



0061929

3 February 2004

Mr. Steve Trent  
Fluor Hanford Inc.  
825 Jadwin Ave.  
Richland, WA 99352

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



Dear Mr. Trent:

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

LvLI Batch #	0401L549
SDG #	H2492
SAF #	F03-020
Date Received	1-15-04
# Samples	1
Matrix	Soil
Volatiles	
Semivolatiles	
Pest/PCB	
DRO/GRO/KRO	
Herbicides	
GC Alcohol	
Metals	
Inorganics	X

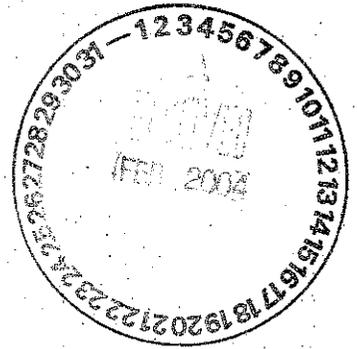
**RECEIVED**  
JUN 21 2004  
EDMC

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

0000040



Lionville Laboratory, Inc.  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNUHANFORD F03-020 H2492

DATE RECEIVED: 01/15/04

LVL LOT # :0401L549

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B183P3						
% SOLIDS	001	S	04L%S013	01/13/04	01/16/04	01/17/04
% SOLIDS	001 REP	S	04L%S013	01/13/04	01/16/04	01/17/04
CHROMIUM VI	001	S	04LVI002	01/13/04	01/16/04	01/16/04
CHROMIUM VI	001 REP	S	04LVI002	01/13/04	01/16/04	01/16/04
CHROMIUM VI	001 MS	S	04LVI002	01/13/04	01/16/04	01/16/04
CHROMIUM VI	001 MSD	S	04LVI002	01/13/04	01/16/04	01/16/04
NITRATE NITRITE	001	S	04LN3B05	01/13/04	01/29/04	01/29/04
NITRATE NITRITE	001 REP	S	04LN3B05	01/13/04	01/29/04	01/29/04
NITRATE NITRITE	001 MS	S	04LN3B05	01/13/04	01/29/04	01/29/04
TOTAL ORGANIC CARBON	001	S	04LTZ003	01/13/04	01/23/04	01/26/04
TOTAL ORGANIC CARBON	001 REP	S	04LTZ003	01/13/04	01/23/04	01/26/04
TOTAL ORGANIC CARBON	001 MS	S	04LTZ003	01/13/04	01/23/04	01/26/04

LAB QC:

CHROMIUM VI	MB1	S	04LVI002	N/A	01/16/04	01/16/04
CHROMIUM VI	MB1 BS	S	04LVI002	N/A	01/16/04	01/16/04
CHROMIUM VI	MB1 BSD	S	04LVI002	N/A	01/16/04	01/16/04
NITRATE NITRITE	MB1	S	04LN3B05	N/A	01/29/04	01/29/04
NITRATE NITRITE	MB1 BS	S	04LN3B05	N/A	01/29/04	01/29/04
TOTAL ORGANIC CARBON	MB1	S	04LTZ003	N/A	01/23/04	01/26/04
TOTAL ORGANIC CARBON	MB1 BS	S	04LTZ003	N/A	01/23/04	01/26/04
TOTAL ORGANIC CARBON	MB1 BSD	S	04LTZ003	N/A	01/23/04	01/26/04

0000041



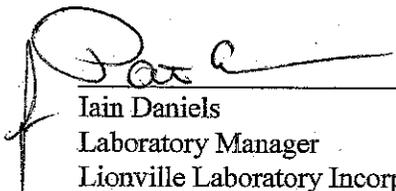
## Analytical Report

Client: TNU-HANFORD F03-020 H2492  
LVL#: 0401L549

W.O.#: 11343-606-001-9999-00  
Date Received: 01-15-04

### INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 soil sample.
2. The sample was 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 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. The duplicate LCS for Total Organic Carbon (TOC) was within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike recoveries for Chromium VI, Nitrate Nitrite and TOC were within the 75-125% control limits.
8. The replicate analyses for Percent Solids and Chromium VI were within the 20% RPD control limit, however replicate analyses for Nitrate Nitrite and TOC were outside the control limit that may be attributed to sample inhomogeneity.
9. Results for solid Chromium VI and Nitrate samples are reported on a dry weight basis and TOC samples are dried prior to analysis.
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

02-03-04  
Date

njp/M01- 549

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.

0000042

02

**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(mod.)	✓ 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		

0000043

## 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 METHOD BLANK DATA SUMMARY PAGE 01/30/04

CLIENT: TNUHANFORD F03-020 H2492  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0401L549

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	04LVI002-MB1	Chromium VI	0.20	u MG/KG	0.20	1.0
BLANK10	04LN3B05-MB1	Nitrate Nitrite	0.20	u MG/KG	0.20	1.0
BLANK10	04LTZ003-MB1	Total Organic Carbon	4.7	u MG/KG	4.7	1.0

0000046

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/30/04

CLIENT: TNUHANFORD F03-020 H2492  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0401L549

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B183P2	Soluble Chromium VI	4.7	0.22u	4.4	103.8	1.0
		Insoluble Chromium VI	1370	0.22u	1360	100.8	100
		Nitrate Nitrite	6.5	0.29	5.6	112.3	1.0
		Total Organic Carbon	2160	49.3	1880	112.2	1.0
BLANK10	04LVI002-MB1	Soluble Chromium VI	4.4	0.20u	4.0	109.9	1.0
		Insoluble Chromium VI	1150	0.20u	1200	95.1	100
BLANK10	04LN3B05-MB1	Nitrate Nitrite	5.0	0.20u	5.0	99.8	1.0
BLANK10	04LT2003-MB1	Total Organic Carbon	456	4.7 u	400	114.1	1.0
		Total Organic Carbon	432	4.7 u	400	107.9	1.0

0000047

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 01/30/04

CLIENT: TNUHANFORD P03-020 H2492  
WORK ORDNR: 11343-606-001-9999-00

LVL LOT #: 0401L549

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	04LTC003-MB1	Total Organic Carbon	114.1	107.9	5.6

0000048

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/30/04

CLIENT: TNUHANFORD F03-020 H2492  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0401L549

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION
			RESULT	REPLICATE RPD		
-001REP	B183P3	% Solids	91.5	92.8	1.4	1.0
		Chromium VI	0.22u	0.22u	NC	1.0
		Nitrate Nitrite	0.29	0.19u	NC	1.0
		Total Organic Carbon	49.3	77.1	44.0	1.0

0000049



FLUOR Hanford Inc.		CENTRAL PLATEAU CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F03-020-031	Page 1 of 1
Collector Pope/Hughes/Pfister	Company Contact Steve Trent	Telephone No. 373-5869	Project Coordinator TRENT, SJ	Price Code 14709 84 84 8C	Data Turnaround 15 Days 15 38 DWS
Project Designation 216-B-26 Characterization Sampling - Soil Sampling	Sampling Location C3245 (329-331.5 ft)	338-340.5	SAF No. F03-020	Air Quality <input type="checkbox"/>	
Ice Chest No. APP-03-022	Field Logbook No. HNF-N-356-1	COA 119142ES10	Method of Shipment Federal Express		
Shipped To RECREATION SERVICES (Formerly TMA) RECRA	Offsite Property No. See PTR	Bill of Lading/Air Bill No. See PTR			

POSSIBLE SAMPLE HAZARDS/REMARKS Fed to B18534 Special Handling and/or Storage	Preservation	Cool 4C	None
	Type of Container	G	G/P
	No. of Container(s)	1	1
	Volume	250mL	250mL

SAMPLE ANALYSIS				Chromium Hex - 7196; NO2/NO3 - 353.2	See Item (j) in Special Instructions. 12-8-3
Sample No.	Matrix *	Sample Date	Sample Time		
B183P3	SOIL	1-13-4	1510	X	

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS		Matrix *
Relinquished By/Removed From J.S. Pope 1/13/04 1630	Date/Time	Received By/Stored In M. G. Baker 1/13/04 1630	Date/Time	(1) Isotopic Thorium (Thorium-232); Strontium-89,90 - Total Sr; Nickel-63; Technetium-99; Carbon-14; Tritium-413; Gamma Spec - Radium (Radium-226, Radium-228)		S=Soil SB=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue W=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From M. G. Baker 1/14/04 0725	Date/Time	Received By/Stored In M. G. Baker 1/14/04 0725	Date/Time			
Relinquished By/Removed From M. G. Baker 1/14/04 0725	Date/Time	Received By/Stored In M. G. Baker 1/14/04 0725	Date/Time			
Relinquished By/Removed From M. G. Baker 1/15/04 10:00	Date/Time	Received By/Stored In M. G. Baker 1/15/04 10:00	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			

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

**Lionville Laboratory Incorporated  
SAMPLE RECEIPT CHECKLIST (SRC)**

CLIENT: TNU Hartford

Date: 1-15-04

Purchase Order / Project# /  
SAF# / SOW# / Release #: F03-020

LvLI Batch #: 0401L549

Sample Custodian: *[Signature]*

NOTE: EXPLAIN ALL DISCREPANCIES

- |   |   |  |
|---|---|--|
| 1. Samples Hand Delivered or <u>Shipped</u>   | Carrier <i>fed Ex</i>   | Airbill# <i>7925 4932 6242</i>                       |
| 2. Custody seals on coolers or shipping container intact, signed and dated?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals      Comments      |
| 3. Outside of coolers or shipping containers are free from damage?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 4. All expected paperwork received (coc and other client specific information) sealed in plastic bag and easily accessible? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 5. Samples received <u>cooled</u> or ambient?   | Temp <i>2.1</i> °C  | Cooler # <i>GRP 03-022</i>                           |
| 6. Custody seals on sample containers intact, signed and dated?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> No Seals                    |
| 7. coc signed and dated?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 8. Sample containers are intact?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 9. All samples on coc received? All samples received on coc?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 10. All sample label information matches coc?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 11. Samples properly preserved?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 12. Samples received within hold times? Short holds taken to wet lab?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 13. VOA, TOC, TOX free of headspace?  | <input type="checkbox"/> Yes <input type="checkbox"/> No            | <input checked="" type="checkbox"/> N/A              |
| 14. QC stickers placed on bottles designated by client?   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> N/A                         |
| 15. Shipment meets LvLI Sample Acceptance Policy? (Identify all bottles not within policy. See reverse side for policy)     | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |  |
| 16. Project Manager contacted concerning discrepancies? name/date (or samples outside criteria)                             | <input type="checkbox"/> Yes <input type="checkbox"/> No            | <input checked="" type="checkbox"/> No Discrepancies |