0059524

SAF-B01-055
100 B/C Area Effluent Pipeline & Proximity Site Remediation Activities - Other Solid
FINAL DATA PACKAGE

E:MAIL RESULTS TO:

Dave Shea	373-1395	N/A INITIAL/DATE

COMPLETE COPY OF DATA PACKAGE TO:

Dave Shea	X3-40	BF 4/15/03 INITIAL/DATE
Dean Strom	X3-40	BF 4/15/03 INITIAL/DATE

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

SDG (H2099) SAF-B01-055

Rad only X Chem only Rad & Chem

X Complete Partial

SAMPLE LOCATION/WASTE SITE: ANOMALY 100BC-004

RECEIVED
MAY 30 2003
EDMC

LIONVILLE LABORATORY INC.

3 April 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 #	0303L924
SDG #	H2099
SAF #	B01-055
Date Received	3-12-03
# Samples	1
Matrix	Other Solid
Volatiles	
Semivolatiles	
Pest/PCB	
DRO/KRO/GRO	
GC Alcohols	
Metals	X
Inorganics	X

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\tnu-hanford\data\b_ltrs.doc

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

RECEIVED
APR

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-055 H2099

DATE RECEIVED: 03/12/03 LVL LOT # :0303L924

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J00J05-A						
TCLP	001	SO	03LTO040	03/05/03	03/24/03	03/24/03
SILVER, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/17/03
SILVER, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/17/03
SILVER, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/17/03
ALUMINUM, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
ALUMINUM, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
ALUMINUM, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
ARSENIC, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/17/03
ARSENIC, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/17/03
ARSENIC, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/17/03
BORON, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
BORON, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
BORON, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
BARIUM, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/17/03
BARIUM, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/17/03
BARIUM, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/17/03
BERYLLIUM, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
BERYLLIUM, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
BERYLLIUM, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
CALCIUM, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
CALCIUM, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
CALCIUM, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
CADMIUM, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/17/03
CADMIUM, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/17/03
CADMIUM, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/17/03
COBALT, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
COBALT, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
COBALT, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
CHROMIUM, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/17/03
CHROMIUM, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/17/03
CHROMIUM, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/17/03
COPPER, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
COPPER, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
COPPER, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
IRON, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-055 H2099

DATE RECEIVED: 03/12/03 LVL LOT # :0303L924

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
IRON, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
IRON, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
MERCURY, TOTAL	001	SO	03C0049	03/05/03	03/13/03	03/14/03
MERCURY, TOTAL	001 REP	SO	03C0049	03/05/03	03/13/03	03/14/03
MERCURY, TOTAL	001 MS	SO	03C0049	03/05/03	03/13/03	03/14/03
POTASSIUM, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
POTASSIUM, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
POTASSIUM, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
MAGNESIUM, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
MAGNESIUM, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
MAGNESIUM, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
MANGANESE, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
MANGANESE, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
MANGANESE, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
MOLYBDENUM, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
MOLYBDENUM, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
MOLYBDENUM, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
NICKEL, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
NICKEL, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
NICKEL, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
LEAD, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/17/03
LEAD, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/17/03
LEAD, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/17/03
ANTIMONY, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
ANTIMONY, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
ANTIMONY, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
SELENIUM, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/17/03
SELENIUM, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/17/03
SELENIUM, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/17/03
SILICON, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
SILICON, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
SILICON, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
TIN, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
TIN, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
TIN, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
TITANIUM, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
TITANIUM, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
TITANIUM, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-055 H2099

DATE RECEIVED: 03/12/03 LVL LOT # :0303L924

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
THALLIUM, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/17/03
THALLIUM, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/17/03
THALLIUM, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/17/03
URANIUM, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
URANIUM, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
URANIUM, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
VANADIUM, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
VANADIUM, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
VANADIUM, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
ZINC, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
ZINC, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
ZINC, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
ZIRCONIUM, TOTAL	001	SO	03L0139	03/05/03	03/17/03	03/26/03
ZIRCONIUM, TOTAL	001 REP	SO	03L0139	03/05/03	03/17/03	03/26/03
ZIRCONIUM, TOTAL	001 MS	SO	03L0139	03/05/03	03/17/03	03/26/03
ARSENIC, TCLP LEACHA	002	W	03L0158	03/24/03	03/25/03	03/25/03
ARSENIC, TCLP LEACHA	002 REP	W	03L0158	03/24/03	03/25/03	03/25/03
ARSENIC, TCLP LEACHA	002 MS	W	03L0158	03/24/03	03/25/03	03/25/03

