0059306

SAF-B01-052

100 B/C Area Effluent Pipeline & Proximity Site Remediation Activities - Quick Turn

FINAL DATA PACKAGE

FAX RESULTS TO:

Dave Shea	373-1395	N/A INITIAL/DATE
Dean Strom	373-1395	N/A INITIAL/DATE

VERIFICATION OF CLIENT RECEIPT:

Phone or CC:Mail to Dave Shea	N/A INITIAL/DATE
Phone or CC:Mail to Dean Strom	N/A INITIAL/DATE

COMPLETE COPY OF DATA PACKAGE TO:

Dave Shea	X3-40	BS 3/4/03 INITIAL/DATE
Dean Strom	X3-40	BS 3/4/03 INITIAL/DATE

COMMENTS: (PLEASE INCLUDE THE FOLLOWING ON THE FAX COVER SHEET)

SDG H2068 SAF-B01-052

Rad only X Chem only Rad & Chem

X Complete Partial

RECEIVED
MAY 13 2003
EDMC

LIONVILLE LABORATORY INC.

20 February 2003

Joan Kessner
Bechtel-Hanford, Inc.
3190 Washington Way
MSIN H9-03
Richland, WA 99352

Subject: Contract No. 630
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 #	0302L655
SDG #	H2068
SAF #	B01-052
Date Received	2-5-03
# Samples	1
Matrix	Soil
Volatiles	
Semivolatiles	
Pest/PCB	
DRO	
GRO	
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

RECEIVED
FEB 2003

r:\group\pm\orlette\tmu-hanford\data\b_ltrs.doc

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

FEB 2003

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-052 H2068

DATE RECEIVED: 02/05/03 LVL LOT # :0302L655

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J00H25						
SILVER, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
SILVER, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03
SILVER, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03
SILVER, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03
ALUMINUM, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
ALUMINUM, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03
ALUMINUM, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03
ALUMINUM, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03
BARIUM, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
BARIUM, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03
BARIUM, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03
BARIUM, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03
BERYLLIUM, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
BERYLLIUM, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03
BERYLLIUM, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03
BERYLLIUM, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03
CALCIUM, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
CALCIUM, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03
CALCIUM, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03
CALCIUM, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03
CADMIUM, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
CADMIUM, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03
CADMIUM, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03
CADMIUM, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03
COBALT, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
COBALT, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03
COBALT, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03
COBALT, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03
CHROMIUM, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
CHROMIUM, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03
CHROMIUM, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03
CHROMIUM, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03
COPPER, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
COPPER, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03
COPPER, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-052 H2068

DATE RECEIVED: 02/05/03 LVL LOT # :0302L655

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
COPPER, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03
IRON, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
IRON, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03
IRON, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03
IRON, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03
MERCURY, TOTAL	001	S	03C0028	01/31/03	02/12/03	02/13/03
MERCURY, TOTAL	001 REP	S	03C0028	01/31/03	02/12/03	02/13/03
MERCURY, TOTAL	001 MS	S	03C0028	01/31/03	02/12/03	02/13/03
POTASSIUM, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
POTASSIUM, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03
POTASSIUM, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03
POTASSIUM, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03
MAGNESIUM, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
MAGNESIUM, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03
MAGNESIUM, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03
MAGNESIUM, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03
MANGANESE, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
MANGANESE, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03
MANGANESE, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03
MANGANESE, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03
SODIUM, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
SODIUM, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03
SODIUM, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03
SODIUM, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03
NICKEL, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
NICKEL, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03
NICKEL, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03
NICKEL, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03
LEAD, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
LEAD, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03
LEAD, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03
LEAD, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03
ANTIMONY, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
ANTIMONY, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03
ANTIMONY, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03
ANTIMONY, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03
VANADIUM, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
VANADIUM, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-052 H2068

DATE RECEIVED: 02/05/03 LVL LOT # :0302L655

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03
VANADIUM, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03
ZINC, TOTAL	001	S	03L0071	01/31/03	02/10/03	02/11/03
ZINC, TOTAL	001 REP	S	03L0071	01/31/03	02/10/03	02/11/03
ZINC, TOTAL	001 MS	S	03L0071	01/31/03	02/10/03	02/11/03
ZINC, TOTAL	001 MSD	S	03L0071	01/31/03	02/10/03	02/11/03

LAB QC:

