Rev. 1 Rev 0
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6/20/12

LvLI
LIONVILLE LABORATORY INC.

20 September 2006

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

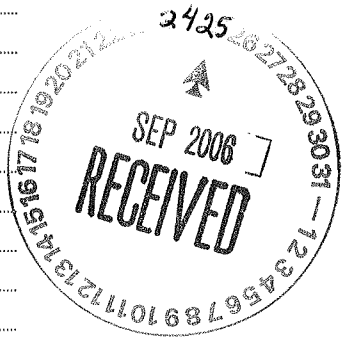
Subject: Contract No. 630
Analytical Data Package

REVISED Dayes 6/20/12
10/27/06

Dear Mr. Trent:

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

LvLI Batch #	0608L763
SDG #	H3437
SAF #	F06-029
Date Received	8/19/06
# Samples	2
Matrix	Water
Volatiles	
Semivolatiles	
Pest/PCB	
DRO/GRO/KRO	
Herbicides	
GC Alcohol	
Metals	
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\fc_ltrs.doc

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD F06-029 H3437

DATE RECEIVED: 08/19/06 LVL LOT # :0608L763

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B1KC04						
% SOLIDS	001	S	06L%S101	08/16/06	08/22/06	08/23/06
ALKALINITY	001	S	06LAK043	08/16/06	08/29/06	08/29/06
ALKALINITY	001 REP	S	06LAK043	08/16/06	08/29/06	08/29/06
CHROMIUM VI	001	S	06LVI087	08/16/06	08/22/06	08/22/06
EXTRACTABLE ORGANIC	001	S	06LE008	08/16/06	08/25/06	08/25/06
TOTAL ORGANIC CARBON	001	S	06LTZ007	08/16/06	08/30/06	08/30/06
B1KC08						
% SOLIDS	002	S	06L%S101	08/16/06	08/22/06	08/23/06
% SOLIDS	002 REP	S	06L%S101	08/16/06	08/22/06	08/23/06
ALKALINITY	002	S	06LAK043	08/16/06	08/29/06	08/29/06
CHROMIUM VI	002	S	06LVI087	08/16/06	08/22/06	08/22/06
CHROMIUM VI	002 REP	S	06LVI087	08/16/06	08/22/06	08/22/06
CHROMIUM VI	002 MS	S	06LVI087	08/16/06	08/22/06	08/22/06
CHROMIUM VI	002 MSD	S	06LVI087	08/16/06	08/22/06	08/22/06
EXTRACTABLE ORGANIC	002	S	06LE008	08/16/06	08/25/06	08/25/06
EXTRACTABLE ORGANIC	002 REP	S	06LE008	08/16/06	08/25/06	08/25/06
EXTRACTABLE ORGANIC	002 MS	S	06LE008	08/16/06	08/25/06	08/25/06
TOTAL ORGANIC CARBON	002	S	06LTZ007	08/16/06	08/30/06	08/30/06
TOTAL ORGANIC CARBON	002 REP	S	06LTZ007	08/16/06	08/30/06	08/30/06
TOTAL ORGANIC CARBON	002 MS	S	06LTZ007	08/16/06	08/30/06	08/30/06

LAB QC:

ALKALINITY	MB1	S	06LAK043	N/A	08/29/06	08/29/06
ALKALINITY	MB1 BS	S	06LAK043	N/A	08/29/06	08/29/06
ALKALINITY	MB1 BSD	S	06LAK043	N/A	08/29/06	08/29/06
CHROMIUM VI	MB1	S	06LVI087	N/A	08/22/06	08/22/06
CHROMIUM VI	MB1 BS	S	06LVI087	N/A	08/22/06	08/22/06
CHROMIUM VI	MB1 BSD	S	06LVI087	N/A	08/22/06	08/22/06
EXTRACTABLE ORGANIC	MB1	W	06LE008	N/A	08/25/06	08/25/06
EXTRACTABLE ORGANIC	MB1 BS	W	06LE008	N/A	08/25/06	08/25/06
TOTAL ORGANIC CARBON	MB1	S	06LTZ007	N/A	08/30/06	08/30/06
TOTAL ORGANIC CARBON	MB1 BS	S	06LTZ007	N/A	08/30/06	08/30/06

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD F06-029
LVL#: 0608L763 A3437

W.O.#: 11343-606-001-9999-00
Date Received: 08-19-06

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.

   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. LvLI certifies that all test results meet the requirements of NELAC with any exception noted in the following statements.

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 Alkalinity was within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries for Chromium VI, Extractable Organic Halides (EOX) and Total Organic Carbon (TOC) were within the 75-125% control limits.

8. The replicate analyses for Alkalinity, Percent solids, Chromium VI, EOX and TOC were within the 20% RPD control limit.

9. Results for solid samples are reported on a dry weight basis with the exception ofEOX that are reported on a wet weight basis and TOC samples that 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

9/13/06
Date

njp\08-763

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 13 pages.

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~~ 9023 mp 9-11-06	__ 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~~ 415.1 (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: Alkalinity **Method:** EPA 310.1 (mod.)

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 09/01/06

CLIENT: TNU-HANFORD F06-029 LVL LOT #: 0608L763

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B1KC04	% Solids	100	%	0.01	1.0
		Alkalinity	10.0 u	MG/KG	10.0	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
		Extr. Organic Halides	33.4 u	MG/KG	33.4	1.0
		Total Organic Carbon	45.4	MG/KG	26.1	1.0
-002	B1KC08	% Solids	83.0	%	0.01	1.0
		Alkalinity	2990	MG/KG	12.0	1.0
		Chromium VI	0.24 u	MG/KG	0.24	1.0
		Extr. Organic Halides	351	MG/KG	38.2	1.0
		Total Organic Carbon	605	MG/KG	67.1	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/01/06

CLIENT: TNU-HANFORD F06-029 LVL LOT #: 0608L763

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	06LAK043-MB1	Alkalinity	5.0	u	MG/KG	5.0	1.0
BLANK10	06LVI087-MB1	Chromium VI	0.20	u	MG/KG	0.20	1.0
BLANK1	06LE008-MB1	Extr. Organic Halides	20.0	u	MG/KG	20.0	1.0
BLANK10	06LTZ007-MB1	Total Organic Carbon	4.7	u	MG/KG	4.7	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/01/06

CLIENT: TNU-HANFORD F06-029 LVL LOT #: 0608L763

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	B1KC08	Soluble Chromium VI	4.6	0.24u	4.8	92.9	1.0
		Insoluble Chromium VI	1330	0.24u	1260	105.0	100
		Extr. Organic Halides	2660	351	2490	93.0	1.0
		Total Organic Carbon	5940	605	4880	109.3	1.0
BLANK10	06LAK043-MB1	Alkalinity	1000	5.0 u	1000	100.4	1.0
		Alkalinity MSD	1000	5.0 u	1000	100.4	1.0
BLANK10	06LVI087-MB1	Soluble Chromium VI	4.0	0.20u	4.0	100.9	1.0
		Insoluble Chromium VI	1260	0.20u	1110	113.8	100
BLANK1	06LE008-MB1	Extr. Organic Halides	514	20.0 u	500	102.7	1.0
BLANK10	06LTZ007-MB1	Total Organic Carbon	413	4.7 u	400	103.2	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 09/01/06

CLIENT: TNU-HANFORD F06-029 LVL LOT #: 0608L763

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	06LAK043-MB1	Alkalinity	100.4	100.4	0.00

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/01/06

CLIENT: TNU-HANFORD F06-029 LVL LOT #: 0608L763

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B1KC04	Alkalinity	10.0 u	10.0 u	NC	1.0
-002REP	B1KC08	% Solids	83.0	82.9	0.084	1.0
		Chromium VI	0.24u	0.24u	NC	1.0
		Extr. Organic Halides	351	345	1.6	1.0
		Total Organic Carbon	605	699	14.4	1.0

Lionville Laboratory Use Only

06081763

Custody Transfer Record/Lab Work Request

Page 1 of 1

See SRC

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU HANFORD SAF# F06-029

Est. Final Proj. Sampling Date

Project # 11343-606-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager OJ

QC Spec Del Std TAT 3Days

Date Rec'd 8/19/06 Date Due 8/22/06

		A	B			C	D										
Refrigerator #		1	1			6	6										
#/Type Container	Liquid																
	Solid	G	G			P	P										
Volume	Liquid																
	Solid	125	60			60	60										
Preservatives		—	—			—	—										
ANALYSES REQUESTED →	ORGANIC: VOA			BNA			Pest/PCB		Herb		INORG: Metal		CN				
		TBC	TOX			9K.	Hex Chrom										
		↓ Lionville Laboratory Use Only ↓															
		IOCT	IEOX			IALKL	ICRG										

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													
001	B1KC04			Soil	8-16-06	2100					X	X			X	X			
002	B1KC08			↓	↓	2330					X	X			X	X			

Special Instructions:

RUN MATRIX QC

DATE/REVISIONS:

1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[signature]	[signature]	8/19/06	0945

Relinquished by	Received by	Date	Time

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

00000010

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F06-029-028 | PAGE 1 OF 1

COLLECTOR: FM HALL	COMPANY CONTACT: CUMMINS, GD	TELEPHONE NO.: 372-2484	PROJECT COORDINATOR: TRENT, SJ
PRICE CODE: 8A	DATA TURNAROUND: 3 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: C4997 365 SPLIT SPOON	PROJECT DESIGNATION: 200-PO-1 WTP Opportunistic Sampling and Analysis - Soil	SAF NO.: F06-029	
ICE CHEST NO.: SAWS 029	FIELD LOGBOOK NO.: ES-WTP-H110	COA: 121523ES20	METHOD OF SHIPMENT: FEDERAL EXPRESS
SHIPPED TO: Lionville Laboratory Incorporated	OFFSITE PROPERTY NO.: 17952		BILL OF LADING/AIR BILL NO.: 790040260789

MATRIX*
OL = OTHER LIQUID
OS = OTHER SOLID
S = SOIL
W = WATER

SPECIAL HANDLING AND/OR STORAGE

POSSIBLE SAMPLE HAZARDS/ REMARKS

SAMPLE NO.	LAB ID	MATRIX*	SAMPLE DATE	SAMPLE TIME	NO./TYPE CONTAINER(S)	ANALYSIS	PRESERVATION
B1KC04		S	8-16-06	2100	1X60mL G/P	Chromium Hex - 7196;	Cool 4C
B1KC04		S			1X125mL aG	TOC - 415.1;	Cool 4C
B1KC04		S			1X60mL aG	TOX - 9020;	Cool 4C
B1KC04		S			1X60mL G/P	Alkalinity - 310.1;	Cool 4C

CHAIN OF POSSESSION

SIGN/ PRINT NAMES			
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
F. HALL	AUG 18 2006/1300	FED EX	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
Fed Ex	8/19/06 0945	R Hernandez	8-19-06 0945
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

** The 48 hour holding time requirement for nitrate, nitrite, and phosphate by method 300.0 applies to the laboratory extraction date.

LABORATORY SECTION	RECEIVED BY		TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD		DISPOSED BY	DATE/TIME

0000000111

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F06-029-032 PAGE 1 OF 1

COLLECTOR: KB Hulse	COMPANY CONTACT: CUMMINS, GD	TELEPHONE NO.: 372-2484	PROJECT COORDINATOR: TRENT, SJ
PRICE CODE: 8A	DATA TURNAROUND: 3 Days / 15 Days	AIR QUALITY: ☐	
SAMPLING LOCATION: C4997 365	PROJECT DESIGNATION: 200-PO-1 WTP Opportunistic Sampling and Analysis - Soil	SAF NO.: F06-029	
ICE CHEST NO.: SAWS 029	FIELD LOGBOOK NO.: ES-WTP-H110	COA: 121523ES20	METHOD OF SHIPMENT: FEDERAL EXPRESS
SHIPPED TO: Lionville Laboratory Incorporated	OFFSITE PROPERTY NO.: 17952		BILL OF LADING/AIR BILL NO.: 7900 4026 0789

0000000012

MATRIX*
OL = OTHER LIQUID
OS = OTHER SOLID
S = SOIL
W = WATER

SPECIAL HANDLING AND/OR STORAGE

POSSIBLE SAMPLE HAZARDS/ REMARKS

SAMPLE NO.	LAB ID	MATRIX*	SAMPLE DATE	SAMPLE TIME	NO./TYPE CONTAINER(S)	ANALYSIS	PRESERVATION
B1KC08		S	8/16/06	2330	1X60mL G/P	Chromium Hex - 7196;	Cool 4C
B1KC08		S	8/16/06	2330	1X125mL aG	TOC - 415.1;	Cool 4C
B1KC08		S	8/16/06	2330	1X60mL aG	TOX - 9020;	Cool 4C
B1KC08		S	8/16/06	2330	1X60mL G/P	Alkalinity - 310.1;	Cool 4C

CHAIN OF POSSESSION — SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
KB Hulse KB Hulse	AUG 18 2006 1300	FED EX	
[illegible]	8-19-06 0945	C. Hernandez	8/19/06 0945

SPECIAL INSTRUCTIONS

** The 48 hour holding time requirement for nitrate, nitrite, and phosphate by method 300.0 applies to the laboratory extraction date.

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 HANFORD Date: 8/19/06

Project/SAF/SOW/Release #: F06-029

LvLI Batch #: 0608L763 Sample Custodian: Victor Hernandez

NOTE: EXPLAIN ALL DISCREPANCIES

1. Samples Hand Delivered or Shipped?	Carrier FedEx		Airbill # 7900 4026 0789
2. Custody Seals on coolers or shipping containers intact, signed & dated?	☑ Yes	☐ No	☐ No Seals
3. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	*Comments:*
4. All expected paperwork received (coc & other client specific information) sealed in plactic bag and easily accessible?	☑ Yes	☐ No	
5. Samples received cooled or ambient?	Temp 4.3°	°C	Cooler # SAWS-029
How was the temperature taken?	☑ IR	☐ Temp. Blank	☐ Other (Specify):
Is the Temp. Criteria met for these samples? (Hg in soils @ 4°C)	☑ Yes	☐ No	
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ No Seals
7. COC (Client & LvLI) signed & dated?	☑ Yes	☐ No	
8. Sample containers are intact?	☑ Yes	☐ No	
9. All samples on COC received? All samples received on COC?	☑ Yes ☑ Yes	☐ No ☐ No	
10. All sample label information matches COC?	☑ Yes	☐ No	
11. Samples properly preserved? (If #5 is no, then this is no.)	☑ Yes	☐ No	
12. Samples received within hold times? Short holds taken to wet lab?	☑ Yes ☐ Yes	☐ No ☐ No	 ☑ N/A
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 that do not meet the policy, which is on the reverse of this page.)	☑ Yes	☐ No	
16. Project Manager contacted concerning any discrepancies?	☐ Yes	☐ No	☑ N/A
Person Contacted _____		Date _____	

LVLI LIONVILLE LABORATORIES