LAB QC:

SILVER LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/17/03
SILVER, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/17/03
ALUMINUM LABORTORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03
ALUMINUM, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
ARSENIC LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/17/03
ARSENIC, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/17/03
BORON LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03
BORON, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
BARIUM LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/17/03
BARIUM, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/17/03
BERYLLIUM LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03
BERYLLIUM, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
CALCIUM LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03
CALCIUM, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
CADMIUM LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/17/03
CADMIUM, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/17/03
COBALT LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-055 H2099

DATE RECEIVED: 03/12/03 LVL LOT # :0303L924

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
COBALT, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
CHROMIUM LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/17/03
CHROMIUM, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/17/03
COPPER LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03
COPPER, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
IRON LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03
IRON, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
MERCURY LABORATORY	LC1 BS	S	03C0049	N/A	03/13/03	03/14/03
MERCURY, TOTAL	MB1	S	03C0049	N/A	03/13/03	03/14/03
POTASSIUM LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03
POTASSIUM, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
MAGNESIUM LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03
MAGNESIUM, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
MANGANESE LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03
MANGANESE, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
MOLYBDENUM LABORATOR	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03
MOLYBDENUM, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
NICKEL LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03
NICKEL, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
LEAD LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/17/03
LEAD, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/17/03
ANTIMONY LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03
ANTIMONY, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
SELENIUM LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/17/03
SELENIUM, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/17/03
SILICON LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03
SILICON, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
TIN LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03
TIN, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
TITANIUM LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03
TITANIUM, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
THALLIUM LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/17/03
THALLIUM, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/17/03
URANIUM LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03
URANIUM, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
VANADIUM LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03
VANADIUM, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
ZINC LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-055 H2099

DATE RECEIVED: 03/12/03 LVL LOT # :0303L924

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ZINC, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
ZIRCONIUM LABORATORY	LC1 BS	S	03L0139	N/A	03/17/03	03/26/03
ZIRCONIUM, TOTAL	MB1	S	03L0139	N/A	03/17/03	03/26/03
ARSENIC LABORATORY	LC1 BS	W	03L0158	N/A	03/25/03	03/25/03
ARSENIC, TCLP LEACHA	MB1	W	03L0158	N/A	03/25/03	03/25/03
ARSENIC, TCLP LEACHA	MB2	W	03L0158	N/A	03/25/03	03/25/03

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-055
LVL#: 0303L924
SDG/SAF#: H2099/B01-055

W.O.#: 11343-606-001-9999-00
Date Received: 03-12-03

METALS CASE NARRATIVE

Revision
This narative has been revised to include the addition of an expanded list of metals on the soil, and the addition of TCLP for Arsenic on the sample.

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

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

   The samples were reported with 6 fold dilutions for some analytes due to 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 (80-120% for Mercury).

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

7. The preparation/method blanks for 2 analytes were 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 Silicon 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.

   b). The MB result for Tin was greater than the Practical Quantitation Limit (PQL), however the sample read less than the IDL.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of

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 18 pages.

Silicon, Uranium, and Zirconium. The LCS for Silicon was high at 120.9% recovery, therefore, the sample result may be biased slightly high. The LCS was not spiked for Uranium or Zirconium. Refer to the Inorganics Laboratory Control Standards Report.

10. The matrix spike (MS) recoveries for 10 analytes were outside the 75-125% control limits. Additionally, the sample was not spiked for Uranium and Zirconium. 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
J00J05-A	Aluminum	120,000	111.1
	Calcium	120,000	110.0
	Copper	600	110.6
	Iron	120,000	94.5
	Manganese	6000	101.0
	Antimony	600	111.2
	Silicon	600	109.8
	Titanium	600	84.3
	Uranium	600	102.8
	Zinc	600	109.8
	Zirconium	6000	106.0

12. The duplicate analyses for 7 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. The TCLP extract from sample J00J05-A was selected for the matrix spike (MS) for this analytical batch. The MS recovery was greater than 50% as per method criteria.

14. 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.

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 Incorporated

03-29-03
Date

jjw/m03-924r

LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 0305L924

Leaching Procedure: __1310 X 1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A X 3010A __3015 __3020A X 3050B __3051 __200.7 __SS17 __Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	X 6010B		__200.7				__99
Antimony	X 6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	X 6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	X 6010B		__200.7				__99
Beryllium	X 6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	X 6010B		__200.7				__99
Cadmium	X 6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	X 6010B		__200.7				__99
Chromium	X 6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	X 6010B		__200.7				__99
Copper	X 6010B	__7211 [5]	__200.7	__220.2			__99
Iron	X 6010B		__200.7				__99
Lead	X 6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	X 6010B		__200.7				__99
Manganese	X 6010B		__200.7				__99
Mercury	__7470A [3]	X 7471A [3]	__245.1 [3]	__245.5 [3]			__99
Molybdenum	X 6010B		__200.7				__99
Nickel	X 6010B		__200.7				__99
Potassium	X 6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	X 6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	X 6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	X 6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	X 6010B	__7841 [5]	__200.7	__279.2 __200.9			__99
Tin	X 6010B		__200.7				__99
Titanium	X 6010B		__200.7				__99
Uranium	X 6010B [1]		__200.7 [1]			__1620	__99
Vanadium	X 6010B		__200.7				__99
Zinc	X 6010B		__200.7				__99
Zirconium	X 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 03/27/03

CLIENT: TNUHANFORD B01-055 H2099

LVL LOT #: 0303L924

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J00J05-A	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Aluminum, Total	7930	MG/KG	12.1	6.0
		Arsenic, Total	33.1	MG/KG	0.35	1.0
		Boron, Total	29.1	MG/KG	1.3	6.0
		Barium, Total	56.0	MG/KG	0.01	1.0
		Beryllium, Total	2.0	MG/KG	0.06	6.0
		Calcium, Total	12200	MG/KG	3.8	6.0
		Cadmium, Total	0.27	MG/KG	0.04	1.0
		Cobalt, Total	8.3	MG/KG	0.43	6.0
		Chromium, Total	13.8	MG/KG	0.06	1.0
		Copper, Total	38.7	MG/KG	0.36	6.0
		Iron, Total	169000	MG/KG	12.0	6.0
		Mercury, Total	0.12	MG/KG	0.01	1.0
		Potassium, Total	946	MG/KG	12.6	6.0
		Magnesium, Total	5020	MG/KG	3.0	6.0
		Manganese, Total	714	MG/KG	0.12	6.0
		Molybdenum, Total	4.6	MG/KG	0.97	6.0
		Nickel, Total	38.0	MG/KG	1.1	6.0
		Lead, Total	8.1	MG/KG	0.26	1.0
		Antimony, Total	1.5 u	MG/KG	1.5	6.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
		Silicon, Total	242	MG/KG	2.7	6.0
		Tin, Total	2.2 u	MG/KG	2.2	6.0
		Titanium, Total	1050	MG/KG	0.12	6.0
		Thallium, Total	0.36 u	MG/KG	0.36	1.0
		Uranium, Total	8.9 u	MG/KG	8.9	6.0
		Vanadium, Total	82.1	MG/KG	0.06	6.0
		Zinc, Total	141	MG/KG	0.85	6.0
		Zirconium, Total	12.4	MG/KG	8.7	6.0
-002	J00J05-A	Arsenic, TCLP Leachate	21.0 u	UG/L	21.0	6.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/27/03

CLIENT: TNUHANFORD B01-055 H2099 LVL LOT #: 0303L924

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	03L0139-MB1	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Aluminum, Total	2.3	MG/KG	2.0	1.0
		Arsenic, Total	0.35 u	MG/KG	0.35	1.0
		Boron, Total	0.69	MG/KG	0.22	1.0
		Barium, Total	0.07	MG/KG	0.01	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Calcium, Total	8.5	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	0.06 u	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	2.1 u	MG/KG	2.1	1.0
		Magnesium, Total	5.7	MG/KG	0.50	1.0
		Manganese, Total	0.02	MG/KG	0.02	1.0
		Molybdenum, Total	0.16 u	MG/KG	0.16	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
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
		Silicon, Total	18.0	MG/KG	0.44	1.0
		Tin, Total	1.3	MG/KG	0.36	1.0
		Titanium, Total	0.02 u	MG/KG	0.02	1.0
		Thallium, Total	0.38	MG/KG	0.36	1.0
		Uranium, Total	1.5 u	MG/KG	1.5	1.0
		Vanadium, Total	0.01 u	MG/KG	0.01	1.0
		Zinc, Total	0.74	MG/KG	0.14	1.0
		Zirconium, Total	1.4 u	MG/KG	1.4	1.0
BLANK1	03C0049-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0
BLANK1	03L0158-MB1	Arsenic, TCLP Leachate	3.5 u	UG/L	3.5	1.0
BLANK2	03L0158-MB2	Arsenic, TCLP Leachate	21.0 u	UG/L	21.0	6.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 03/27/03

CLIENT: TNUHANFORD B01-055 H2099

LVL LOT #: 0303L924

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J00J05-A	Silver, Total	5.2	0.08u	5.2	100	1.0
		Aluminum, Total	8440	7930	206	244.9*	6.0
		Arsenic, Total	218	33.1	206	89.6	1.0
		Boron, Total	120	29.1	103	88.2	6.0
		Barium, Total	253	56.0	206	95.6	1.0
		Beryllium, Total	6.8	2.0	5.2	92.3	6.0
		Calcium, Total	15500	12200	2580	130.8*	6.0
		Cadmium, Total	5.0	0.27	5.2	90.9	1.0
		Cobalt, Total	59.0	8.3	51.6	98.3	6.0
		Chromium, Total	33.5	13.8	20.6	95.6	1.0
		Copper, Total	54.0	38.7	25.8	59.3	6.0
		Iron, Total	138000	169000	103	30000. *	6.0
		Mercury, Total	0.20	0.12	0.13	69.3	1.0
		Potassium, Total	3560	946	2580	101.1	6.0
		Magnesium, Total	7730	5020	2580	105.3	6.0
		Manganese, Total	705	714	51.6	-17. *	6.0
		Molybdenum, Total	103	4.6	103	95.0	6.0
		Nickel, Total	85.0	38.0	51.6	91.1	6.0
		Lead, Total	56.2	8.1	51.6	93.2	1.0
		Antimony, Total	30.6	1.5 u	51.6	59.3	6.0
		Selenium, Total	157	0.36u	206	76.2	1.0
		Silicon, Total	278	242	103	34.4	6.0
		Tin, Total	97.5	2.2 u	103	94.5	6.0
		Titanium, Total	1120	1050	103	65.2*	6.0
		Thallium, Total	183	0.36u	206	88.8	1.0
		Uranium, Total	9.0 u	8.9 u	516	NC	6.0
		Vanadium, Total	124	82.1	51.6	81.0	6.0
		Zinc, Total	168	141	51.6	52.3	6.0
		Zirconium, Total	27.6	12.4	516	2.9	6.0
-002	J00J05-A	Arsenic, TCLP Leachate	4900	21.0 u	5000	98.0	6.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 03/27/03

