 87.48
~~0809L154-001~~	RU					
~~Sample 001R~~	~~AH~~					
~~duplicate analysis 001S~~	~~40~~					

EA 9/25/08

Standard:	ID	Prep Date/Time
LCS/MS		
ICV/CCV/LCS	See page 040	

Reviewed By/Date: [signature] 10/8

see book # 9368 for std traceability information

LCS =US Metals in soil No.3; True Value = 4.70 mg/Kg
Lot #1RM-021, Lot # E021

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

nville Laboratory Use Only

8091123

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI LIONVILLE LABORATORY INC.

000000017

nt W.C. Hanford SAF# RC-030

Final Proj. Sampling Date

ect# 60049-001-001-0001-00

ect Contact/Phone#

nville Laboratory Project Manager D. JOHNSON

SW846 Del STD TAT 15 days

e Rec'd 9-17-08 Date Due 10-2-08

Refrigerator #									A	3						
#/Type Container	Liquid / Solid								1P							
Volume									125							
Preservatives									1							
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				TCL Metal	CN						
		Lionville Laboratory Use Only														
									Met①							

RIX
ES:
Soil
Sediment
Solid
Sludge
Water
Oil
Air
Drum Solids
Drum Liquids
EP/TCLP Leachate
Wipe
Other
Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected													
001	J17FN5	✓	✓	OTHER SOLID	9/15/08	0926							X						

ecial Instructions: HSL+ met① = B, mo, S: NO TL

Special Instructions:

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

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	9/17/08	0925

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN		"COMPOSITE WASTE"	

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-030-093	Page 1 of 2
Collector: C. Martinez SEC D. RIOS	Company Contact: H. Sulloway	Telephone No.: 372-9363	Project Coordinator: KESSNER, JH	Price Code: 9C; Data Turnaround: 15 Days
Project Designation: Remaining Sites Confirmation Sampling - Other Solid	Sampling Location: 100-D-78		SAF No.: RC-030	
Ice Chest No.: ERC-96-030	Field Logbook No.: EL-1601-2	COA: 010D78A000	Method of Shipment: Fed Ex	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A080351		Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

COOL 4 Degrees C

Preservation	None	None	Cool 4C	None							
Type of Container	G/P	G/P	G/P	G/P							
No. of Container(s)	1	1	0	0							
Volume	500mL	~~60mL~~ 125 mL 08/28/08	60mL	60mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	pH (Soil) - 9045							

DA 9/11/08

*Sample No.	Matrix *	Sample Date	Sample Time										
~~J17FN4~~	~~OTHER SOLID~~	~~9/11/08~~	~~1210~~										
J17FN5	OTHER SOLID	9/15/08	0926		✓								
J17FN6	OTHER SOLID												
J17FN7	OTHER SOLID												
J17FN8	OTHER SOLID												

Mushea 9/15/08

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From: [signature]	Date/Time: 1435 9-15-08	Received By/Stored In: DWSHEA DWSHEA	Date/Time: 9/15/08 1435
Relinquished By/Removed From: DWSHEA DWSHEA	Date/Time: 9/15/08 1823	Received By/Stored In: Fridge 3A	Date/Time: 9/15/08 1823
Relinquished By/Removed From: Fridge 3A/J.E. Bernhard	Date/Time: 0900 9-16-08	Received By/Stored In: J. E. Bernhard	Date/Time: 0900 9-16-08
Relinquished By/Removed From: J.E. Bernhard WCH	Date/Time: 0930 9-16-08	Received By/Stored In: FED EX	Date/Time:
Relinquished By/Removed From: [signature]	Date/Time: 9-17-08 0925	Received By/Stored In: [signature]	Date/Time: 9-17-08 0925
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Gross Alpha & Gross Beta
(2) 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)
(3) IC Anions - 300.0 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)

Sampler unavailable to remove samples from controlled storage. Shipper removed samples from storage location taking custody of samples for shipment to lab.

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

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

VCH-EE-011

000000018

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: W.C Hanford
Project/SAF/SOW/Release #: RC 030

Date: 9-17-08

LvLI Batch #: 0809L123

Sample Custodian: [signature]

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier [illegible]		Airbill # 7980 1267 1170
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 2.1	°C	Cooler # ERC-96-030
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 & LvLI) 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 LvLI 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 _____

LvLI