

Eberline Services
W.O. No. R1-07-104-7042

Bechtel Hanford Inc.
SDG H1430

Case Narrative

Page 1 of 1

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1430 was composed of one water sample designated under SAF No. B01-059 with a Project Designation of: 200-TW-1 & 2 – QC Sampling.

The sample was received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion
Melissa C. Mannion
Program Manager

9/5/01
Date

RECEIVED
FEB 06 2002
EDMC

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H1430

SDG 7042
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1430

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B12BW6	B-38/200E	WATER		R107104-01	B01-059	B01-059-02	07/18/01 22:30
Method Blank		WATER		R107104-03	B01-059		
Lab Control Sample		WATER		R107104-02	B01-059		
Duplicate (R107104-01)	B-38/200E	WATER		R107104-04	B01-059		07/18/01 22:30

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 09/05/01

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H1430

SDG 7042
 Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H1430

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7042	B01-059-02	B12BW6	WATER		2.0 L		07/20/01	2	R107104-01	7042-001
		Method Blank	WATER						R107104-03	7042-003
		Lab Control Sample	WATER						R107104-02	7042-002
		Duplicate (R107104-01)	WATER		2.0 L		07/20/01	2	R107104-04	7042-004

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-QS
 Version 3.06
 Report date 09/05/01

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H1430

SDG 7042
 Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
 Contract No. 630
 Case no SDG H1430

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED				QUALI- FIERS	
			BATCH	2σ %	CLIENT	MORE	RE	BLANK		LCS
Gas Proportional Counting										
93A	WATER	Gross Alpha in Water	6994-146	20.0	1			1	1	1/1
93B	WATER	Gross Beta in Water	6994-146	15.0	1			1	1	1/1

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
 Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-PBS
 Version 3.06
 Report date 09/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1430

SDG 7042
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1430

CLIENT SAMPLE ID LOCATION CUSTODY	SAF No	MATRIX	LAB SAMPLE ID COLLECTED RECEIVED	PLANCHET	TEST	SUF- FIX	ANALYZED	REVIEWED	BY	METHOD
B12BW6 B-38/200E B01-059-02	B01-059	WATER	R107104-01 07/18/01 07/20/01	7042-001 7042-001	93A/93 93B/93		08/27/01 08/27/01	09/05/01 09/05/01	MCM MCM	Gross Alpha in Water Gross Beta in Water
Method Blank	B01-059	WATER	R107104-03 07/20/01	7042-003 7042-003	93A/93 93B/93		08/27/01 08/27/01	09/05/01 09/05/01	MCM MCM	Gross Alpha in Water Gross Beta in Water
Lab Control Sample	B01-059	WATER	R107104-02 07/20/01	7042-002 7042-002	93A/93 93B/93		08/30/01 08/30/01	09/05/01 09/05/01	MCM MCM	Gross Alpha in Water Gross Beta in Water
Duplicate (R107104-01) B-38/200E	B01-059	WATER	R107104-04 07/18/01 07/20/01	7042-004 7042-004	93A/93 93B/93		08/29/01 08/29/01	09/05/01 09/05/01	MCM MCM	Gross Alpha in Water Gross Beta in Water

COUNTS OF TESTS BY SAMPLE TYPE											
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
93A/93	B01-059	Gross Alpha in Water	900.0_ALPHABETA_GPC	1			1	1	1		4
93B/93	B01-059	Gross Beta in Water	900.0_ALPHABETA_GPC	1			1	1	1		4
TOTALS				2			2	2	2		8

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 09/05/01

EBERLINE SERVICES / RICHMOND
 SAMPLE DELIVERY GROUP H1430

R107104-03

Method Blank

METHOD BLANK

SDG <u>7042</u>	Client/Case no <u>Hanford</u>	<u>SDG H1430</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R107104-03</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7042-003</u>	Material/Matrix _____	<u>WATER</u>
	SAF No <u>B01-059</u>	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.316	0.68	1.3	3.0	U	93A
Gross Beta	12587-47-2	0.145	1.7	2.9	4.0	U	93B

200-TW-1 & 2 - QC Sampling

QC-BLANK #39480

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>09/05/01</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1430

R107104-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7042</u>	Client/Case no <u>Hanford</u>	<u>SDG H1430</u>
Contact <u>Melissa C. Mannion</u>	Case no <u>No. 630</u>	
Lab sample id <u>R107104-02</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7042-002</u>	Material/Matrix <u>WATER</u>	
	SAF No <u>B01-059</u>	

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	33.1	3.4	1.2	3.0		93A	35.0	1.4	95	68-132	70-130
Gross Beta	80.1	3.8	2.6	4.0		93B	80.3	3.2	100	76-124	70-130

200-TW-1 & 2 - QC Sampling

QC-LCS #39479

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>09/05/01</u>

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H1430

R107104-04

B12BW6

DUPLICATE

SDG <u>7042</u> Contact <u>Melissa C. Mannion</u> DUPLICATE Lab sample id <u>R107104-04</u> Dept sample id <u>7042-004</u>	ORIGINAL Lab sample id <u>R107104-01</u> Dept sample id <u>7042-001</u> Received <u>07/20/01</u>	Client/Case no <u>Hanford</u> <u>SDG H1430</u> Case no <u>No. 630</u> Client sample id <u>B12BW6</u> Location/Matrix <u>B-38/200E</u> <u>WATER</u> Collected/Volume <u>07/18/01 22:30</u> <u>2.0 L</u> Custody/SAF No <u>B01-059-02</u> <u>B01-059</u>
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ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI- FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	0.276	0.60	0.93	3.0	U	93A	-0.078	0.37	0.78	U	-	
Gross Beta	-0.051	1.3	2.2	4.0	U	93B	0.258	1.1	1.8	U	-	

200-TW-1 & 2 - QC Sampling

QC-DUP#1 39481

EBERLINE SERVICES / RICHMOND
 SAMPLE DELIVERY GROUP H1430

R107104-01

B12BW6

DATA SHEET

SDG <u>7042</u>	Client/Case no <u>Hanford</u>	<u>SDG H1430</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R107104-01</u>	Client sample id <u>B12BW6</u>	
Dept sample id <u>7042-001</u>	Location/Matrix <u>B-38/200E</u>	<u>WATER</u>
Received <u>07/20/01</u>	Collected/Volume <u>07/18/01 22:30</u>	<u>2.0 L</u>
	Custody/SAF No <u>B01-059-02</u>	<u>B01-059</u>

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	-0.078	0.37	0.78	3.0	U	93A
Gross Beta	12587-47-2	0.258	1.1	1.8	4.0	U	93B

200-TW-1 & 2 - QC Sampling

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>09/05/01</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1430

METHOD SUMMARY

GROSS ALPHA IN WATER

GAS PROPORTIONAL COUNTING

Test 93A Matrix WATER
 SDG 7042
 Contact Melissa C. Mannion

Client Hanford
 Contract No. 630
 Contract SDG H1430

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Gross Alpha
Preparation batch 6994-146					
B12BW6	R107104-01	93		7042-001	U
BLK (QC ID=39480)	R107104-03	93		7042-003	U
LCS (QC ID=39479)	R107104-02	93		7042-002	ok
Duplicate (R107104-01)	R107104-04	93		7042-004	- U
Nominal values and limits from method		RDIs (pCi/L)		3.0	
200-TW-1 & 2 - QC Sampling					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 6994-146 2σ prep error 20.0 % Reference Lab Notebook 6994 pg. 146															
B12BW6	R107104-01	93		0.78	0.300			7	100				40	08/22/01	08/27 GRB-101
BLK (QC ID=39480)	R107104-03	93		1.3	0.300			20	100					08/22/01	08/27 GRB-105
LCS (QC ID=39479)	R107104-02	93		1.2	0.300			21	100					08/22/01	08/30 GRB-115
Duplicate (R107104-01)	R107104-04	93		0.93	0.300			7	100				42	08/22/01	08/29 GRB-102
(QC ID=39481)															
Nominal values and limits from method				3.0	0.300			5-250	100				180		

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
CP-060	Soil Preparation, rev 3	
CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4	
CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 3	

AVERAGES ± 2 SD	MDA	<u>1.1</u>	±	<u>0.48</u>
FOR 4 SAMPLES	RESIDUE	<u>14</u>	±	<u>16</u>

METHOD SUMMARIES

Page 1

SUMMARY DATA SECTION

Page 11

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CMS
 Version 3.06
 Report date 09/05/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1430

METHOD SUMMARY

GROSS BETA IN WATER
GAS PROPORTIONAL COUNTING

Test 93B Matrix WATER
SDG 7042
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Contract SDG H1430

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Gross Beta
Preparation batch 6994-146					
B12BW6	R107104-01	93		7042-001	U
BLK (QC ID=39480)	R107104-03	93		7042-003	U
LCS (QC ID=39479)	R107104-02	93		7042-002	ok
Duplicate (R107104-01)	R107104-04	93		7042-004	- U
Nominal values and limits from method		RDLs (pCi/L)		4.0	
200-TW-1 & 2 - QC Sampling					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU- TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- YZED	DETECTOR
Preparation batch 6994-146 2σ prep error 15.0 % Reference Lab Notebook 6994 pg. 146															
B12BW6	R107104-01	93		1.8	0.300			7	100			40	08/22/01	08/27	GRB-101
BLK (QC ID=39480)	R107104-03	93		2.9	0.300			20	100				08/22/01	08/27	GRB-105
LCS (QC ID=39479)	R107104-02	93		2.6	0.300			21	100				08/22/01	08/30	GRB-115
Duplicate (R107104-01)	R107104-04	93		2.2	0.300			7	100			42	08/22/01	08/29	GRB-102
(QC ID=39481)															
Nominal values and limits from method				4.0	0.300	5-250		100	180						

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
 CP-060 Soil Preparation, rev 3
 CP-070 Soil Dissolution, < 1.0g Aliquot, rev 4
 CP-170 Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 3

AVERAGES ± 2 SD MDA 2.4 ± 0.96
 FOR 4 SAMPLES RESIDUE 14 ± 16

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CMS
 Version 3.06
 Report date 09/05/01

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					B01-059-02		Page 1 of 1			
Collector Thomas, G/Watson, D.		Company Contact Todd, M.			Telephone No. (509)372-9631		Project Coordinator TRENT, SJ		Price Code 7N Data Turnaround 45 Days			
Project Designation 200-TW-1 & 2 - QC Sampling		Sampling Location B-38/200E			H1430 (7042)		SAF No. B01-059		Air Quality <input type="checkbox"/>			
Ice Chest No. ERC 99-010		Field Logbook No. EL-1518		COA B20TW2674C B20TW1674E DT 07/18/01		Method of Shipment Fed Ex		Bill of Lading/Air Bill No. 423579545903				
Shipped To TMA/RECRA		Offsite Property No. A010271										
POSSIBLE SAMPLE HAZARDS/REMARKS Samples did not originate in radiological controlled area. No total activity associated with sample/samples. <i>DT 7/19/01</i> Special Handling and/or Storage				Preservation		Cool 4C	H2SO4 to pH < 2 Cool 4C	HNO3 to pH < 2	Cool 4C	HNO3 to pH < 2	HCl or H2SO4 to pH < 2 Con	
				Type of Container		aG	aG	aG	aG	aG	aG*	
				No. of Container(s)		1	1	1	2	2	3	
				Volume		500mL	500mL	500mL	1000mL	1000mL	40mL	
SAMPLE ANALYSIS				See item (1) in Special Instructions.	Ammonia - 350.3; NO2/NO3 - 352.1; TOC - 9060	See item (2) in Special Instructions.	Semi-VOA - 8270A (Add-On) (Tributyl phosphate)	Gross Alpha; Gross Beta	VOA - 8260A (TCL)			
				Sample No.	Matrix *	Sample Date	Sample Time					
B12BW6	WATER	07/18/01	2230					X	X DT 07/18/01			
CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *				
Relinquished By Greg Thomas / Amy Thomas		Date/Time 07/18/01		Received By Stord m		Date/Time 07/18/01		(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate) (2) ICP Metals - 6010A (TAL) (Cadmium, Chromium, Copper, Nickel, Silver); ICP Metals - 6010A (Add-on) (Lead) Samples stored in Ref.# 3B at the 3728 Shipping Facility on 7/18/01. Collector not available to relequish samples on 7/19/01 for shipment.				
Relinquished By REF 3B		Date/Time 71901 1000		Received By SJOALE M/AL		Date/Time 71901 1000						
Relinquished By SJOALE M/AL		Date/Time 71901 1000		Received By FED EX		Date/Time 7-19-01						
Relinquished By Fed EX		Date/Time 7-20-01 1000		Received By James Lind James Lind		Date/Time 7-20-01 1000						
Relinquished By		Date/Time		Received By		Date/Time						
Relinquished By		Date/Time		Received By		Date/Time		B-Soil SE-Sediment SO-Solid S-Slags W - Water O-Oil A-Air DS-Drum Solids DL-Drum Liquids T-Tissue WI-Wipe L-Liquid V-Vegetative X-Other				
LABORATORY SECTION		Received By		Title		Date/Time						
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time						

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 7-20-01 1000
 CoC No. B01-058-20Z, B01-059-02
 Container I.D. No. ERC 99-010 Requested TAT (Days) 45 P.O. Received Yes [] No []

INSPECTION

1. Custody seals on shipping container intact? Yes [] No [] N/A []
2. Custody seals on shipping container dated & signed? Yes [] No [] N/A []
3. Custody seals on sample containers intact? Yes [] No [] N/A []
4. Custody seals on sample containers dated & signed? Yes [] No [] N/A []
5. Cooler Temperature: _____ Packing material is: Wet [] Dry []
6. Number of samples in shipping container: 2 7-20-01
7. Number of containers per sample: 1 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [] No []
9. Samples have: Tape [] Hazard labels [] Rad labels [] Appropriate sample labels []
10. Samples are: In good condition [] Leaking [] Broken Container [] Missing []
11. Describe any anomalies: Sample B12B06 Has two Containers

13. Was P.M. notified of any anomalies? Yes [] No [] Date _____
 14. Received by James Lind Date: 7-20-01 Time: 1000

Customer Sample No.	cpm	mr/hr	Customer Sample No.	Cpm	mr/hr

Ion Chamber Ser. No. _____

Calibration date _____

Survey Meter Ser No. _____

Calibration date _____

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD B01-059 H1430



DATE RECEIVED: 07/20/01

LVL LOT # :0107L378

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12BW6						
CHLORIDE BY IC	001	W	01LIC048	07/18/01	07/24/01	07/24/01
CHLORIDE BY IC	001 REP	W	01LIC048	07/18/01	07/24/01	07/24/01
CHLORIDE BY IC	001 MS	W	01LIC048	07/18/01	07/24/01	07/24/01
FLUORIDE BY IC	001	W	01LIC048	07/18/01	07/24/01	07/24/01
FLUORIDE BY IC	001 REP	W	01LIC048	07/18/01	07/24/01	07/24/01
FLUORIDE BY IC	001 MS	W	01LIC048	07/18/01	07/24/01	07/24/01
NITRITE BY IC	001	W	01LICB48	07/18/01	07/24/01	07/24/01
NITRITE BY IC	001 REP	W	01LICB48	07/18/01	07/24/01	07/24/01
NITRITE BY IC	001 MS	W	01LICB48	07/18/01	07/24/01	07/24/01
NITRATE BY IC	001	W	01LICA48	07/18/01	07/24/01	07/24/01
NITRATE BY IC	001 REP	W	01LICA48	07/18/01	07/24/01	07/24/01
NITRATE BY IC	001 MS	W	01LICA48	07/18/01	07/24/01	07/24/01
PHOSPHATE BY IC	001	W	01LICB48	07/18/01	07/24/01	07/24/01
PHOSPHATE BY IC	001 REP	W	01LICB48	07/18/01	07/24/01	07/24/01
PHOSPHATE BY IC	001 MS	W	01LICB48	07/18/01	07/24/01	07/24/01
SULFATE BY IC	001	W	01LIC048	07/18/01	07/24/01	07/24/01
SULFATE BY IC	001 REP	W	01LIC048	07/18/01	07/24/01	07/24/01
SULFATE BY IC	001 MS	W	01LIC048	07/18/01	07/24/01	07/24/01
NITRATE NITRITE	001	W	01LN3A40	07/18/01	07/26/01	07/26/01
NITRATE NITRITE	001 REP	W	01LN3A40	07/18/01	07/26/01	07/26/01
NITRATE NITRITE	001 MS	W	01LN3A40	07/18/01	07/26/01	07/26/01
AMMONIA	001	W	01LAMA38	07/18/01	07/30/01	07/31/01
AMMONIA	001 REP	W	01LAMA38	07/18/01	07/30/01	07/31/01
AMMONIA	001 MS	W	01LAMA38	07/18/01	07/30/01	07/31/01
TOTAL ORGANIC CARBON	001	W	01LTC039	07/18/01	08/02/01	08/02/01
TOTAL ORGANIC CARBON	001 REP	W	01LTC039	07/18/01	08/02/01	08/02/01
TOTAL ORGANIC CARBON	001 MS	W	01LTC039	07/18/01	08/02/01	08/02/01

LAB QC:

CHLORIDE BY IC	MB1	W	01LIC048	N/A	07/24/01	07/24/01
CHLORIDE BY IC	MB1 BS	W	01LIC048	N/A	07/24/01	07/24/01
FLUORIDE BY IC	MB1	W	01LIC048	N/A	07/24/01	07/24/01
FLUORIDE BY IC	MB1 BS	W	01LIC048	N/A	07/24/01	07/24/01
NITRITE BY IC	MB1	W	01LICB48	N/A	07/24/01	07/24/01

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD B01-059 H1430

DATE RECEIVED: 07/20/01

LVL LOT # :0107L370

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRITE BY IC	MB1 BS	W	01LICB48	N/A	07/24/01	07/24/01
NITRATE BY IC	MB1	W	01LICA48	N/A	07/24/01	07/24/01
NITRATE BY IC	MB1 BS	W	01LICA48	N/A	07/24/01	07/24/01
PHOSPHATE BY IC	MB1	W	01LICB48	N/A	07/24/01	07/24/01
PHOSPHATE BY IC	MB1 BS	W	01LICB48	N/A	07/24/01	07/24/01
SULFATE BY IC	MB1	W	01LIC048	N/A	07/24/01	07/24/01
SULFATE BY IC	MB1 BS	W	01LIC048	N/A	07/24/01	07/24/01
NITRATE NITRITE	MB1	W	01LN3A40	N/A	07/26/01	07/26/01
NITRATE NITRITE	MB1 BS	W	01LN3A40	N/A	07/26/01	07/26/01
AMMONIA	MB1	W	01LAMA38	N/A	07/30/01	07/31/01
AMMONIA	MB1 BS	W	01LAMA38	N/A	07/30/01	07/31/01
AMMONIA	MB1 BSD	W	01LAMA38	N/A	07/30/01	07/31/01
TOTAL ORGANIC CARBON	MB1	W	01LTC039	N/A	08/02/01	08/02/01
TOTAL ORGANIC CARBON	MB1 BS	W	01LTC039	N/A	08/02/01	08/02/01



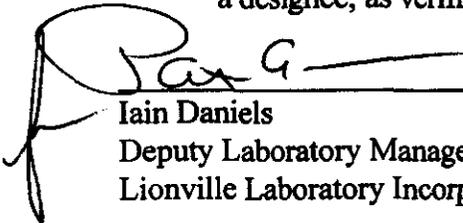
Analytical Report

Client: TNU-HANFORD B01-059 H1430
LVL#: 0107L370

W.O.#: 11343-606-001-9999-00
Date Received: 07-20-01

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 water 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 with the exception of Nitrate, Nitrite and Phosphate.
4. The cooler temperature was recorded on the chain of custody.
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 Ammonia was within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike recoveries were within the 75-125% control limits.
8. The replicate analyses were within the 20% 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.


Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

08-16-01
Date

njpl07-370

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 14 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	<u>EPA /600</u>	<u>SW846</u>	<u>OTHER</u>
Acidity	305.1		
___ Alkalinity ___ Bicarbonate ___ Carbonate	310.1		
BOD	405.1		___ 5210B (b)
Ion Chromatography:			
<input checked="" type="checkbox"/> Bromide <input checked="" type="checkbox"/> Chloride <input checked="" type="checkbox"/> Fluoride	<input checked="" type="checkbox"/> 300.0	___ 9056	
<input checked="" type="checkbox"/> Nitrate <input checked="" type="checkbox"/> Nitrite <input checked="" type="checkbox"/> Phosphate	<input checked="" type="checkbox"/> 300.0	___ 9056	
<input checked="" type="checkbox"/> Sulfate ___ Formate ___ Acetate ___ Oxalate	<input checked="" type="checkbox"/> 300.0	___ 9056	
Chloride	325.2	___ 9251	
Chlorine, 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		
<input checked="" type="checkbox"/> Nitrate-Nitrite ___ Nitrate ___ Nitrite	<input checked="" type="checkbox"/> 353.2		
Ammonia	350.3		
Total ___ Kjeldahl ___ Organic Nitrogen	351.3		
Total <input checked="" type="checkbox"/> Organic ___ Inorganic Carbon	415.1	<input checked="" type="checkbox"/> 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

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 08/03/01

CLIENT: TNUHANFORD B01-059 H1430
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0107L370

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12BW6	Chloride by IC	0.29	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	0.36	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.28	MG/L	0.25	1.0
		Nitrate Nitrite	0.21	MG/L	0.020	1.0
		Ammonia, as N	0.10 u	MG/L	0.10	1.0
		Total Organic Carbon	0.50 u	MG/L	0.50	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 08/03/01

CLIENT: TNUHANFORD B01-059 H1430
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0107L370

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
BLANK10	01LICO48-MB1	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	01LICB48-MB1	Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	01LICA48-MB1	Nitrate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	01LN3A40-MB1	Nitrate Nitrite	0.020u	MG/L	0.020	1.0
BLANK10	01LAMA38-MB1	Ammonia, as N	0.10 u	MG/L	0.10	1.0
BLANK10	01LTC039-MB1	Total Organic Carbon	0.50 u	MG/L	0.50	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 08/03/01

CLIENT: TNUHANFORD B01-059 H1430
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0107L370

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B12BW6	Chloride by IC	5.4	0.29	5.0	102.5	1.0
		Fluoride by IC	11.0	0.00	10.0	110.1	1.0
		Nitrite by IC	5.21	0.25u	5.00	104.3	1.0
		Nitrate by IC	5.28	0.36	5.00	98.3	1.0
		Phosphate by IC	5.0	0.25u	5.0	100.7	1.0
		Sulfate by IC	5.1	0.28	5.0	97.1	1.0
		Nitrate Nitrite	0.70	0.21	0.50	97.8	1.0
		Ammonia, as N	2.0	0.10u	2.0	98.5	1.0
		Total Organic Carbon	6.1	0.48	5.0	112.1	1.0
BLANK10	01LIC048-MB1	Chloride by IC	4.7	0.25u	5.0	93.2	1.0
		Fluoride by IC	11.0	0.25u	10.0	109.7	1.0
		Sulfate by IC	4.8	0.25u	5.0	96.5	1.0
BLANK10	01LICB48-MB1	Nitrite by IC	4.77	0.25u	5.00	95.3	1.0
		Phosphate by IC	5.2	0.25u	5.0	104.0	1.0
BLANK10	01LYCA48-MB1	Nitrate by IC	4.97	0.25u	5.00	99.4	1.0
BLANK10	01LN3A40-MB1	Nitrate Nitrite	0.49	0.02u	0.50	98.6	1.0
BLANK10	01LAMA38-MB1	Ammonia, as N	1.9	0.10u	2.0	95.0	1.0
		Ammonia, as N MSD	2.1	0.10u	2.0	103.5	1.0
BLANK10	01LTC039-MB1	Total Organic Carbon	5.2	0.50u	5.0	104.9	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 08/03/01

CLIENT: TNUHANFORD B01-059 H1430
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0107L370

SAMPLE	SITE ID	ANALYTE	SPIKE#1 SPIKE#2		%DIFF
			%RECOV	%RECOV	
BLANK10	01LAMA38-MB1	Ammonia, as N	95.0	103.5	8.6

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 08/03/01

CLIENT: TNUHANFORD B01-059 H1430
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0107L370

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE RPD		DILUTION FACTOR (REP)
-----	-----	-----	-----	-----	-----	-----
-001REP	B12BW6	Chloride by IC	0.29	0.30	4.1	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	0.36	0.36	0.00	1.0
		Phosphate by IC	0.25u	0.25u	NC	1.0
		Sulfate by IC	0.28	0.26	7.5	1.0
		Nitrate Nitrite	0.21	0.21	0.47	1.0
		Ammonia, as N	0.10u	0.10u	NC	1.0
		Total Organic Carbon	0.50u	0.51	NC	1.0

Collector Thomas, G/Watson, D.	Company Contact Todd, M.	Telephone No. (509)372-9631	Project Coordinator TRENT, SJ	Price Code 7N	Data Turnaround 45 Days
Project Designation 200-TW-1 & 2 - QC Sampling	Sampling Location B-38/ 200E	SAF No. B01-059	Air Quality <input type="checkbox"/>		
Ice Chest No. ERC 99 056	Field Logbook No. EL-1518	COA # 07/18/01 B20TW1674E B26TW 2 6746	Method of Shipment Fed Ex		
Shipped To TMA/RECRA	Offsite Property No. A 010317	Bill of Lading/Air Bill No. 423579545914			

POSSIBLE SAMPLE HAZARDS/REMARKS Samples did not originate in radiological controlled area. No total activity associated with sample/samples. <i>ST 7/18/01</i> Special Handling and/or Storage	Preservation	Cool 4C	H2SO4 to pH < 2 Cool 4C	HNO3 to pH < 2	Cool 4C	HNO3 to pH < 2	HCl or H2SO4 to pH < 2 Cool						
	Type of Container	uG	uG	uG	uG	uG	uGs*						
	No. of Container(s)	1	1	1	2	2	3						
	Volume	500mL	500mL	500mL	1000mL	1000mL	40mL						

SAMPLE ANALYSIS				See item (1) in Special Instructions.	Ammonia - 350.3; NO2/NO3 - 353.1; TOC - 9060	See item (2) in Special Instructions.	Semi-VDA - E270A (Add-On) (Tributyl phosphate)	Gross Alpha; Gross Beta	VDA - E260A (TCL)				
------------------------	--	--	--	---------------------------------------	--	---------------------------------------	--	-------------------------	-------------------	--	--	--	--

Sample No.	Matrix *	Sample Date	Sample Time										
B12BW6	WATER	07/18/01	2230	X	X	X	X		Y				

CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix * S=Soil SE=Sediment SO=Solid S=Sledge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Filter WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By <i>Greg Thomas</i>	Date/Time 2345 07/18/01	Received By <i>Stord in</i>	Date/Time 2345 07/18/01	(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate) (2) ICP Metals - 6010A (TAL) (Cadmium, Chromium, Copper, Nickel, Silver); ICP Metals - 6010A (Add-on) (Lead) Samples stored in Ref.# <u>3B</u> at the 3728 Shipping Facility on <u>7/18/01</u> . Collector not available to relenquish samples on <u>7/19/01</u> for shipment.				
Relinquished By <i>REF 3B</i>	Date/Time 71901 1000	Received By <i>SJGALE</i>	Date/Time 71901 1000					
Relinquished By <i>SJGALE</i>	Date/Time 71901 1000	Received By <i>FED EX</i>	Date/Time					
Relinquished By <i>FED EX</i>	Date/Time 7-20-01 9:05	Received By <i>Calis</i>	Date/Time 7-20-01 9:05					
Relinquished By	Date/Time	Received By	Date/Time					
Relinquished By	Date/Time	Received By	Date/Time					

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

Collector Thomas, G/Watson, D.	Company Contact Todd, M.	Telephone No. (509)372-9631	Project Coordinator TRENT, SJ	Price Code 7N	Data Turnaround 45 Days
Project Designation 200-TW-1 & 2 - QC Sampling	Sampling Location T-26/200 W	SAF No. B01-059	Air Quality <input type="checkbox"/>		
Ice Chest No. ERC 99-058	Field Logbook No. EL-1518	COA B20TW1A44C	Method of Shipment Fed Ex		
Shipped To MDEL 71901 TMA/RECRA	Offsite Property No. A010317	Bill of Lading/Air Bill No. 42357954 5914			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	COOL UC HCl or H2SO4 to pH < 2 Cool	DSW 07-18-01																
	Type of Container	4Gs+																	
	No. of Container(s)	3																	
	Volume	40mL																	
SPECIAL HANDLING and/or STORAGE																			
SAMPLE ANALYSIS			VOA - 8360A (TCL)																

Sample No.	Matrix *	Sample Date	Sample Time																
B12CV6	WATER	07/18/01	0600	X															

CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS		Matrix *		
Relinquished By/Removed From D. WATSON	Date/Time 07/18/01 0805	Received By/Stored In REF 1A	Date/Time 07/18/01 0805	Samples stored in Ref.#1A at the 3728 Shipping Facility on 7/18/01. Collector not available to relinquish samples on 7/19/01 for shipment. AK				B=Soil SB=Soilment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Time WF=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From REF 1A	Date/Time 71901 1000	Received By/Stored In SIGALE	Date/Time 71901 1000					
Relinquished By/Removed From SIGALE	Date/Time 71901 1000	Received By/Stored In FED EX	Date/Time					
Relinquished By/Removed From FED EX	Date/Time 7-20-01 9:05	Received By/Stored In Calvin Henry	Date/Time 9-20-01 9:05					
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

Figure 1. Sample Check-in List

Date/Time Received: 7-20-01 9:05

SDG#: 01076370

Work Order Number: _____ SAF# B01-059

Shipping Container ID: 4235 7954 5914 Chain of Custody # B01-059-02

- 1. Custody Seals on shipping container intact? Yes No
- 2. Custody Seals dated and signed? Yes No
- 3. Chain-of-Custody record present? Yes No
- 4. Cooler temperature 3°
- 5. Vermiculite/packing materials is Wet Dry
- 6. Number of samples in shipping container: 16
- 7. Sample holding times exceeded? Yes No

8. Samples have: <input type="checkbox"/> tape <input type="checkbox"/> hazard labels <input checked="" type="checkbox"/> custody seals <input type="checkbox"/> appropriate sample labels
9. Samples are: <input checked="" type="checkbox"/> in good condition <input type="checkbox"/> leaking <input type="checkbox"/> broken <input type="checkbox"/> have air bubbles

10. Were any anomalies identified in sample receipt? Yes No

11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: Carlo Henry Date: 7-20-01

Telephoned to: _____ On _____ By _____



Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD B01-059 H1430

DATE RECEIVED: 07/20/01

LVL LOT # :0107L370

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12BW6						
SILVER, TOTAL	001	W	01L0459	07/18/01	07/25/01	07/30/01
SILVER, TOTAL	001 REP	W	01L0459	07/18/01	07/25/01	07/30/01
SILVER, TOTAL	001 MS	W	01L0459	07/18/01	07/25/01	07/30/01
CADMIUM, TOTAL	001	W	01L0459	07/18/01	07/25/01	07/30/01
CADMIUM, TOTAL	001 REP	W	01L0459	07/18/01	07/25/01	07/30/01
CADMIUM, TOTAL	001 MS	W	01L0459	07/18/01	07/25/01	07/30/01
CHROMIUM, TOTAL	001	W	01L0459	07/18/01	07/25/01	07/30/01
CHROMIUM, TOTAL	001 REP	W	01L0459	07/18/01	07/25/01	07/30/01
CHROMIUM, TOTAL	001 MS	W	01L0459	07/18/01	07/25/01	07/30/01
COPPER, TOTAL	001	W	01L0459	07/18/01	07/25/01	07/30/01
COPPER, TOTAL	001 REP	W	01L0459	07/18/01	07/25/01	07/30/01
COPPER, TOTAL	001 MS	W	01L0459	07/18/01	07/25/01	07/30/01
NICKEL, TOTAL	001	W	01L0459	07/18/01	07/25/01	07/30/01
NICKEL, TOTAL	001 REP	W	01L0459	07/18/01	07/25/01	07/30/01
NICKEL, TOTAL	001 MS	W	01L0459	07/18/01	07/25/01	07/30/01
LEAD, TOTAL	001	W	01L0459	07/18/01	07/25/01	07/30/01
LEAD, TOTAL	001 REP	W	01L0459	07/18/01	07/25/01	07/30/01
LEAD, TOTAL	001 MS	W	01L0459	07/18/01	07/25/01	07/30/01

LAB QC:

SILVER LABORATORY	LC1 BS	W	01L0459	N/A	07/25/01	07/30/01
SILVER, TOTAL	MB1	W	01L0459	N/A	07/25/01	07/30/01
CADMIUM LABORATORY	LC1 BS	W	01L0459	N/A	07/25/01	07/30/01
CADMIUM, TOTAL	MB1	W	01L0459	N/A	07/25/01	07/30/01
CHROMIUM LABORATORY	LC1 BS	W	01L0459	N/A	07/25/01	07/30/01
CHROMIUM, TOTAL	MB1	W	01L0459	N/A	07/25/01	07/30/01
COPPER LABORATORY	LC1 BS	W	01L0459	N/A	07/25/01	07/30/01
COPPER, TOTAL	MB1	W	01L0459	N/A	07/25/01	07/30/01
NICKEL LABORATORY	LC1 BS	W	01L0459	N/A	07/25/01	07/30/01
NICKEL, TOTAL	MB1	W	01L0459	N/A	07/25/01	07/30/01
LEAD LABORATORY	LC1 BS	W	01L0459	N/A	07/25/01	07/30/01
LEAD, TOTAL	MB1	W	01L0459	N/A	07/25/01	07/30/01



Analytical Report

Client: TNU-HANFORD B01-059
LVL#: 0107L370
SDG/SAF#: H1430/B01-059

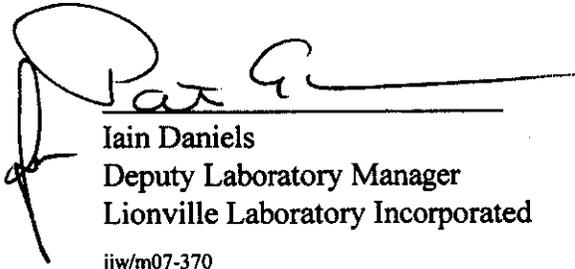
W.O.#: 11343-606-001-9999-00
Date Received: 07-20-01

METALS CASE NARRATIVE

1. This narrative covers the analyses of 1 water sample.
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. The cooler temperature has been recorded on the Chain of Custody.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were 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. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. The duplicate analyses for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
12. 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 12 pages.

13. 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
Deputy Laboratory Manager
Lionville Laboratory Incorporated
jjw/m07-370

07-31-01
Date

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 0107L370

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 ⁵	<input type="checkbox"/> 200.7 <input type="checkbox"/> 204.2			<input type="checkbox"/> 99
Arsenic	<input type="checkbox"/> 6010B <input type="checkbox"/> 7060A ⁵	<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 ¹	<input type="checkbox"/> 200.7 ¹		<input type="checkbox"/> 1620	<input type="checkbox"/> 99
Boron	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Cadmium	<input checked="" type="checkbox"/> 6010B <input type="checkbox"/> 7131A ⁵	<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 checked="" type="checkbox"/> 6010B <input type="checkbox"/> 7191 ⁵	<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 checked="" type="checkbox"/> 6010B <input type="checkbox"/> 7211 ⁵	<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 checked="" type="checkbox"/> 6010B <input type="checkbox"/> 7421 ⁵	<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 ⁴	<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 ³ <input type="checkbox"/> 7471A ³	<input type="checkbox"/> 245.1 ² <input type="checkbox"/> 245.5 ²			<input type="checkbox"/> 99
Molybdenum	<input type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Nickel	<input checked="" type="checkbox"/> 6010B	<input type="checkbox"/> 200.7			<input type="checkbox"/> 99
Potassium	<input type="checkbox"/> 6010B <input type="checkbox"/> 7610 ⁴	<input type="checkbox"/> 200.7 <input type="checkbox"/> 258.1 ⁴			<input type="checkbox"/> 99
Rare Earths	<input type="checkbox"/> 6010B ¹	<input type="checkbox"/> 200.7 ¹		<input type="checkbox"/> 1620	<input type="checkbox"/> 99
Selenium	<input type="checkbox"/> 6010B <input type="checkbox"/> 7740 ⁵	<input type="checkbox"/> 200.7 <input type="checkbox"/> 270.2	<input type="checkbox"/> 3113B		<input type="checkbox"/> 99
Silicon	<input type="checkbox"/> 6010B ¹	<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 checked="" type="checkbox"/> 6010B <input type="checkbox"/> 7761 ⁵	<input type="checkbox"/> 200.7 <input type="checkbox"/> 272.2			<input type="checkbox"/> 99
Sodium	<input type="checkbox"/> 6010B <input type="checkbox"/> 7770 ⁴	<input type="checkbox"/> 200.7 <input type="checkbox"/> 273.1 ⁴			<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 ⁵	<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 ¹	<input type="checkbox"/> 200.7 ¹		<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 ¹	<input type="checkbox"/> 200.7 ¹		<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, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. 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, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
4. Flame AA.
5. Graphite Furnace AA.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/31/01

CLIENT: TNUHANFORD B01-059 H1430
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0107L370

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12BW6	Silver, Total	2.8	u UG/L	2.8	1.0
		Cadmium, Total	4.3	u UG/L	4.3	1.0
		Chromium, Total	3.9	u UG/L	3.9	1.0
		Copper, Total	2.4	u UG/L	2.4	1.0
		Nickel, Total	11.4	u UG/L	11.4	1.0
		Lead, Total	31.2	u UG/L	31.2	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/31/01

CLIENT: TNUHANFORD B01-059 H1430
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0107L370

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0459-MB1	Silver, Total	2.8	u UG/L	2.8	1.0
		Cadmium, Total	4.3	u UG/L	4.3	1.0
		Chromium, Total	3.9	u UG/L	3.9	1.0
		Copper, Total	2.4	u UG/L	2.4	1.0
		Nickel, Total	11.4	u UG/L	11.4	1.0
		Lead, Total	31.2	u UG/L	31.2	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/31/01

CLIENT: TNUHANFORD B01-059 H1430
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0107L370

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B12BW6	Silver, Total	50.0	2.8 u	50.0	100	1.0
		Cadmium, Total	50.2	4.3 u	50.0	100.4	1.0
		Chromium, Total	210	3.9 u	200	104.9	1.0
		Copper, Total	246	2.4 u	250	98.6	1.0
		Nickel, Total	522	11.4 u	500	104.4	1.0
		Lead, Total	532	31.2 u	500	106.4	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/31/01

CLIENT: TNUHANFORD B01-059 H1430
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0107L370

SAMPLE	SITE ID	ANALYTE	INITIAL		DILUTION
			RESULT	REPLICATE RPD	
-001REP	B12BW6	Silver, Total	2.8 u	2.8 u NC	1.0
		Cadmium, Total	4.3 u	4.3 u NC	1.0
		Chromium, Total	3.9 u	5.4 NC ²⁰⁰	1.0
		Copper, Total	2.4 u	2.4 u NC	1.0
		Nickel, Total	11.4 u	11.4 u NC	1.0
		Lead, Total	31.2 u	31.2 u NC	1.0

Handwritten notes:
 NC 200
 7/31/01

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 07/31/01

CLIENT: TNUHANFORD B01-059 H1430
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0107L370

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	UNITS	%RECOV
			SAMPLE	AMOUNT		
LCS1	01L0459-LC1	Silver, LCS	482	500	UG/L	96.4
		Cadmium, LCS	240	250	UG/L	95.8
		Chromium, LCS	499	500	UG/L	99.7
		Copper, LCS	1210	1250	UG/L	96.4
		Nickel, LCS	2030	2000	UG/L	101.5
		Lead, LCS	2510	2500	UG/L	100.4

Collector Thomas, G/Watson, D.	Company Contact Todd, M.	Telephone No. (509)372-9631	Project Coordinator TRENT, SJ	Price Code 7N	Data Turnaround 45 Days
Project Designation 200-TW-1 & 2 - QC Sampling	Sampling Location B-38/200E	SAF No. B01-059	Air Quality <input type="checkbox"/>		
Ice Chest No. ERC 99056	Field Logbook No. EL-1518	COA <i>BT 07/18/01</i> B20TW1674E B2C1W7 6746	Method of Shipment Fed Ex		
Shipped To TMA/RECRA	Offsite Property No. A 10317	Bill of Lading/Air Bill No. 423579545914			

POSSIBLE SAMPLE HAZARDS/REMARKS Samples did not originate in radiological controlled area. No total activity associated with sample/samples. <i>BT 7/18/01</i> Special Handling and/or Storage	Preservation	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HNO3 to pH <2	HCl or H2SO4 to pH <2 Cool				
	Type of Container	aG	aG	aG	aG	aG	aGs*				
	No. of Container(s)	1	1	1	2	2	3				
	Volume	500mL	500mL	500mL	1000mL	1000mL	40mL				

SAMPLE ANALYSIS				See item (1) in Special Instructions.	Ammonia - 350.3; NO2/NO3 - 353.1; TOC - 9060	See item (2) in Special Instructions.	Semi-VOA - 8270A (Add-On) (Tributyl phosphate)	Gross Alpha; Gross Beta	VOA - 8260A (TCL)				
Sample No.	Matrix *	Sample Date	Sample Time										
B12BW6	WATER	07/18/01	2230	X	X	X	X		X				

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *
Relinquished By <i>Greg Thomas</i>	Date/Time 2345 07/18/01	Received By <i>Stored in</i>	Date/Time 2345 07/18/01	(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate) (2) ICP Metals - 6010A (TAL) (Cadmium, Chromium, Copper, Nickel, Silver); ICP Metals - 6010A (Add-on) (Lead) Samples stored in Ref.# <u>3B</u> at the 3728 Shipping Facility on <u>7/18/01</u> . Collector not available to relinquish samples on <u>7/19/01</u> for shipment.				S=Soil SE=Sediment SO=Solid S=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Trace WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By <i>REF 3B</i>	Date/Time 71901 1000	Received By <i>SJGALE</i>	Date/Time 71901 1000					
Relinquished By <i>SJGALE</i>	Date/Time 71901 1000	Received By <i>FED EX</i>	Date/Time					
Relinquished By <i>FED EX</i>	Date/Time 7-20-01 9:05	Received By <i>Calis Henry</i>	Date/Time 7-20-01 9:05					
Relinquished By	Date/Time	Received By	Date/Time					

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

Collector Thomas, G/Watson, D.	Company Contact Todd, M.	Telephone No. (509)372-9631	Project Coordinator TRENT, SJ	Price Code 7N	Data Turnaround 45 Days
Project Designation 200-TW-1 & 2 - QC Sampling	Sampling Location T-26/200 W	SAF No. B01-059	Air Quality <input type="checkbox"/>		
Ice Chest No. ERC 99-056	Field Logbook No. EL-1518	COA B20TW1A44C	Method of Shipment Fed Ex		
Shipped To MDEL 71901 TMA/RECRA	Offsite Property No. A010317	Bill of Lading/Air Bill No. 42357954 5914			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	COOL UC HCl or H2SO4 to pH < 2, Cool																	
	Type of Container	4Gs*																	
	No. of Container(s)	3																	
	Volume	40mL																	

SPECIAL HANDLING AND/OR STORAGE																			
---------------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

SAMPLE ANALYSIS																			
Sample No.	Matrix *	Sample Date	Sample Time																
B12CV6	WATER	07/18/01	0600	X															

CHAIN OF POSSESSION				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	Samples stored in Ref.#1A at the 3728 Shipping Facility on 7/18/01. Collector not available to relinquish samples on 7/19/01 for shipment.				s=Soil SB=Soilment SO=Solid SL=Sediment W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Time Wp=Wipe L=Liquid V=Vegetation X=Other	
DO WATSON	07/18/01 0805	REF 1A	07/18/01 0805						
REF 1A	7/19/01 1000	SJGALE	7/19/01 1000						
SJGALE	7/19/01 1000	FED EX							
FED EX	7-20-01 9:05	Calvin Hamel	9-20-01 9:05						

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



Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-059 H1430

DATE RECEIVED: 07/20/01

LVL LOT # :0107L370

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12BW6	001	W	01LE0876	07/18/01	07/23/01	07/30/01
B12BW6	001 MS	W	01LE0876	07/18/01	07/23/01	07/30/01
B12BW6	001 MSD	W	01LE0876	07/18/01	07/23/01	07/30/01

LAB QC:

SBLKCT	MB1	W	01LE0876	N/A	07/23/01	07/30/01
SBLKCT	MB1 BS	W	01LE0876	N/A	07/23/01	07/30/01



Analytical Report

Client: TNU-HANFORD B01-059
LVL #: 0107L370
SDG/SAF #: H1430/B01-059

W.O. #: 11343-606-001-9999-00
Date Received: 07-20-01

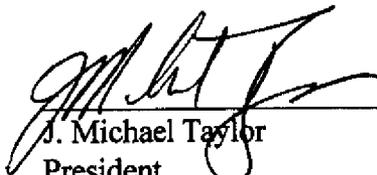
SEMIVOLATILE

One (1) water sample was collected on 07-18-01.

The sample and its associated QC samples were extracted on 07-23-01 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL and Tributylphosphate Semivolatile target compounds on 07-30-01.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The sample was extracted and analyzed within required holding times.
3. Non-target compounds were not detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank contained the common laboratory contaminant Bis(2-Ethylhexyl)phthalate at a level less than the CRQL.
8. Internal standard area and retention time criteria were met.
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 data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.



J. Michael Taylor
President
Lionville Laboratory Incorporated

pef\group\data\bna\tnu-hanford-0107-370.doc

8/9/01
Date

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 8 pages.

Cust ID:	B12BW6	B12BW6	B12BW6	SBLKCT	SBLKCT BS	
RFW#:	001	001 MS	001 MSD	01LE0876-MB1	01LE0876-MB1	
2-Chloronaphthalene	11 U	22 U	22 U	10 U	10 U	
2-Nitroaniline	28 U	56 U	56 U	25 U	25 U	
Dimethylphthalate	11 U	22 U	22 U	10 U	10 U	
Acenaphthylene	11 U	22 U	22 U	10 U	10 U	
2,6-Dinitrotoluene	11 U	22 U	22 U	10 U	10 U	
3-Nitroaniline	28 U	56 U	56 U	25 U	25 U	
Acenaphthene	11 U	70 %	57 %	10 U	66 %	
2,4-Dinitrophenol	28 U	56 U	56 U	25 U	25 U	
4-Nitrophenol	28 U	78 %	65 %	25 U	70 %	
Dibenzofuran	11 U	22 U	22 U	10 U	10 U	
2,4-Dinitrotoluene	11 U	92 %	77 %	10 U	82 %	
Diethylphthalate	11 U	22 U	22 U	10 U	10 U	
4-Chlorophenyl-phenylether	11 U	22 U	22 U	10 U	10 U	
Fluorene	11 U	22 U	22 U	10 U	10 U	
4-Nitroaniline	28 U	56 U	56 U	25 U	25 U	
4,6-Dinitro-2-methylphenol	28 U	56 U	56 U	25 U	25 U	
N-Nitrosodiphenylamine (1)	11 U	22 U	22 U	10 U	10 U	
4-Bromophenyl-phenylether	11 U	22 U	22 U	10 U	10 U	
Hexachlorobenzene	11 U	22 U	22 U	10 U	10 U	
Pentachlorophenol	28 U	84 %	55 %	25 U	75 %	
Phenanthrene	11 U	22 U	22 U	10 U	10 U	
Anthracene	11 U	22 U	22 U	10 U	10 U	
Carbazole	11 U	22 U	22 U	10 U	10 U	
Di-n-Butylphthalate	11 U	2 J	22 U	10 U	10 U	
Fluoranthene	11 U	22 U	22 U	10 U	10 U	
Pyrene	11 U	94 %	80 %	10 U	84 %	
Butylbenzylphthalate	11 U	22 U	22 U	10 U	10 U	
3,3'-Dichlorobenzidine	11 U	22 U	22 U	10 U	10 U	
Benzo(a)anthracene	11 U	22 U	22 U	10 U	10 U	
Chrysene	11 U	22 U	22 U	10 U	10 U	
bis(2-Ethylhexyl)phthalate	4 JB	5 JB	8 JB	5 J	1 JB	
Di-n-Octyl phthalate	11 U	22 U	22 U	10 U	10 U	
Benzo(b)fluoranthene	11 U	22 U	22 U	10 U	10 U	
Benzo(k)fluoranthene	11 U	22 U	22 U	10 U	10 U	
Benzo(a)pyrene	11 U	22 U	22 U	10 U	10 U	
Indeno(1,2,3-cd)pyrene	11 U	22 U	22 U	10 U	10 U	
Dibenzo(a,h)anthracene	11 U	22 U	22 U	10 U	10 U	
Benzo(g,h,i)perylene	11 U	22 U	22 U	10 U	10 U	
Tributylphosphate	11 U	22 U	22 U	10 U	10 U	

04

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

GLOSSARY OF BNA DATA

DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- A** = Indicates that a TIC is a suspected aldol-condensation product.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.

GLOSSARY OF BNA DATA

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Suffix added to sample number to indicate that results are from a diluted analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP, Z** = Indicates Spiked Compound.

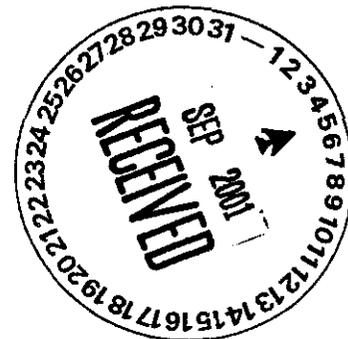
TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quantitation modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quantitation modifications:

- MP** - **Missed Peak:** manually added peak not found by automatic quantitation program.
- PA** - **Peak Assignment:** quantitation report was changed to reflect correct peak assignment.
- RI** - **Routine Integration:** routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP** - **Split Peak:** the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB** - **Coelution/Background:** peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI** - **Proper Integration:** a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

L-WI-035/a-mi-10/00





Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-059 H1430

DATE RECEIVED: 07/20/01

LVL LOT # :0107L370

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12BW6	001	W	01LVX259	07/18/01	N/A	07/25/01
B12BW6	001 MS	W	01LVX259	07/18/01	N/A	07/25/01
B12BW6	001 MSD	W	01LVX259	07/18/01	N/A	07/25/01
B12CV6	002	W	01LVX259	07/18/01	N/A	07/25/01

LAB QC:

VBLKHY	MB1	W	01LVX259	N/A	N/A	07/25/01
VBLKHY	MB1 BS	W	01LVX259	N/A	N/A	07/25/01



FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

0107 L370

Client <u>TNU-HANFORD 1301-059</u>	Refrigerator #	<u>A B C D E</u>	<u>F</u>	<u>G</u>	<u>H</u>
Est. Final Proj. Sampling Date _____	#Type Container	Liquid <u>3AG 2AG</u>	<u>1AG</u>	<u>1AG</u>	<u>1AG</u>
Project # <u>11343-100(a-00)-9999-00</u>	Volume	Liquid <u>40 1L</u>	<u>500</u>	<u>500</u>	<u>500</u>
Project Contact/Phone # _____	Preservatives	<u>HCl</u>	<u>HNO3</u>	<u>H2SO4</u>	
Lionville Laboratory Project Manager <u>OJ</u>	ANALYSES REQUESTED	ORGANIC		INORG	
QC <u>Spec</u> Del <u>Std</u> TAT <u>30 day</u>	VOA	BNA	Pest/PCB	Herb	F-Metal
Date Rec'd <u>7-20-01</u> Date Due <u>8-19-01</u>					

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 Wf - Wipe X - Other F - Fish	Lab ID	Client ID/Description	Matrix QC Chosen (✓)		Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only											
			MS	MSD				H	X										
	<u>001</u>	<u>B12BWL</u>			<u>W</u>	<u>7-18-01</u>	<u>2230</u>	<u>X</u>	<u>X</u>					<u>met</u>					
	<u>002</u>	<u>B12CV6</u>			<u>I</u>	<u>0600</u>		<u>X</u>											

Special Instructions: Saf 1301-059

DATE/REVISIONS:

ICD 1. Cl, Fl, No3, No2, Po4, So4

met 2. Cd, Cr, Cu, Ni, Ag, Pb

3. _____

4. _____

5. _____

6. _____

Lionville Laboratory Use Only

Samples were:

1) Shipped or Hand Delivered Airbill # SEE BELOW

2) Ambient or Chilled

3) Received in Good Condition or N

4) Samples Properly Preserved or N

5) Received Within Holding Times or N

Tamper Resistant Seal was:

1) Present on Outer Package or N

2) Unbroken on Outer Package or N

3) Present on Sample or N

4) Unbroken on Sample or N

COC Record Present Upon Sample Rec't or N

Cooler Temp. 30 °C

Relinquished by	Received by	Date	Time
<u>FedEx</u>	<u>Carl Hand</u>	<u>7-20-01</u>	<u>9:05</u>

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

4235 7954 5914

GLOSSARY OF VOA DATA

DATA QUALIFIERS

- U** - Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** - Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** - This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** - Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** - Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** - Interference.
- NQ** - Result qualitatively confirmed but not able to quantify.
- N** - Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** - This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** - Additional qualifiers used as required are explained in the case narrative.

GLOSSARY OF VOA DATA

ABBREVIATIONS

- BS** - Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** - Indicates blank spike duplicate.
- MS** - Indicates matrix spike.
- MSD** - Indicates matrix spike duplicate.
- DL** - Suffix added to sample number to indicate that results are from a diluted analysis.
- NA** - Not Applicable.
- DF** - Dilution Factor.
- NR** - Not Required.
- SP, Z** - Indicates Spiked Compound.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quantitation modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quantitation modifications:

- MP** - **Missed Peak:** manually added peak not found by automatic quantitation program.
- PA** - **Peak Assignment:** quantitation report was changed to reflect correct peak assignment.
- RI** - **Routine Integration:** routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP** - **Split Peak:** the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB** - **Coelution/Background:** peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI** - **Proper Integration:** a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

L-WI-035/a-mi-10/00



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Lionville Laboratory, Inc.
 Volatiles by GC/MS, HSL List

Report Date: 08/22/01 13:16

RFW Batch Number: 0107L370

Client: TNUHANFORD B01-059 H1430 Work Order: 11343606001 Page: 1a

Sample Information	Cust ID:	B12BW6	B12BW6	B12BW6	B12CV6	VBLKHY	VBLKHY BS
	RFW#:	001	001 MS	001 MSD	002	01LVX259-MB1	01LVX259-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate	Toluene-d8	105 %	104 %	105 %	107 %	103 %	106 %
Recovery	Bromofluorobenzene	103 %	102 %	105 %	102 %	101 %	103 %
	1,2-Dichloroethane-d4	102 %	106 %	106 %	101 %	97 %	99 %
		-----fl-----	-----fl-----	-----fl-----	-----fl-----	-----fl-----	-----fl-----
Chloromethane		10 U					
Bromomethane		10 U					
Vinyl Chloride		10 U					
Chloroethane		10 U					
Methylene Chloride		3 JB	9 B	9 B	3 JB	8	5 JB
Acetone		10 U					
Carbon Disulfide		5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene		5 U	79 %	80 %	5 U	5 U	87 %
1,1-Dichloroethane		5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene (total)		5 U	5 U	5 U	5 U	5 U	5 U
Chloroform		5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane		5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone		10 U					
1,1,1-Trichloroethane		5 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride		5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane		5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane		5 U	5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene		5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene		5 U	104 %	105 %	5 U	5 U	102 %
Dibromochloromethane		5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane		5 U	5 U	5 U	5 U	5 U	5 U
Benzene		5 U	104 %	104 %	5 U	5 U	104 %
Trans-1,3-Dichloropropene		5 U	5 U	5 U	5 U	5 U	5 U
Bromoform		5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone		10 U					
2-Hexanone		10 U					
Tetrachloroethene		5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane		5 U	5 U	5 U	5 U	5 U	5 U
Toluene		5 U	103 %	107 %	5 U	5 U	108 %

*= Outside of EPA CLP QC limits.