CLIENT: TNUHANFORD B01-055 H2099 LVL LOT #: 0303L924

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J00J05-A	Silver, Total	0.08u	0.09	~~NC~~ 200	1.0
		Aluminum, Total	7930	7410	6.8 MW 3/28/03	6.0
		Arsenic, Total	33.1	26.3	22.9	1.0
		Boron, Total	29.1	21.8	28.7	6.0
		Barium, Total	56.0	47.7	16.0	1.0
		Beryllium, Total	2.0	1.9	5.1	6.0
		Calcium, Total	12200	11900	2.4	6.0
		Cadmium, Total	0.27	0.13	68.0	1.0
		Cobalt, Total	8.3	7.6	8.8	6.0
		Chromium, Total	13.8	14.5	4.9	1.0
		Copper, Total	38.7	28.0	32.1	6.0
		Iron, Total	169000	143000	16.8	6.0
		Mercury, Total	0.12	0.05	81.9	1.0
		Potassium, Total	946	841	11.8	6.0
		Magnesium, Total	5020	4830	3.8	6.0
		Manganese, Total	714	655	8.7	6.0
		Molybdenum, Total	4.6	4.1	11.5	6.0
		Nickel, Total	38.0	34.5	9.7	6.0
		Lead, Total	8.1	7.5	7.7	1.0
		Antimony, Total	1.5 u	2.2	~~NC~~ 200 MW 3/28/03	6.0
		Selenium, Total	0.36u	0.35u	NC	1.0
		Silicon, Total	242	237	2.3	6.0
		Tin, Total	2.2 u	2.1 u	NC	6.0
		Titanium, Total	1050	900	15.8	6.0
		Thallium, Total	0.36u	0.35u	NC	1.0
		Uranium, Total	8.9 u	8.5 u	NC	6.0
		Vanadium, Total	82.1	76.2	7.5	6.0
		Zinc, Total	141	128	9.9	6.0
		Zirconium, Total	12.4	14.7	17.0	6.0
-002REP	J00J05-A	Arsenic, TCLP Leachate	21.0 u	21.0 u	NC	6.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 03/27/03

CLIENT: TNUHANFORD B01-055 H2099 LVL LOT #: 0303L924

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	03L0139-LC1	Silver, LCS	50.1	50.0	MG/KG	100.2
		Aluminum, LCS	510	500	MG/KG	101.9
		Arsenic, LCS	959	1000	MG/KG	95.9
		Boron, LCS	480	500	MG/KG	95.9
		Barium, LCS	498	500	MG/KG	99.5
		Beryllium, LCS	24.4	25.0	MG/KG	97.6
		Calcium, LCS	2540	2500	MG/KG	101.6
		Cadmium, LCS	24.8	25.0	MG/KG	99.2
		Cobalt, LCS	251	250	MG/KG	100.6
		Chromium, LCS	51.0	50.0	MG/KG	102.0
		Copper, LCS	127	125	MG/KG	101.3
		Iron, LCS	497	500	MG/KG	99.5
		Potassium, LCS	2480	2500	MG/KG	99.2
		Magnesium, LCS	2460	2500	MG/KG	98.6
		Manganese, LCS	77.1	75.0	MG/KG	102.8
		Molybdenum, LCS	504	500	MG/KG	100.8
		Nickel, LCS	202	200	MG/KG	101.1
		Lead, LCS	247	250	MG/KG	98.7
		Antimony, LCS	296	300	MG/KG	98.5
		Selenium, LCS	938	1000	MG/KG	93.8
		Silicon, LCS	605	500	MG/KG	120.9
		Tin, LCS	495	500	MG/KG	98.9
		Titanium, LCS	497	500	MG/KG	99.3
		Thallium, LCS	982	1000	MG/KG	98.2
		Uranium, LCS	-0.4	500	MG/KG	-0.08
		Vanadium, LCS	254	250	MG/KG	101.6
		Zinc, LCS	100	100	MG/KG	100.3
		Zirconium, LCS	-0.5	500	MG/KG	-0.09
LCS1	03C0049-LC1	Mercury, LCS	7.5	6.2	MG/KG	120.4
LCS1	03L0158-LC1	Arsenic, LCS	9940	10000	UG/L	99.4

(b) Metals N.Cu

Lionville Laboratory Use Only: 0303L924

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI LIONVILLE LABORATORY, INC.

Client: TNU Hanford B01-055
Est. Final Proj. Sampling Date:
Project #: 11343-606-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: Arlette Johnson
QC: SPEC Del: STD TAT: 7 day
Date Rec'd: 3-12-03 Date Due: 3-19-03

		A														
Refrigerator #									6							
#/Type Container	Liquid															
	Solid								1oz							
Volume	Liquid															
	Solid								60							
Preservatives									1							
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				ICP Metal (1)	CN	LEACHATE					
		Lionville Laboratory Use Only														
								ICR6	MRCRATO		MASTC					

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	ICR6	MRCRATO	MASTC
001	J00J05-A	X	X	SO	3-5-03	1051		X	
002	J00J05-B tclp of 001			L	*				✓

Special Instructions: SAF # B01-055

DATE/REVISIONS:
3-13-03 1. Add ICR6
3-20-03 2. Add ITCLP & MASTC due by 3/27/03
3. Add/Report Full Scan Metals
-001 4. Al, B, Be, Ca, Co, Cu, Fe, K, Mg, Mn, Mo, Ni,
5. Si, Sb, Sn, Ti, Tl, U, V, Zr, Zn
6.

Relinquished by	Received by	Date	Time
Leo Ex	D.J. Smith	3-12-03	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___
Airbill # 7913 1968 3345
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. 0.3 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-055-049

Collector: D.Shea	Company Contact: D.Shea — Telephone No.: 373-6425	Project Coordinator: KESSNER, JH
Price Code	Date	Air Quality ☐ 7days
Project Designation: 100 B/C Area Effluent Pipeline & Proximity Site Remediatio	Sampling Location: 100 B/C, Anomaly 100BC-004	SAF No.: B01-055
Ice Chest No.: EBC 96-072	Field Logbook No.: EI-1548-3 — COA: R100BC2600	Method of Shipment: ~~Gov. vehicle~~ Fed Ex RE 3-11-03
Shipped To: TMA/RECRA / RCF	Offsite Property No.: A030 163	Bill of Lading/Air Bill No.: 7913 1968 3345

POSSIBLE SAMPLE HAZARDS/REMARKS

Possibly radiologically contaminated

tie to J00J05

Special Handling and/or Storage

cool 4°C

Preservation	Cool 4C	Cool 4C	Cool 4C	None	NONE						
Type of Container	G/P	G/P	G/P	G	G						
No. of Container(s)	1	10	10	01	0						
Volume	60mL	60mL	60mL	60mL	60ml						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	ICP Metals - 6010A (Add-on) (Chromium, Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	Ignitability - 1010; pH (Soil) - 9045	RCF Shipping GEA	RCF sid	grams				
Sample No.	Matrix *	Sample Date	Sample Time								
J00J05 - A	OTHER SOLID	3/5/03	1051	✓	✓	✓		✓	10868	80.5	

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By/Removed From: DWShea DWShea 3/5/03 1105	Received By/Stored In: 100BC Sample Ring A 3/5/03 1105	(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Selenium, Silver)	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
Relinquished By/Removed From: 100BC Sample Ring A 3/6/03 1400	Received By/Stored In: DWShea DWShea 3/6/03 1400	Rel by [illegible] 3/10/03 / Rec by RCF 1B 3728 3-10-03/1030	
Relinquished By/Removed From: DWShea DWShea 3/6/03 1501	Received By/Stored In: Fridge 1A 3/6/03 1501	SEE Page 2 of 2 for custody transfer	
Relinquished By/Removed From: 1B 3728 3-10-03 0730	Received By/Stored In: R.Fahlen R.Fahlen 3-10-03 0730		
Relinquished By/Removed From: R.Fahlen R.Fahlen 3-10-03 0745	Received By/Stored In: K.Ellison / Kelly 3-10-03 0745		
Relinquished By/Removed From: K.Ellison / Kelly 3-10-03 / 1000	Received By/Stored In: [illegible] 3-10-03 / 1000		

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

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

Bechtel Hanford, Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			B01-055-049	Page 2 of 2
Collector	Company Contact	Telephone No.	Project Coordinator	Price Code	Data Turnaround
Project Designation	Sampling Location		SAF No.	Air Quality ☐	
Ice Chest No.	Field Logbook No.	COA	Method of Shipment		
Shipped To	Offsite Property No.		Bill of Lading/Air Bill No.		

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation										
	Type of Container										
	No. of Container(s)										
Special Handling and/or Storage	Volume										

SAMPLE ANALYSIS

Sample No.	Matrix*	Sample Date	Sample Time										
J00J05-A													

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
IB 3728 3-11-03	1300	R. Fahlberg R. Fahlberg 3-11-03	1300
Relinquished By/Removed From ERC	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg R. Fahlberg 3-11-03	1300	Fed Ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

Page 2 of 2 for custody transfer Only

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W=Water
O=OR
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

BHI-EE-001 (03/06/2002)

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hanford

Purchase Order/Project:

DATE: 3-12-03

SAF# / **SOW# / Release #:** B01-055

Laboratory SDG #: 03031924

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 LvLI 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:

ERL 96-072 / 0.3°C

Laboratory Sample Custodian: D Smith

Laboratory Project Manager:

RECEIVED
APR 2003

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-055 H2099

DATE RECEIVED: 03/12/03 LVL LOT # :0303L924

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J00J05-A						
% SOLIDS	001	SO	03L%S033	03/05/03	03/13/03	03/14/03
% SOLIDS	001 REP	SO	03L%S033	03/05/03	03/13/03	03/14/03
CHROMIUM VI	001	SO	03LVI014	03/05/03	03/17/03	03/17/03
CHROMIUM VI	001 REP	SO	03LVI014	03/05/03	03/17/03	03/17/03
CHROMIUM VI	001 MS	SO	03LVI014	03/05/03	03/17/03	03/17/03
CHROMIUM VI	001 MSD	SO	03LVI014	03/05/03	03/17/03	03/17/03
LAB QC:						
CHROMIUM VI	MB1	S	03LVI014	N/A	03/17/03	03/17/03
CHROMIUM VI	MB1 BS	S	03LVI014	N/A	03/17/03	03/17/03
CHROMIUM VI	MB1 BSD	S	03LVI014	N/A	03/17/03	03/17/03

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-055 H2099
LVL#: 0303L924

W.O.#: 11343-606-001-9999-00
Date Received: 03-12-03

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 solid sample.

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

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

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

5. The method blank for Chromium VI was within the method criteria.

6. The Laboratory Control Samples (LCS) for Chromium VI were within the laboratory control limits.

7. The matrix spike recoveries for Chromium VI were within the 75-125% control limits.

8. The replicate analyses for Percent Solids and Chromium VI were within the 20% Relative Percent Difference (RPD) control limit.

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

10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

03-19-03
Date

njp\i03-924

The results presented in this report relate to the analytical testing and conditions of the samples upon 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 12 pages.

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

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		✓ 9081	__ c
Chromium VI		✓ 3060A/7196A	
Corrosivity __ by coupon __ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		__ 9010B	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		__ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		__ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		__ 9095A	
Other:	**Method:**		
Other:	**Method**		

Lionville Laboratory Incorporated

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
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).

b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/18/03

CLIENT: TNUHANFORD B01-055 H2099

LVL LOT #: 0303L924

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J00J05-A	% Solids	95.9	%	0.01	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/18/03

CLIENT: TNUHANFORD B01-055 H2099 LVL LOT #: 0303L924

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	03LVI014-MB1	Chromium VI	0.40 u	NG/KG	0.40	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 03/18/03

CLIENT: TNUHANFORD B01-055 H2099

LVL LOT #: 0303L924

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J00J05-A	Soluble Chromium VI	4.6	0.42u	4.2	108.4	1.0
		Insoluble Chromium VI	1190	0.42u	1300	91.6	100
BLANK10	03LVI014-MB1	Soluble Chromium VI	4.0	0.40u	4.0	98.9	1.0
		Insoluble Chromium VI	1260	0.40u	1110	113.5	100

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 03/18/03

CLIENT: TNUHANFORD B01-055 H2099

LVL LOT #: 0303L924

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J00J05-A	% Solids	95.9	96.0	0.094	1.0
		Chromium VI	0.42u	0.42u	NC	1.0

Lionville Laboratory Use Only
0303L924

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI LIONVILLE LABORATORY INC.

60

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford B01-055

Est. Final Proj. Sampling Date:

Project #: 11343-606-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: Orlette Johnson

QC: SPEC Del: STD TAT: 7 days

Date Rec'd: 3.12.03 Date Due: 3-19-03

Refrigerator #			A 6
#/Type Container	Liquid		
	Solid		100
Volume	Liquid		
	Solid		60
Preservatives			—

ANALYSES REQUESTED →

ORGANIC				INORG	
VOA	BNA	Pest/PCB	Herb	ICP Metal (1)	CN

Lionville Laboratory Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	ICR6	MRCRATO
001	J00J05-A	X	X	SO	3-5-03	1051		X

Special Instructions: SAF # B01-055

DATE/REVISIONS:
3-13-03 1. Add ICR6
2.
3.
4.
5.
6.

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # 7913 1968 3345
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. 0.3 °C

Relinquished by	Received by	Date	Time
Leo Ex	D.Y. Smith	3.12.03	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-055-049	Page 1 of 2

Collector: D.Shea	Company Contact: D.Shea	Telephone No.: 373-6425	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: 7days	Air Quality ☐	
Project Designation: 100 B/C Area Effluent Pipeline & Proximity Site Remediatio	Sampling Location: 100 B/C, Anomaly 100BC-004		SAF No.: B01-055
Ice Chest No.: ERC 96-072	Field Logbook No.: EI-1548-3	COA: R100BC2600	Method of Shipment: ~~Gov. vehicle~~ Fed Ex RCF 3-11-03
Shipped To: TMA/RECRA / RCF	Offsite Property No.: A030 163		Bill of Lading/Air Bill No.: 7913 1968 3345

POSSIBLE SAMPLE HAZARDS/REMARKS

Possibly radiologically contaminated

tie to J00J05

Special Handling and/or Storage

cool 4°C

Preservation	Cool 4C	Cool 4C	Cool 4C	None	NONE						
Type of Container	G/P	G/P	G/P	G	G						
No. of Container(s)	1	1	1	1	1						
Volume	60mL	60mL	60mL	60mL	60ml						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	ICP Metals - 6010A (Add-on) (Chromium, Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	Ignitability - 1010; pH (Soil) - 9045	RCF Shipping GEA	RCF#	grams				
Sample No.	Matrix *	Sample Date	Sample Time								
J00J05 - A	OTHER SOLID	3/5/03	1051	✓	✓	✓		✓	10868	80.5	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DWSlen DWSlen	3/5/03 1105	100BC sample Room A	3/5/03 1105
100BC sample Room A	3/6/03 1400	DWSlen DWSlen	3/6/03 1400
DWSlen DWSlen	3/6/03 1501	Fridge 1A	3/6/03 1501
1A 3728	3-10-03 0730	R.Fahlen R.Fahlen	3-10-03 0730
R.Fahlen R.Fahlen	3-10-03 0745	R.E.Ellison	3-10-03 0745
R.E.Ellison	3-10-03 1000	[illegible]	3-10-03 1000

SPECIAL INSTRUCTIONS

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

Rel by [illegible] 3/10/03 1030

Rec by RCF 1B 3728 3-10-03/1030

SEE Page 2 of 2 for Custody Transfer

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

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

Bechtel Hanford, Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		1301-055-049	Page 2 of 2
Collector	Company Contact	Telephone No.	Project Coordinator	Price Code / Data Turnaround
Project Designation	Sampling Location		SAF No.	Air Quality ☐
Ice Chest No.	Field Logbook No.	COA	Method of Shipment	
Shipped To	Offsite Property No.		Bill of Lading/Air Bill No.	

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation											
	Type of Container											
	No. of Container(s)											
Special Handling and/or Storage	Volume											

SAMPLE ANALYSIS

Sample No.	Matrix*	Sample Date	Sample Time										
J00J05-A													

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From — Date/Time	Received By/Stored In — Date/Time	Page 2 of 2 for custody transfer Only
1B 3728 3-11-03 1300	R. Fahlberg R. Fahlberg 3-11-03 1300	
Relinquished By/Removed From — Date/Time	Received By/Stored In — Date/Time	
R. Fahlberg R. Fahlberg 3-11-03 1300	Fed Ex	
Relinquished By/Removed From — Date/Time	Received By/Stored In — Date/Time	
Relinquished By/Removed From — Date/Time	Received By/Stored In — Date/Time	
Relinquished By/Removed From — Date/Time	Received By/Stored In — Date/Time	
Relinquished By/Removed From — Date/Time	Received By/Stored In — Date/Time	

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

BHI-EE-041 (03/04/2002)

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hanford

Purchase Order/Project:

DATE: 3-12-03

SAF# / SOW# / Release #: B01-055

Laboratory SDG #: 03031924

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 LvLl 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:

ERL 96-072 / 0.3°C

Laboratory Sample Custodian: D. Smith

Laboratory Project Manager: