





4 September 2003

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

**Subject: Contract No. 630  
Analytical Data Package**

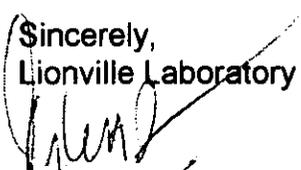
Dear Ms. Kessner:

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

LvLI Batch #	0308L196
SDG #	H2313
SAF #	B01-090
Date Received	8-15-03
# Samples	2
Matrix	Soil
Volatiles	
Semivolatiles	
Pest/PCB	
DRO/KRO/GRO	
GC Alcohols	
Herbicides	
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



Lionville Laboratory, Inc.  
 INORGANIC ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD B01-090 H2313

DATE RECEIVED: 08/15/03

LVL LOT # :0308L196

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J00WM8						
MERCURY, TOTAL	001	S	03C0216	08/13/03	08/19/03	08/19/03
J00WM9						
MERCURY, TOTAL	002	S	03C0216	08/13/03	08/19/03	08/19/03
MERCURY, TOTAL	002 REP	S	03C0216	08/13/03	08/19/03	08/19/03
MERCURY, TOTAL	002 MS	S	03C0216	08/13/03	08/19/03	08/19/03
LAB QC:						
MERCURY LABORATORY	LC1 BS	S	03C0216	N/A	08/19/03	08/19/03
MERCURY, TOTAL	MB1	S	03C0216	N/A	08/19/03	08/19/03





## Analytical Report

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**Client:** TNU-HANFORD B01-090  
**LVL#:** 0308L196  
**SDG/SAF#:** H2313/B01-090

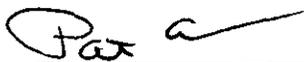
**W.O.#:** 11343-606-001-9999-00  
**Date Received:** 08-15-03

### METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 soil samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. Please refer to the Sample Receipt Check List for sample discrepancies in LvLI's sample acceptance policy.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 80-120% control limits.
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. The preparation/method blank (MB) was within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. The laboratory control sample (LCS) was within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
9. The matrix spike (MS) recovery was within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
10. The duplicate analysis was within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
11. 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.

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 13 pages.

12. 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

jjw/m08-196

09-04-03

Date

## METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 03082196

Leaching Procedure:  1310  1311  1312  Other: \_\_\_\_\_

CLP Metals  Digestion and  Analysis Methods:  ILM03.0  ILM04.0

Metals Digestion Methods:  3005A  3010A  3015  3020A  3050B  3051  200.7  SS17  
 Other: \_\_\_\_\_

### Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Antimony	<input type="checkbox"/> 6010B <input type="checkbox"/> 7041 <sup>5</sup>	<input type="checkbox"/> 200.7 <input type="checkbox"/> 204.2			<input type="checkbox"/> 99
Arsenic	<input type="checkbox"/> 6010B <input type="checkbox"/> 7060A <sup>5</sup>	<input type="checkbox"/> 200.7 <input type="checkbox"/> 206.2	<input type="checkbox"/> 3113B		<input type="checkbox"/> 99
Barium	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Beryllium	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Bismuth	<input type="checkbox"/> 6010B <sup>1</sup>	<input type="checkbox"/> 200.7 <sup>1</sup>		<input type="checkbox"/> 1620	<input type="checkbox"/> 99
Boron	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Cadmium	<input type="checkbox"/> 6010B <input type="checkbox"/> 7131A <sup>5</sup>	<input type="checkbox"/> 200.7 <input type="checkbox"/> 213.2			<input type="checkbox"/> 99
Calcium	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Chromium	<input type="checkbox"/> 6010B <input type="checkbox"/> 7191 <sup>5</sup>	<input type="checkbox"/> 200.7 <input type="checkbox"/> 218.2			<input type="checkbox"/> SS17
Cobalt	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Copper	<input type="checkbox"/> 6010B <input type="checkbox"/> 7211 <sup>5</sup>	<input type="checkbox"/> 200.7 <input type="checkbox"/> 220.2			<input type="checkbox"/> 99
Iron	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Lead	<input type="checkbox"/> 6010B <input type="checkbox"/> 7421 <sup>5</sup>	<input type="checkbox"/> 200.7 <input type="checkbox"/> 239.2	<input type="checkbox"/> 3113B		<input type="checkbox"/> 99
Lithium	<input type="checkbox"/> 6010B <input type="checkbox"/> 7430 <sup>4</sup>	<input type="checkbox"/> 200.7		<input type="checkbox"/> 1620	<input type="checkbox"/> 99
Magnesium	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Manganese	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Mercury	<input type="checkbox"/> 7470A <sup>3</sup> <input type="checkbox"/> 7471A <sup>3</sup>	<input type="checkbox"/> 245.1 <sup>2</sup> <input type="checkbox"/> 245.5 <sup>2</sup>			<input type="checkbox"/> 99
Molybdenum	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Nickel	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Potassium	<input type="checkbox"/> 6010B <input type="checkbox"/> 7610 <sup>4</sup>	<input type="checkbox"/> 200.7 <input type="checkbox"/> 258.1 <sup>4</sup>			<input type="checkbox"/> 99
Rare Earths	<input type="checkbox"/> 6010B <sup>1</sup>	<input type="checkbox"/> 200.7 <sup>1</sup>		<input type="checkbox"/> 1620	<input type="checkbox"/> 99
Selenium	<input type="checkbox"/> 6010B <input type="checkbox"/> 7740 <sup>5</sup>	<input type="checkbox"/> 200.7 <input type="checkbox"/> 270.2	<input type="checkbox"/> 3113B		<input type="checkbox"/> 99
Silicon	<input type="checkbox"/> 6010B <sup>1</sup>	<input type="checkbox"/> 200.7		<input type="checkbox"/> 1620	<input type="checkbox"/> 99
Silica	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7		<input type="checkbox"/> 1620	<input type="checkbox"/> 99
Silver	<input type="checkbox"/> 6010B <input type="checkbox"/> 7761 <sup>5</sup>	<input type="checkbox"/> 200.7 <input type="checkbox"/> 272.2			<input type="checkbox"/> 99
Sodium	<input type="checkbox"/> 6010B <input type="checkbox"/> 7770 <sup>4</sup>	<input type="checkbox"/> 200.7 <input type="checkbox"/> 273.1 <sup>4</sup>			<input type="checkbox"/> 99
Strontium	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Thallium	<input type="checkbox"/> 6010B <input type="checkbox"/> 7841 <sup>5</sup>	<input type="checkbox"/> 200.7 <input type="checkbox"/> 279.2 <input type="checkbox"/> 200.9			<input type="checkbox"/> 99
Tin	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Titanium	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Uranium	<input type="checkbox"/> 6010B <sup>1</sup>	<input type="checkbox"/> 200.7 <sup>1</sup>		<input type="checkbox"/> 1620	<input type="checkbox"/> 99
Vanadium	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Zinc	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Zirconium	<input type="checkbox"/> 6010B <sup>1</sup>	<input type="checkbox"/> 200.7 <sup>1</sup>		<input type="checkbox"/> 1620	<input type="checkbox"/> 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 09/04/03

CLIENT: TNUHANFORD B01-090 H2313  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0308L196

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	J00WM8	Mercury, Total	0.01 u	MG/KG	0.01	1.0
-002	J00WM9	Mercury, Total	0.01 u	MG/KG	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/04/03

CLIENT: TNUHANFORD B01-090 H2313  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0308L196

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	03C0216-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/04/03

CLIENT: TNUHANFORD B01-090 H2313  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0308L196

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
=====	=====	=====	=====	=====	=====	=====	=====
-002	J00WM9	Mercury, Total	0.15	0.01u	0.15	102.0	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/04/03

CLIENT: TNUHANFORD B01-090 H2313  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0308L196

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REF)
-002REP	J00WM9	Mercury, Total	0.01u	0.01u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/04/03

CLIENT: TNUHANFORD B01-090 H2313

LVL LOT #: 0308L196

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
=====	=====	=====	=====	=====	=====	=====
LCS1	03C0216-LC1	Mercury, LCS	6.4	6.2	MG/KG	103.3



Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					Price Code 8L		Data Turnaround	
Collector R Kerkow		Company Contact R Kerkow		Telephone No. 509-372-2187		Project Coordinator KESSNER, JH		21 Days		
Project Designation 100-NR-1 TSD Sites R. A. Verification Sampling - Soil		Sampling Location 116-N-1 Trench SZ Verification			SAF No. B01-090		Air Quality <input type="checkbox"/>			
Ice Chest No. EPC 99-069		Field Logbook No. EL-1524-3		COA R1301N2600		Method of Shipment Fed Ex				
Shipped To RECRA		Offsite Property No. A030 340			Bill of Lading/Air Bill No. SEK OSPL					
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive Tie to JOOWK8 JOOWK8 Special Handling and/or Storage None PE 8-14-03 cool 4°C		Preservation	Cool C	Cool C	None	Cool 4C	None			
		Type of Container	G	G	G	G	P			
		No. of Container(s)	1	1	1	1	1			
		Volume	250mL	120mL	60mL	120mL	1000mL			
SAMPLE ANALYSIS		ICP Metals - 6010A (TAL) (Chromium)	Chromium Hex - 7196	Mercury - 7471 - (CV)	NO2/NO3 - 353.2	See item (1) in Special Instructions.				
		PK 8-11-03	PK 8-11-03			PK 8-11-03			TIE TO:	SE VER
Sample No.	Matrix *	Sample Date	Sample Time							
JOOWM8	SOIL	8-13-03	0900			X	X		JOOWK2	VXW1
JOOWM9	SOIL	8-13-03	0910			X	X		JOOWK8	VXE1
CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *		
Relinquished By/Removed From RB KERKOW/RB Kerkow		Date/Time 8-13-03 1600		Received By/Stored In 3728, REF #11		Date/Time 8-13-03 1600		Lab COA: R1325N-2F00 (1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-154, Europium-155); Isotopic Plutonium (Plutonium-239/240); Americium-241; Strontium-89,90 -- Total Sr; Nickel-63; Tritium - H3  Personnel not available to relinquish samples from 3728 Ref # 1A on 8/14/03		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 11 3728		Date/Time 8-14-03 1050		Received By/Stored In R. F. Fehlbach		Date/Time 8-14-03 1000				
Relinquished By/Removed From R. F. Fehlbach		Date/Time 8-14-03 1000		Received By/Stored In Fed Ex		Date/Time				
Relinquished By/Removed From Fed Ex		Date/Time 8-15-03/0940		Received By/Stored In J. Smith		Date/Time 8-15-03/0940				
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time				
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time				
LABORATORY SECTION		Received By		Title				Date/Time		
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time		

# LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

CLIENT: TNU Hamford  
Purchase Order/Project:

DATE: 8-15-03

SAP# / SOW# / Release #: B01-090

Laboratory SDG #: 0308L196

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

- |  |   |  |   |  |
|--|---|--|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment #   |
| 2. Outside of coolers or shipping containers are free from damage?   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment #   |
| 3. Airbill # recorded?   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> 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) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment #   |
| 5. Sample containers are intact?   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment #   |
| 6. Custody seals on sample containers intact, signed and dated?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment #   |
| 7. All samples on coc received?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment #   |
| 8. All sample label information matches coc?   | <input checked="" type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # ① |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?)   | <input type="checkbox"/> Yes            | <input type="checkbox"/> No            | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment #   |
| 10. Shipment meets LVL1 Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)  | <input checked="" type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # ① |
| 11. Where applicable, bar code labels are affixed to coc?  | <input type="checkbox"/> Yes            | <input type="checkbox"/> No            | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment #   |
| 12. coc signed and dated?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment #   |
| 13. coc will be faxed or emailed to client?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment #   |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date)   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment #   |

Cooler # / temp (°C) and Comments:

# ERC 99-069 / 0.2

① Sample label indicates Cr-6 analysis  
the chain request NO<sub>2</sub> / NO<sub>x</sub> analysis

Laboratory Sample Custodian:

*D. J. Smith*

Laboratory Project Manager:

RECEIVED  
SEP 2003

Lionville Laboratory, Inc.  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNUHANFORD B01-090 H2313

DATE RECEIVED: 08/15/03

LVL LOT # :0308L196

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
---------------------	-------	-----	--------	------------	-----------	----------

J00WM8

% SOLIDS	001	S	03L*S108	08/13/03	08/18/03	08/18/03
NITRATE NITRITE	001	S	03LN3A49	08/13/03	09/03/03	09/03/03
NITRATE NITRITE	001 REP	S	03LN3A49	08/13/03	09/03/03	09/03/03
NITRATE NITRITE	001 MS	S	03LN3A49	08/13/03	09/03/03	09/03/03

J00WM9

% SOLIDS	002	S	03L*S108	08/13/03	08/18/03	08/18/03
% SOLIDS	002 REP	S	03L*S108	08/13/03	08/18/03	08/18/03
NITRATE NITRITE	002	S	03LN3A49	08/13/03	09/03/03	09/03/03

LAB QC:

NITRATE NITRITE	MB1	S	03LN3A49	N/A	09/03/03	09/03/03
NITRATE NITRITE	MB1 BS	S	03LN3A49	N/A	09/03/03	09/03/03



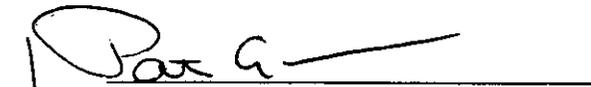
## Analytical Report

**Client:** TNU-HANFORD B01-090 H2313  
**LVL#:** 0308L196

**W.O.#:** 11343-606-001-9999-00  
**Date Received:** 08-15-03

### INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 soil samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the 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 did not meet LvLI's sample acceptance policy as noted on the Sample Receipt Checklist.
5. The method blank for Nitrate Nitrite was within the method criteria.
6. The Laboratory Control Sample (LCS) for Nitrate Nitrite was within the laboratory control limits.
7. The matrix spike recovery for Nitrate Nitrite was within the 75-125% control limits.
8. The replicate analyses for Nitrate Nitrite and Percent Solids 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  
njpl08-196

09-04-03  
Date

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 25 pages.

11 29/103

**Lionville Laboratory Incorporated**

**WET CHEMISTRY**

**METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS**

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
% 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: <i>Nitrate Nitrite</i>		Method: <i>EPA.353.2(mod.)</i>	
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 09/04/03

CLIENT: TNUHANFORD B01-090 H2313  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0308L196

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J00WMB	% Solids	97.6	%	0.01	1.0
		Nitrate Nitrite	0.18 u	MG/KG	0.18	1.0
-002	J00WM9	% Solids	98.1	%	0.01	1.0
		Nitrate Nitrite	4.8	MG/KG	0.19	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/04/03

CLIENT: TNUHANFORD B01-090 H2313  
WORK ORDER: 11343-606-001-9999-00

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SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	03LN3A49-MB1	Nitrate Nitrite	0.20 u	MG/KG	0.20	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/04/03

CLIENT: TNUHANFORD B01-090 H2313  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0308L196

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	J00WM8	Nitrate Nitrite	5.0	0.18u	5.0	100.8	1.0
BLANK10	03LN3A49-MB1	Nitrate Nitrite	5.2	0.20u	5.0	103.6	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/04/03

CLIENT: TNUHANFORD B01-090 H2313  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0308L196

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE	RPD	
-001REP	J00WM8	Nitrate Nitrite	0.18u	0.17u	NC	1.0
-002REP	J00WM9	% Solids	98.1	97.9	0.24	1.0



Collector R Kerkow	Company Contact R Kerkow	Telephone No. 509-372-2187	Project Coordinator KESSNER, JH	Price Code 8L	Data Turnaround 21 Days
Project Designation 100-NR-1 TSD Sites R. A. Verification Sampling - Soil	Sampling Location 116-N-1 Trench SZ Verification	SAF No. B01-090	Air Quality <input type="checkbox"/>		
Ice Chest No. ERC 99-069	Field Logbook No. EL-1524-3	COA R1301N2600	Method of Shipment Fed Ex		
Shipped To RECRA	Offsite Property No. A030 340	Bill of Lading/Air Bill No. SEK OSPL			

POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive Tie To JOOWK8 JOOWK8 Special Handling and/or Storage None PE 8-14-03 cool 4°C	Preservation	Cool 4C	Cool 4C	None	Cool 4C	None							
	Type of Container	G	G	G	G	P							
	No. of Container(s)	1	1	1	1	1							
	Volume	250mL	120mL	60mL	120mL	1000mL							

SAMPLE ANALYSIS				ICP Metals - 6010A (TAL) (Chromium)	Chromium Hex - 7196	Mercury - 7471 - (CV)	NO2/NO3 - 353.2	See item (1) in Special Instructions						
				PK 8-11-03	PK 8-11-03			PK 8-11-03					TIE TO:	SE VER
Sample No.	Matrix *	Sample Date	Sample Time											
JOOWM8	SOIL	8-13-03	0900			X	X						JOOWK8	VXW1
JOOWM9	SOIL	8-13-03	0910			X	X						JOOWK8	VXE1

CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From PB KERKOW/PB Kerkow	Date/Time 8-13-03 1600	Received By/Stored In 3728, REF #1A	Date/Time 8-13-03 1600	Lab COA: R1325N-2F00				S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquid T=Tissue WJ=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From 1A 3728	Date/Time 8-14-03 1000	Received By/Stored In R. F. Fehlbach	Date/Time 8-14-03 1000	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-154, Europium-155); Isotopic Plutonium (Plutonium-239/240); Americium-241; Strontium-89,90 -- Total Sr; Nickel-63; Tritium - H3				
Relinquished By/Removed From R. F. Fehlbach	Date/Time 8-14-03 1000	Received By/Stored In Fed Ex	Date/Time	Personnel not available to relinquish samples from 3728 Ref # 1A on 8/14/03				
Relinquished By/Removed From Fed Ex	Date/Time 8-15-03/0940	Received By/Stored In D. Smith	Date/Time 8-15-03/0940					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					

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

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# LIONVILLE LABORATORY INCORPORATED

## SAMPLE RECEIPT CHECKLIST

Client: TNU Hartford  
 Purchase Order/Project:

DATE: 8-15-03

AP# / SOW# / Release #: B01-090

Laboratory SDG #: 0308L196

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

- |  |   |  |   |  |
|--|---|--|---|--|
| 1. Custody seals on coolers or shipping container intact, signed and dated?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment #   |
| 2. Outside of coolers or shipping containers are free from damage?   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment #   |
| 3. Airbill # recorded?   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> 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) | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment #   |
| 5. Sample containers are intact?   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment #   |
| 6. Custody seals on sample containers intact, signed and dated?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment #   |
| 7. All samples on coc received?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment #   |
| 8. All sample label information matches coc?   | <input checked="" type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # ① |
| 9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?)   | <input type="checkbox"/> Yes            | <input type="checkbox"/> No            | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment #   |
| 10. Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)  | <input checked="" type="checkbox"/> Yes | <input checked="" type="checkbox"/> No | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment # ① |
| 11. Where applicable, bar code labels are affixed to coc?  | <input type="checkbox"/> Yes            | <input type="checkbox"/> No            | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> see Comment #   |
| 12. coc signed and dated?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment #   |
| 13. coc will be faxed or emailed to client?  | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment #   |
| 14. Project Manager/Client contacted concerning discrepancies? (name/date)   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            | <input type="checkbox"/> N/A            | <input type="checkbox"/> see Comment #   |

Cooler # / temp (°C) and Comments:

# ERC 99-069 / 0.2

① Sample label indicates Cr-6 analysis  
 the chain request NO<sub>3</sub>/NO<sub>2</sub> analysis

Laboratory Sample Custodian:

*D. Smith*

Laboratory Project Manager: