Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD I06-020 H3397

DATE RECEIVED: 02/01/06 LVL LOT # :0602L190

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	ANALYSIS TIME
B1HFN7							
BROMIDE BY IC	001	W	06LIC015	01/31/06	02/02/06	02/02/06	
BROMIDE BY IC	001 REP	W	06LIC015	01/31/06	02/02/06	02/02/06	
BROMIDE BY IC	001 MS	W	06LIC015	01/31/06	02/02/06	02/02/06	
CHLORIDE BY IC	001	W	06LIC015	01/31/06	02/02/06	02/02/06	
CHLORIDE BY IC	001 REP	W	06LIC015	01/31/06	02/02/06	02/02/06	
CHLORIDE BY IC	001 MS	W	06LIC015	01/31/06	02/02/06	02/02/06	
FLUORIDE BY IC	001	W	06LIC015	01/31/06	02/02/06	02/02/06	
FLUORIDE BY IC	001 REP	W	06LIC015	01/31/06	02/02/06	02/02/06	
FLUORIDE BY IC	001 MS	W	06LIC015	01/31/06	02/02/06	02/02/06	
NITRITE BY IC	001	W	06LIC015	01/31/06	02/02/06	02/02/06	1139
NITRITE BY IC	001 REP	W	06LIC015	01/31/06	02/02/06	02/02/06	1231
NITRITE BY IC	001 MS	W	06LIC015	01/31/06	02/02/06	02/02/06	1244
NITRATE BY IC	001	W	06LIC015	01/31/06	02/02/06	02/02/06	1139
NITRATE BY IC	001 REP	W	06LIC015	01/31/06	02/02/06	02/02/06	1231
NITRATE BY IC	001 MS	W	06LIC015	01/31/06	02/02/06	02/02/06	1244
PHOSPHATE BY IC	001	W	06LIC015	01/31/06	02/02/06	02/02/06	1139
PHOSPHATE BY IC	001 REP	W	06LIC015	01/31/06	02/02/06	02/02/06	1231
PHOSPHATE BY IC	001 MS	W	06LIC015	01/31/06	02/02/06	02/02/06	1244
SULFATE BY IC	001	W	06LIC018	01/31/06	02/07/06	02/07/06	
SULFATE BY IC	001 REP	W	06LIC018	01/31/06	02/07/06	02/07/06	
SULFATE BY IC	001 MS	W	06LIC018	01/31/06	02/07/06	02/07/06	

LAB QC:

BROMIDE BY IC	MB1	W	06LIC015	N/A	02/02/06	02/02/06	
BROMIDE BY IC	MB1 BS	W	06LIC015	N/A	02/02/06	02/02/06	
CHLORIDE BY IC	MB1	W	06LIC015	N/A	02/02/06	02/02/06	
CHLORIDE BY IC	MB1 BS	W	06LIC015	N/A	02/02/06	02/02/06	
FLUORIDE BY IC	MB1	W	06LIC015	N/A	02/02/06	02/02/06	
FLUORIDE BY IC	MB1 BS	W	06LIC015	N/A	02/02/06	02/02/06	
NITRITE BY IC	MB1	W	06LIC015	N/A	02/02/06	02/02/06	
NITRITE BY IC	MB1 BS	W	06LIC015	N/A	02/02/06	02/02/06	
NITRATE BY IC	MB1	W	06LIC015	N/A	02/02/06	02/02/06	
NITRATE BY IC	MB1 BS	W	06LIC015	N/A	02/02/06	02/02/06	
PHOSPHATE BY IC	MB1	W	06LIC015	N/A	02/02/06	02/02/06	

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CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PHOSPHATE BY IC	MB1 BS	W	06LIC015	N/A	02/02/06	02/02/06
SULFATE BY IC	MB1	W	06LIC018	N/A	02/07/06	02/07/06
SULFATE BY IC	MB1 BS	W	06LIC018	N/A	02/07/06	02/07/06

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD I06-020 H3397
LVL#: 0602L190

W.O.#: 11343-606-001-9999-00
Date Received: 02-01-06

INORGANIC NARRATIVE

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

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

   LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

3. Sample holding times as required by the method and/or contract were met with the exception of Nitrite, Nitrate and Phosphate (see the sample chronology summary for analyses times for short hold samples).

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

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits with the exception of 06LIC015-MB1 for Phosphate that was above the 90-110% control limits at 111.2%; however, the associated sample results were less than the reporting limit therefore are not considered biased high.

7. The matrix spike recoveries for Bromide, Chloride, Fluoride, Nitrite, Nitrate, Phosphate and Sulfate were within the 75-125% control limits.

8. The replicate analyses for Bromide, Chloride, Fluoride, Nitrite, Nitrate, Phosphate and Sulfate were within the 20% Relative Percent Difference (RPD) control limit.

9. 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.

for Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

3/21/06
Date

njp\i02-190

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.

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Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	EPA /600	SW846	OTHER
Acidity	___ 305.1		
___Alkalinity ___Bicarbonate ___Carbonate	___ 310.1		
BOD	___ 405.1		___ 5210B (b)
Ion Chromatography:			
✓Bromide ✓Chloride ✓Fluoride	✓ 300.0	___ 9056	
✓Nitrate ✓Nitrite ✓Phosphate	✓ 300.0	___ 9056	
✓Sulfate ___Formate ___Acetate ___Oxalate	✓ 300.0	___ 9056	
Chloride	___ 325.2	___ 9251	
Chorine, Residual	___ 330.5 (mod)		
Cyanide, Amenable to Chlorination	___ 335.2	___ 9010B	
Cyanide, Total	___ 335.2	___ 9010B ___ 9014	___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable		___	___ 412 (a) ___ 4500CN-I (b)
COD	___ 410.4(mod)		___ 5220C (b)
Color	___ 110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	___ 340.2		___ 4500-FC
Hardness, Calcium	___ 215.2		
Hardness, Total	___ 130.2		
Iodide			___ ASTM D19P202 (1)
Surfactant	___ 425.1		
___Nitrate-Nitrite ___Nitrate ___Nitrite	___ 353.2		
Ammonia	___ 350.3		
Total___ Kjeldahl ___ Organic Nitrogen	___ 351.3		
Total___ Organic ___ Inorganic Carbon	___ 415.1	___ 9060	
Oil & Grease	___ 413.1	___ 9070	
___ pH ____ pH; paper	___ 150.1	___ 9040B ___ 9041A	
Petroleum Hydrocarbons, Total Recoverable	___ 418.1		
Phenol	___ 420.1 ___ 420.2	___ 9065 ___ 9066	
___Ortho ___Total Phosphate	___ 365.2		___ 4500-P B ___ C
Salinity			___ 210A (a) ___ 2520 (b)
Settleable Solids	___ 160.5		
Sulfide	___ 376.1	___ 9030B/9034 (acid soluble)	
Reactive ___Cyanide ___Sulfide		___ Section 7.3 (__9014__9030B)	
Silica	___ 370.1		
Sulfite	___ 377.1		
Sulfate	___ 375.4	___ 9038	
Specific Conductance	___ 120.1	___ 9050A	
Specific Gravity			___ D5057-90 ___ 213E (a)
Synthetic Precipitation Leach	___ 1312		
Total ___Dissolved __Suspended ___Solids	160 ___.1 ___.2 ___.3		
Total Organic Halides	___ 450.1	___ 9020B	
Turbidity	___ 180.1		
Volatile Solids:			
__Total __Dissolved __Suspended	___ 160.4		
Other:		**Method:**	

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, Inc.

INORGANICS DATA SUMMARY REPORT 02/15/06

CLIENT: TNUHANFORD I06-020 H3397 LVL LOT #: 0602L190
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B1HFN7	Bromide by IC	0.25 u	MG/L	0.25	1.0
		Chloride by IC	1.3	MG/L	0.25	1.0
		Fluoride by IC	0.25 u	MG/L	0.25	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	1.77	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	10.5	MG/L	0.50	2.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/15/06

CLIENT: TNUHANFORD I06-020 H3397 LVL LOT #: 0602L190
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	06LIC015-MB1	Bromide by IC	0.25 u	MG/L	0.25	1.0
		Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.25 u	MG/L	0.25	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	06LIC018-MB1	Sulfate by IC	0.25 u	MG/L	0.25	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/15/06

CLIENT: TNUHANFORD I06-020 H3397 LVL LOT #: 0602L190
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B1HFN7	Bromide by IC	9.6	0.00	10.0	96.2	2.0
		Chloride by IC	10.9	1.3	10.0	95.6	2.0
		Fluoride by IC	9.6	0.039	10.0	95.8	2.0
		Nitrite by IC	9.74	0.25u	10.0	97.4	2.0
		Nitrate by IC	11.5	1.77	10.0	97.6	2.0
		Phosphate by IC	9.8	0.25u	10.0	98.3	2.0
		Sulfate by IC	33.9	10.5	25.0	93.4	5.0
BLANK10	06LIC015-MB1	Bromide by IC	4.9	0.25u	5.0	98.5	1.0
		Chloride by IC	4.8	0.25u	5.0	95.6	1.0
		Fluoride by IC	5.0	0.25u	5.0	99.5	1.0
		Nitrite by IC	5.16	0.25u	5.00	103.3	1.0
		Nitrate by IC	4.95	0.25u	5.00	99.1	1.0
		Phosphate by IC	5.6	0.25u	5.0	111.2	1.0
BLANK10	06LIC018-MB1	Sulfate by IC	4.6	0.25u	5.0	92.9	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/15/06

CLIENT: TNUHANFORD I06-020 H3397 LVL LOT #: 0602L190

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B1HFN7	Bromide by IC	0.25u	0.25u	NC	1.0
		Chloride by IC	1.3	1.3	2.2	1.0
		Fluoride by IC	0.25u	0.25u	NC	1.0
		Nitrite by IC	0.25u	0.25u	NC	1.0
		Nitrate by IC	1.77	1.75	1.6	1.0
		Phosphate by IC	0.25u	0.25u	NC	1.0
		Sulfate by IC	10.5	10.5	0.14	2.0

Lionville Laboratory Use Only

0602L190

Custody Transfer Record/Lab Work Request

Page 1 of 1

See SRC

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FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford I06-020

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: 30 days

Date Rec'd: 2.1.06   Date Due: 3/3/06

	A
Refrigerator #	6
#/Type Container (Liquid / Solid)	1pl
Volume (Liquid / Solid)	500
Preservatives	—
ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN	IC 1 Anions

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	VOA	BNA	Pest/PCB	Herb			Metal	CN		IC 1
001	BIHFN7	✓	✓	1.31.06	1001	W										X

Lionville Laboratory Use Only

Special Instructions:

IC 1 = IC - Br, Cl, Fl, NO_2, NO_3, PO_4, SO_4

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FedEx	D. Smith	2.1.06	0910

Relinquished by	Received by	Date	Time

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

PNNL	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I06-020-10
		Page 1 of 1

Collector D. Parchen	**Contact/Requester** Dot Stewart	**Telephone No.** 509-376-5056 **MSIN** **FAX**
SAF No. I06-020	**Sampling Origin** Hanford Site	**Purchase Order/Charge Code**
Project Title 100NR2IAM, FEBRUARY 2006	DTS - SAMS H102	**Ice Chest No.** +J-3 **Temp.**
Shipped To (Lab) Lionville Laboratory Incorporated	**Method of Shipment** Govt. Vehicle	**Bill of Lading/Air Bill No.** 792003676386
Protocol CERCLA	**Priority:** 45 Days	**Offsite Property No.**

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐
Batch all PNNL GW samples submitted under "W", "S", "I", "A" or "G" 06 SAFs into one SDG, not to exceed SDG closure of 14 days.
Submit invoices & deliverables to DL Stewart, PNNL

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B1HFN7		W	1-31-06	1001	1x500-mL P	IC Anions - 300.0	Cool 4C
B1HFN7		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	D. Parchen		JAN 31 2006 1400		FED Ex		
Relinquished By			Date/Time	Received By			Date/Time
Fed Ex			2-1-06 0910		D. Smith		2-1-06 0910
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

Lionville Laboratory Incorporated

SAMPLE RECEIPT CHECKLIST (SRC)

CLIENT: TNU Hanford **Date:** 2-1-06

Purchase Order / Project# / SAF# / SOW# / Release #: 106-020

LvLI Batch # : 0201L190 **Sample Custodian:** D. Smith

NOTE: EXPLAIN ALL DISCREPANCIES

1.	Samples Hand Delivered or Shipped	Carrier FedEx		Airbill# 7920 0367 6386	
2.	Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ No Seals	Comments
3.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No		
4.	All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible?	☑ Yes	☐ No		
5.	Samples received cooled or ambient? IR	Temp 1.3 °C		Cooler # TJ-3	
6.	Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals	
7.	coc signed and dated?	☑ Yes	☐ No		
8.	Sample containers are intact?	☑ Yes	☐ No		
9.	All samples on coc received? All samples received on coc?	☑ Yes	☐ No		
10.	All sample label information matches coc?	☑ Yes	☐ No		
11.	Samples properly preserved?	☑ Yes	☐ No		
12.	Samples received within hold times? Short holds taken to wet lab?	☑ Yes	☐ No		
13.	VOA, TOC, TOX free of headspace?	☐ Yes	☐ No	☑ N/A	
14.	QC stickers placed on bottles designated by client?	☑ Yes	☐ No	☐ N/A	
15.	Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy)	☑ Yes	☐ No		
16.	Project Manager contacted concerning discrepancies? name/date (or samples outside criteria)	☐ Yes	☐ No	☑ No Discrepancies	

SR-002-B

LVLI LIONVILLE LABORATORY INC.