SILVER LABORATORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03
SILVER, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03
ALUMINUM LABORTORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03
ALUMINUM, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03
BARIUM LABORATORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03
BARIUM, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03
BERYLLIUM LABORATORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03
BERYLLIUM, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03
CALCIUM LABORATORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03
CALCIUM, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03
CADMIUM LABORATORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03
CADMIUM, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03
COBALT LABORATORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03
COBALT, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03
CHROMIUM LABORATORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03
CHROMIUM, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03
COPPER LABORATORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03
COPPER, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03
IRON LABORATORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03
IRON, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03
MERCURY LABORATORY	LC1 BS	S	03C0028	N/A	02/12/03	02/13/03
MERCURY, TOTAL	MB1	S	03C0028	N/A	02/12/03	02/13/03
POTASSIUM LABORATORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03
POTASSIUM, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03
MAGNESIUM LABORATORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03
MAGNESIUM, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03
MANGANESE LABORATORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03
MANGANESE, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03
SODIUM LABORATORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-052 H2068

DATE RECEIVED: 02/05/03 LVL LOT # :0302L655

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SODIUM, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03
NICKEL LABORATORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03
NICKEL, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03
LEAD LABORATORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03
LEAD, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03
ANTIMONY LABORATORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03
ANTIMONY, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03
VANADIUM LABORATORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03
VANADIUM, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03
ZINC LABORATORY	LC1 BS	S	03L0071	N/A	02/10/03	02/11/03
ZINC, TOTAL	MB1	S	03L0071	N/A	02/10/03	02/11/03

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-052
LVL#: 0302L655
SDG/SAF#: H2068/B01-052

W.O.#: 11343-606-001-9999-00
Date Received: 02-05-03

METALS CASE NARRATIVE

1. This narrative covers the analysis of 1 soil sample.

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

   The sample was rerun and reported with a twenty fold dilution for Iron due to the high concentration of this analyte. The sample was reported with a ten fold dilution for Mercury due to the high concentration. All other analytes were reported with six fold dilutions due to the sample matrix.

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

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

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.

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

7. The preparation/method blank for 1 analyte was outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, 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 Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and the sample 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.

8. 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 16 pages.

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. The matrix spike (MS) recoveries for 11 analytes and matrix spike duplicate (MSD) recoveries for 9 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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
J00H25	Aluminum	60,000	114.7
	Antimony	600	110.7
	Calcium	60,000	119.1
	Cadmium	600	104.9
	Chromium	18,000	106.6
	Copper	600	102.8
	Iron	1,000,000	73.8
	Lead	600	107.0
	Manganese	6,000	115.7
	Nickel	600	113.4
	Zinc	600	117.0

12. The duplicate analyses for 6 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

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.

for Pat E

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

02-20-03
Date

gnb/m07-655

LIONVILLE LABORATORY INC.

METALS METHODS GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this RFW Lot#: 0302L655

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A __3010A __3015 __3020A ✓3050A __3051 __200.7 __SS17 __Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	✓6010A		__200.7				__99
Antimony	✓6010A	__7041 [5]	__200.7	__204.2			__99
Arsenic	__6010A	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010A		__200.7				__99
Beryllium	✓6010A		__200.7				__99
Bismuth	__6010A [1]		__200.7 [1]			__1620	__99
Boron	__6010A [1]		__200.7				__99
Cadmium	✓6010A	__7131A [5]	__200.7	__213.2			__99
Calcium	✓6010A		__200.7				__99
Chromium	✓6010A	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	✓6010A		__200.7				__99
Copper	✓6010A	__7211 [5]	__200.7	__220.2			__99
Iron	✓6010A		__200.7				__99
Lead	✓6010A	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010A	__7430 [4]	__200.7			__1620	__99
Magnesium	✓6010A		__200.7				__99
Manganese	✓6010A		__200.7				__99
Mercury	✓7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010A		__200.7				__99
Nickel	✓6010A		__200.7				__99
Potassium	✓6010A	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010A [1]		__200.7 [1]			__1620	__99
Selenium	__6010A	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010A [1]		__200.7			__1620	__99
Silica	__6010A [1]		__200.7			__1620	__99
Silver	✓6010A	__7761 [5]	__200.7	__272.2			__99
Sodium	✓6010A	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010A		__200.7				__99
Thallium	__6010A	__7841 [5]	__200.7	__279.2__200.9			__99
Tin	__6010A [1]		__200.7				__99
Titanium	__6010A [1]		__200.7				__99
Uranium	__6010A [1]		__200.7 [1]			__1620	__99
Vanadium	✓6010A		__200.7				__99
Zinc	✓6010A		__200.7				__99
Zirconium	__6010A [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 02/13/03

CLIENT: TNUHANFORD B01-052 H2068 LVL LOT #: 0302L655

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J00H25	Silver, Total	0.89	MG/KG	0.45	6.0
		Aluminum, Total	2230	MG/KG	11.3	6.0
		Barium, Total	29.0	MG/KG	0.06	6.0
		Beryllium, Total	0.27	MG/KG	0.06	6.0
		Calcium, Total	2750	MG/KG	3.5	6.0
		Cadmium, Total	3.3	MG/KG	0.23	6.0
		Cobalt, Total	1.8	MG/KG	0.40	6.0
		Chromium, Total	15100	MG/KG	0.34	6.0
		Copper, Total	54.8	MG/KG	0.34	6.0
		Iron, Total	480000	MG/KG	37.2	20.0
		Mercury, Total	3.6	MG/KG	0.17	10.0
		Potassium, Total	123	MG/KG	11.8	6.0
		Magnesium, Total	354	MG/KG	2.8	6.0
		Manganese, Total	935	MG/KG	0.11	6.0
		Sodium, Total	46.1	MG/KG	2.7	6.0
		Nickel, Total	33.0	MG/KG	1.0	6.0
		Lead, Total	17.5	MG/KG	1.5	6.0
		Antimony, Total	1.6	MG/KG	1.4	6.0
		Vanadium, Total	54.6	MG/KG	0.06	6.0
		Zinc, Total	197	MG/KG	0.79	6.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/13/03

CLIENT: TNUHANFORD B01-052 H2068 LVL LOT #: 0302L655

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	03L0071-MB1	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Aluminum, Total	4.3	MG/KG	2.0	1.0
		Barium, Total	0.06	MG/KG	0.01	1.0
		Beryllium, Total	0.01	MG/KG	0.01	1.0
		Calcium, Total	3.2	MG/KG	0.62	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Cobalt, Total	0.07 u	MG/KG	0.07	1.0
		Chromium, Total	0.16	MG/KG	0.06	1.0
		Copper, Total	0.06 u	MG/KG	0.06	1.0
		Iron, Total	2.0 u	MG/KG	2.0	1.0
		Potassium, Total	4.6	MG/KG	2.1	1.0
		Magnesium, Total	0.71	MG/KG	0.50	1.0
		Manganese, Total	0.03	MG/KG	0.02	1.0
		Sodium, Total	3.6	MG/KG	0.48	1.0
		Nickel, Total	0.18 u	MG/KG	0.18	1.0
		Lead, Total	0.26 u	MG/KG	0.26	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Vanadium, Total	0.06	MG/KG	0.01	1.0
		Zinc, Total	2.0	MG/KG	0.14	1.0
BLANK1	03C0028-MB1	Mercury, Total	0.02	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/13/03

CLIENT: TNUHANFORD B01-052 H2068 LVL LOT #: 0302L655

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J00H25	Silver, Total	6.7	0.89	5.7	101.9	6.0
		Silver, Total MSD	6.4	0.89	5.4	102.0	6.0
		Aluminum, Total	3360	2230	229	494.5*	6.0
		Aluminum, Total MSD	2700	2230	215	219.5*	6.0
		Barium, Total	259	29.0	229	100.5	6.0
		Barium, Total MSD	245	29.0	215	100.4	6.0
		Beryllium, Total	5.8	0.27	5.7	97.0	6.0
		Beryllium, Total MSD	5.5	0.27	5.4	96.8	6.0
		Calcium, Total	3760	2750	2860	35.3	6.0
		Calcium, Total MSD	3530	2750	2690	29.0	6.0
		Cadmium, Total	8.2	3.3	5.7	86.0	6.0
		Cadmium, Total MSD	7.1	3.3	5.4	70.4	6.0
		Cobalt, Total	57.5	1.8	57.2	97.4	6.0
		Cobalt, Total MSD	57.8	1.8	53.8	104.1	6.0
		Chromium, Total	15500	15100	22.9	1776 *	6.0
		Chromium, Total MSD	14000	15100	21.5	-5200. *	6.0
		Copper, Total	139	54.8	28.6	293.0	6.0
		Copper, Total MSD	134	54.8	26.9	294.4	6.0
		Iron, Total	415000	480000	114	58000. *	20.0
		Iron, Total MSD	449000	480000	108	30000. *	20.0
		Mercury, Total	2.1	3.6	0.17	-900. *	10.0
		Potassium, Total	3090	123	2860	103.7	6.0
		Potassium, Total MSD	2930	123	2690	104.5	6.0
		Magnesium, Total	3180	354	2860	98.8	6.0
		Magnesium, Total MSD	2980	354	2690	97.8	6.0
		Manganese, Total	809	935	57.2	-220. *	6.0
		Manganese, Total MSD	924	935	53.8	-22. *	6.0
		Sodium, Total	2770	46.1	2860	95.1	6.0
		Sodium, Total MSD	2630	46.1	2690	96.1	6.0
		Nickel, Total	106	33.0	57.2	126.7	6.0
		Nickel, Total MSD	109	33.0	53.8	141.3	6.0
		Lead, Total	292	17.5	57.2	479.2	6.0
		Lead, Total MSD	75.4	17.5	53.8	107.6	6.0
		Antimony, Total	41.4	1.6	57.2	69.6	6.0
		Antimony, Total MSD	43.7	1.6	53.8	78.3	6.0
		Vanadium, Total	123	54.6	57.2	120.1	6.0
		Vanadium, Total MSD	101	54.6	53.8	86.4	6.0
		Zinc, Total	292	197	57.2	166.4	6.0
		Zinc, Total MSD	302	197	53.8	194.4	6.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/13/03

CLIENT: TNUHANFORD B01-052 H2068 LVL LOT #: 0302L655

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J00H25	Silver, Total	0.89	1.0	11.2	6.0
		Aluminum, Total	2230	2200	0.96	6.0
		Barium, Total	29.0	43.5	40.0	6.0
		Beryllium, Total	0.27	0.32	16.4	6.0
		Calcium, Total	2750	922	99.5	6.0
		Cadmium, Total	3.3	3.8	14.1	6.0
		Cobalt, Total	1.8	2.1	15.4	6.0
		Chromium, Total	15100	17300	13.4	6.0
		Copper, Total	54.8	77.4	34.2	6.0
		Iron, Total	480000	495000	2.9	20.0
		Mercury, Total	3.6	3.4	6.9	10.0
		Potassium, Total	123	136	10.1	6.0
		Magnesium, Total	354	412	14.9	6.0
		Manganese, Total	935	818	13.4	6.0
		Sodium, Total	46.1	39.8	14.7	6.0
		Nickel, Total	33.0	49.9	40.8	6.0
		Lead, Total	17.5	17.6	0.57	6.0
		Antimony, Total	1.6	3.3	69.4	6.0
		Vanadium, Total	54.6	59.7	8.9	6.0
		Zinc, Total	197	258	26.6	6.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 02/13/03

CLIENT: TNUHANFORD B01-052 H2068 LVL LOT #: 0302L655

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	03L0071-LC1	Silver, LCS	49.8	50.0	MG/KG	99.6
		Aluminum, LCS	513	500	MG/KG	102.5
		Barium, LCS	503	500	MG/KG	100.7
		Beryllium, LCS	24.1	25.0	MG/KG	96.4
		Calcium, LCS	2520	2500	MG/KG	100.7
		Cadmium, LCS	24.9	25.0	MG/KG	99.6
		Cobalt, LCS	252	250	MG/KG	100.6
		Chromium, LCS	51.6	50.0	MG/KG	103.2
		Copper, LCS	127	125	MG/KG	101.8
		Iron, LCS	485	500	MG/KG	97.1
		Potassium, LCS	2630	2500	MG/KG	105.1
		Magnesium, LCS	2460	2500	MG/KG	98.5
		Manganese, LCS	77.4	75.0	MG/KG	103.2
		Sodium, LCS	2460	2500	MG/KG	98.5
		Nickel, LCS	201	200	MG/KG	100.6
		Lead, LCS	248	250	MG/KG	99.4
		Antimony, LCS	294	300	MG/KG	98.1
		Vanadium, LCS	256	250	MG/KG	102.4
		Zinc, LCS	99.8	100	MG/KG	99.8
LCS1	03C0028-LC1	Mercury, LCS	2.2	2.5	MG/KG	88.2

Lionville Laboratory Use Only

0302L655

Custody Transfer Record

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford B01-052

Est. Final Proj. Sampling Date:

Project #: 11343-[illegible]-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: Orlotte Johnson

QC: Spec Del: Std. TAT: 7day

Date Rec'd: 2.5.03 Date Due: 02/12/03

Refrigerator #			A
#/Type Container	Liquid		5
	Solid		1g
Volume	Liquid		
	Solid		60 *
Preservatives			–

ANALYSES REQUESTED →

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	ORGANIC VOA	BNA	Pest/PCB	Herb	INORG Metal	CN
001	J00H25	X	X	S	1.31.03	0941					X metals (1)	

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Special Instructions:

Saf # B01-052

DATE/REVISIONS:

* → 1. Sample rec'd in 500ml jar.

Metals (1) 2. Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K,

3. Mg, Mn, Na, Ni, Sb, V-, Zn, Pb, Hg

4.

5.

6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # 7901 97809079

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Samples Properly Preserved Y or N

5) Received Within Holding Times Y or N

Tamper Resistant Seal was: 1) Present on Outer Package Y or N

2) Unbroken on Outer Package Y or N

3) Present on Sample Y or N

4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 0.8 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Relinquished by	Received by	Date	Time
Yes Ea	D Smith	2503	0920

Relinquished by	Received by	Date	Time
ORIGINAL REWRITTEN	COMPOSITE WASTE		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-052-139	Page 1 of 1
Collector: D. Shea	Company Contact: Dave Shea	Telephone No.: 373-6425	Project Coordinator: KESSNER, JH	Price Code / Data Turnaround
Project Designation: 100 B/C Area Effluent Pipeline & Proximity Site Remediatio	Sampling Location: 100 BC anomaly 100BC-002		SAF No.: B01-052	Air Quality ☐
Ice Chest No.: ERC 01-061	Field Logbook No.: EL-1548-3	COA: R100BC2600	Method of Shipment: ~~Gov'ment Vehicle~~ 2403 FED EX	
Shipped To: TMA/RECRA	Offsite Property No.: A030126		Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

NOT from a radiologically controlled area DWS 1/31/03

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C									
Type of Container	G/P	G/P									
No. of Container(s)	1	~~1~~ 0									
Volume	60mL	60mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	ICP Metals - 6010A (Add-on) (Chromium, Lead); Mercury - 7471 - (CV)									

Sample No.	Matrix *	Sample Date	Sample Time										
J00H25	SOIL	1/31/03	0941	✓	✓								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: DWShea DWShea	Date/Time: 1/31/03 1115	Received By/Stored In: 100BC Sample RMSA	Date/Time: 1/31/03 1115
Relinquished By/Removed From: 100BC Sample RMSA	Date/Time: 1/31/03 1630	Received By/Stored In: D.Shea DSHEA	Date/Time: 1/31/03 1630
Relinquished By/Removed From: D.Shea DShea	Date/Time: 1/31/03 1723	Received By/Stored In: Fridge 3A	Date/Time: 1/31/03 1723
Relinquished By/Removed From: REF 3A 2403	Date/Time: 1030	Received By/Stored In: SJGALE S/Gale 2403	Date/Time: 1030
Relinquished By/Removed From: SJGALE S/Gale 2403	Date/Time: 1030	Received By/Stored In: FED EX	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 2.5.03 / 0920	Received By/Stored In: [signature]	Date/Time: 2.5.03/0920

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (~~Client List~~) Target list (Arsenic, Barium, Cadmium, Selenium, Silver)

need total ICP metals list esp. Fe DWS 1/31/03

Personnel not available to relinquish samples from the 3728 Ref # 3A on 2/4/03

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: [signature]	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

CLIENT: TRU Hanford

Purchase Order/Project:

DATE: 2-5-03

SAF# / SOW# / Release #: B01-052

Laboratory SDG #: 03021655

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

1. Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3. Airbill # recorded?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5. Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7. All samples on coc received?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
8. All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
10. Shipment meets LvLJ Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
11. Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12. coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13. coc will be faxed or emailed to client?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
14. Project Manager/Client contacted concerning discrepancies? (name/date)	☐ Yes	☐ No	☐ N/A	☐ see Comment #

Cooler # / temp (°C) and Comments:

ERC-01-001 / 0.8°C

Laboratory Sample Custodian: [signature]

Laboratory Project Manager: