1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1547 was composed of six solid (soil) samples designated under SAF No. B01-103 with a Project Designation of: 200 Area RCRA Drilling Waste Designation.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on December 15, 2001.

2.0 ANALYSIS NOTES

2.1 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.2 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.3 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.4 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.5 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

2.6 Tritium Analyses

No problems were encountered during the course of the analyses.

2.7 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.8 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.9 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

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2.10 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.11 Nickel-63 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

12/19/01

Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

SDG 7114
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1547

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B10055	200 East	SOLID		R110102-01	B01-103	B01-103-014	10/10/01 09:20
B10056	200 East	SOLID		R110102-02	B01-103	B01-103-014	10/10/01 09:45
B10057	200 East	SOLID		R110102-03	B01-103	B01-103-014	10/10/01 10:45
B10058	200 East	SOLID		R110102-04	B01-103	B01-103-014	10/10/01 11:05
B135C2	200 East	SOLID		R110102-05	B01-103	B01-103-014	10/10/01 11:40
B135C3	200 East	SOLID		R110102-06	B01-103	B01-103-014	10/10/01 12:10
Method Blank		SOLID		R110102-08	B01-103		
Lab Control Sample		SOLID		R110102-07	B01-103		
Duplicate (R110102-04)	200 East	SOLID		R110102-09	B01-103		10/10/01 11:05
Spike (R110102-04)	200 East	SOLID		R110102-10	B01-103		10/10/01 11:05

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Protocol Hanford
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

SDG 7114
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1547

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7114	B01-103-014	B10055	SOLID	85.7	1081 g		10/18/01	8	R110102-01	7114-001
		B10056	SOLID	76.5	1658 g		10/18/01	8	R110102-02	7114-002
		B10057	SOLID	96.7	1372 g		10/18/01	8	R110102-03	7114-003
		B10058	SOLID	79.1	1593 g		10/18/01	8	R110102-04	7114-004
		B135C2	SOLID	97.2	1317 g		10/18/01	8	R110102-05	7114-005
		B135C3	SOLID	85.8	1605 g		10/18/01	8	R110102-06	7114-006
		Method Blank	SOLID						R110102-08	7114-008
		Lab Control Sample	SOLID						R110102-07	7114-007
		Duplicate (R110102-04)	SOLID	79.1	1593 g		10/18/01	8	R110102-09	7114-009
		Spike (R110102-04)	SOLID		1593 g		10/18/01	8	R110102-10	7114-010

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

SDG 7114
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1547

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	7012-059	5.0	6			1	1	1/1		
NP	SOLID	Neptunium in Soil	7012-059	5.0	6			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7012-059	5.0	6			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	7012-059	5.0	6			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	7012-059	5.0	6			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7012-059	10.0	6			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	7012-059	10.0	6			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7012-059	15.0	6			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	7012-059	10.0	6			1	1	1/1		
H	SOLID	Tritium in Soil	7012-059	10.0	6			1	1	1/1	1/1	X
NI_L	SOLID	Nickel 63 in Soil	7012-059	10.0	6			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.

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

SDG 7114
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1547

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B10055			R110102-01	7114-001	AM		11/21/01	12/15/01	MCM	Americium 241 in Soil
200 East		SOLID	10/10/01	7114-001	C		11/26/01	12/15/01	MCM	Carbon 14 in Soil
B01-103-014	B01-103		10/18/01	7114-001	GAM		11/21/01	12/15/01	MCM	Gamma Scan
				7114-001	H		11/21/01	12/15/01	MCM	Tritium in Soil
				7114-001	NI_L		11/16/01	12/15/01	MCM	Nickel 63 in Soil
				7114-001	NP		12/06/01	12/15/01	MCM	Neptunium in Soil
				7114-001	PU		11/27/01	12/15/01	MCM	Plutonium, Isotopic in Solids
				7114-001	SR		11/15/01	12/15/01	MCM	Total Strontium in Soil
				7114-001	TC		12/03/01	12/15/01	MCM	Technetium 99 in Soil
				7114-001	TH		11/21/01	12/15/01	MCM	Thorium, Isotopic in Soil
				7114-001	U		11/15/01	12/15/01	MCM	Uranium, Isotopic in Soil
B10056			R110102-02	7114-002	AM		11/21/01	12/15/01	MCM	Americium 241 in Soil
200 East		SOLID	10/10/01	7114-002	C		11/26/01	12/15/01	MCM	Carbon 14 in Soil
B01-103-014	B01-103		10/18/01	7114-002	GAM		12/04/01	12/15/01	MCM	Gamma Scan
				7114-002	H		11/21/01	12/15/01	MCM	Tritium in Soil
				7114-002	NI_L		11/16/01	12/15/01	MCM	Nickel 63 in Soil
				7114-002	NP		12/06/01	12/15/01	MCM	Neptunium in Soil
				7114-002	PU		11/27/01	12/15/01	MCM	Plutonium, Isotopic in Solids
				7114-002	SR		11/15/01	12/15/01	MCM	Total Strontium in Soil
				7114-002	TC		12/03/01	12/15/01	MCM	Technetium 99 in Soil
				7114-002	TH		11/21/01	12/15/01	MCM	Thorium, Isotopic in Soil
				7114-002	U		11/15/01	12/15/01	MCM	Uranium, Isotopic in Soil
B10057			R110102-03	7114-003	AM		11/21/01	12/15/01	MCM	Americium 241 in Soil
200 East		SOLID	10/10/01	7114-003	C		11/26/01	12/15/01	MCM	Carbon 14 in Soil
B01-103-014	B01-103		10/18/01	7114-003	GAM		11/20/01	12/15/01	MCM	Gamma Scan
				7114-003	H		11/21/01	12/15/01	MCM	Tritium in Soil
				7114-003	NI_L		11/16/01	12/15/01	MCM	Nickel 63 in Soil
				7114-003	NP		12/06/01	12/15/01	MCM	Neptunium in Soil
				7114-003	PU		11/30/01	12/15/01	MCM	Plutonium, Isotopic in Solids
				7114-003	SR		11/15/01	12/15/01	MCM	Total Strontium in Soil
				7114-003	TC		12/05/01	12/15/01	MCM	Technetium 99 in Soil
				7114-003	TH		11/19/01	12/15/01	MCM	Thorium, Isotopic in Soil
				7114-003	U		11/16/01	12/15/01	MCM	Uranium, Isotopic in Soil

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

SDG 7114
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1547

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B10058			R110102-04	7114-004	AM		11/21/01	12/15/01	MCM	Americium 241 in Soil
200 East		SOLID	10/10/01	7114-004	C		11/27/01	12/15/01	MCM	Carbon 14 in Soil
B01-103-014	B01-103		10/18/01	7114-004	GAM		11/28/01	12/15/01	MCM	Gamma Scan
				7114-004	H		11/21/01	12/15/01	MCM	Tritium in Soil
				7114-004	NI_L		11/16/01	12/15/01	MCM	Nickel 63 in Soil
				7114-004	NP		12/07/01	12/15/01	MCM	Neptunium in Soil
				7114-004	PU		11/27/01	12/15/01	MCM	Plutonium, Isotopic in Solids
				7114-004	SR		11/15/01	12/15/01	MCM	Total Strontium in Soil
				7114-004	TC		12/03/01	12/15/01	MCM	Technetium 99 in Soil
				7114-004	TH		11/19/01	12/15/01	MCM	Thorium, Isotopic in Soil
				7114-004	U		11/15/01	12/15/01	MCM	Uranium, Isotopic in Soil
B135C2			R110102-05	7114-005	AM		11/21/01	12/15/01	MCM	Americium 241 in Soil
200 East		SOLID	10/10/01	7114-005	C		11/27/01	12/15/01	MCM	Carbon 14 in Soil
B01-103-014	B01-103		10/18/01	7114-005	GAM		11/21/01	12/15/01	MCM	Gamma Scan
				7114-005	H		11/21/01	12/15/01	MCM	Tritium in Soil
				7114-005	NI_L		11/16/01	12/15/01	MCM	Nickel 63 in Soil
				7114-005	NP		12/06/01	12/15/01	MCM	Neptunium in Soil
				7114-005	PU		11/27/01	12/15/01	MCM	Plutonium, Isotopic in Solids
				7114-005	SR		11/15/01	12/15/01	MCM	Total Strontium in Soil
				7114-005	TC		12/05/01	12/15/01	MCM	Technetium 99 in Soil
				7114-005	TH		11/19/01	12/15/01	MCM	Thorium, Isotopic in Soil
				7114-005	U		11/16/01	12/15/01	MCM	Uranium, Isotopic in Soil
B135C3			R110102-06	7114-006	AM		11/21/01	12/15/01	MCM	Americium 241 in Soil
200 East		SOLID	10/10/01	7114-006	C		11/27/01	12/15/01	MCM	Carbon 14 in Soil
B01-103-014	B01-103		10/18/01	7114-006	GAM		11/20/01	12/15/01	MCM	Gamma Scan
				7114-006	H		11/21/01	12/15/01	MCM	Tritium in Soil
				7114-006	NI_L		11/16/01	12/15/01	MCM	Nickel 63 in Soil
				7114-006	NP		12/06/01	12/15/01	MCM	Neptunium in Soil
				7114-006	PU		11/27/01	12/15/01	MCM	Plutonium, Isotopic in Solids
				7114-006	SR		11/15/01	12/15/01	MCM	Total Strontium in Soil
				7114-006	TC		12/03/01	12/15/01	MCM	Technetium 99 in Soil
				7114-006	TH		11/21/01	12/15/01	MCM	Thorium, Isotopic in Soil
				7114-006	U		11/17/01	12/15/01	MCM	Uranium, Isotopic in Soil

Lab id TMANC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

SDG 7114
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1547

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Method Blank			R110102-08	7114-008	AM		11/21/01	12/15/01	MCM	Americium 241 in Soil
		SOLID		7114-008	C		11/26/01	12/15/01	MCM	Carbon 14 in Soil
	B01-103			7114-008	GAM		11/20/01	12/15/01	MCM	Gamma Scan
				7114-008	H		11/22/01	12/15/01	MCM	Tritium in Soil
				7114-008	NI_L		11/16/01	12/15/01	MCM	Nickel 63 in Soil
				7114-008	NP		12/06/01	12/15/01	MCM	Neptunium in Soil
				7114-008	PU		11/27/01	12/15/01	MCM	Plutonium, Isotopic in Solids
				7114-008	SR		11/15/01	12/15/01	MCM	Total Strontium in Soil
				7114-008	TC		12/05/01	12/15/01	MCM	Technetium 99 in Soil
				7114-008	TH		11/20/01	12/15/01	MCM	Thorium, Isotopic in Soil
				7114-008	U		11/20/01	12/15/01	MCM	Uranium, Isotopic in Soil
Lab Control Sample			R110102-07	7114-007	AM		11/21/01	12/15/01	MCM	Americium 241 in Soil
		SOLID		7114-007	C		11/27/01	12/15/01	MCM	Carbon 14 in Soil
	B01-103			7114-007	GAM		11/30/01	12/15/01	MCM	Gamma Scan
				7114-007	H		11/22/01	12/15/01	MCM	Tritium in Soil
				7114-007	NI_L		11/16/01	12/15/01	MCM	Nickel 63 in Soil
				7114-007	NP		12/06/01	12/15/01	MCM	Neptunium in Soil
				7114-007	PU		11/27/01	12/15/01	MCM	Plutonium, Isotopic in Solids
				7114-007	SR		11/15/01	12/15/01	MCM	Total Strontium in Soil
				7114-007	TC		12/05/01	12/15/01	MCM	Technetium 99 in Soil
				7114-007	TH		11/21/01	12/15/01	MCM	Thorium, Isotopic in Soil
				7114-007	U		11/17/01	12/15/01	MCM	Uranium, Isotopic in Soil
Duplicate (R110102-04)			R110102-09	7114-009	AM		11/21/01	12/15/01	MCM	Americium 241 in Soil
200 East		SOLID	10/10/01	7114-009	C		11/27/01	12/15/01	MCM	Carbon 14 in Soil
	B01-103		10/18/01	7114-009	GAM		12/03/01	12/15/01	MCM	Gamma Scan
				7114-009	H		11/22/01	12/15/01	MCM	Tritium in Soil
				7114-009	NI_L		11/17/01	12/15/01	MCM	Nickel 63 in Soil
				7114-009	NP		12/06/01	12/15/01	MCM	Neptunium in Soil
				7114-009	PU		11/28/01	12/15/01	MCM	Plutonium, Isotopic in Solids
				7114-009	SR		11/15/01	12/15/01	MCM	Total Strontium in Soil
				7114-009	TC		12/05/01	12/15/01	MCM	Technetium 99 in Soil
				7114-009	TH		11/20/01	12/15/01	MCM	Thorium, Isotopic in Soil
				7114-009	U		11/20/01	12/15/01	MCM	Uranium, Isotopic in Soil
Spike (R110102-04)			R110102-10	7114-010	H		11/22/01	12/15/01	MCM	Tritium in Soil
200 East		SOLID	10/10/01							
	B01-103		10/18/01							

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

SDG 7114
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1547

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
AM	B01-103	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	6			1	1	1		9
C	B01-103	Carbon 14 in Soil	C14_COX_LSC	6			1	1	1		9
GAM	B01-103	Gamma Scan	GAMMA_GS	6			1	1	1		9
H	B01-103	Tritium in Soil	906.0_H3_LSC	6			1	1	1	1	10
NI_L	B01-103	Nickel 63 in Soil	NI63_LSC	6			1	1	1		9
NP	B01-103	Neptunium in Soil	NP237_LLE_PLATE_AEA	6			1	1	1		9
PU	B01-103	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	6			1	1	1		9
SR	B01-103	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	6			1	1	1		9
TC	B01-103	Technetium 99 in Soil	TC99_TR_SEP_LSC	6			1	1	1		9
TH	B01-103	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	6			1	1	1		9
U	B01-103	Uranium, Isotopic in Soil	UISO_PLATE_AEA	6			1	1	1		9
TOTALS				66			11	11	11	1	100

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

R110102-08 **Method Blank**

METHOD BLANK

SDG	7114	Client/Case no	Hanford SDG H1547
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R110102-08	Client sample id	Method Blank
Dept sample id	7114-008	Material/Matrix	SOLID
		SAF No	B01-103

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.015	0.15	0.26	400	U	H
Carbon 14	14762-75-5	-0.666	2.8	4.7	50	U	C
Nickel 63	13981-37-8	-1.12	1.2	2.1	30	U	NI_L
Total Strontium	SR-RAD	-0.112	0.11	0.21	1.0	U	SR
Americium 241	14596-10-2	0.024	0.094	0.18	1.0	U	AM
Technetium 99	14133-76-7	-0.023	0.16	0.53	15	U	TC
Thorium 228	14274-82-9	0.014	0.19	0.37		U	TH
Thorium 230	14269-63-7	-0.137	0.17	0.34	1.0	U	TH
Thorium 232	TH-232	0.041	0.082	0.11	1.0	U	TH
Uranium 233	U-233/234	-0.023	0.046	0.18	1.0	U	U
Uranium 235	15117-96-1	0	0.056	0.21	1.0	U	U
Uranium 238	U-238	0	0.046	0.18	1.0	U	U
Neptunium 237	13994-20-2	-0.031	0.062	0.24	1.0	U	NP
Plutonium 238	13981-16-3	0.049	0.098	0.37	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.098	0.37	1.0	U	PU
Potassium 40	13966-00-2	U		0.98		U	GAM
Cobalt 60	10198-40-0	U		0.062	0.050	U	GAM
Cesium 137	10045-97-3	U		0.049	0.10	U	GAM
Radium 226	13982-63-3	U		0.098	0.10	U	GAM
Radium 228	15262-20-1	U		0.19	0.20	U	GAM
Europium 152	14683-23-9	U		0.12	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Europium 155	14391-16-3	U		0.14	0.10	U	GAM
Thorium 228	14274-82-9	U		0.070		U	GAM
Thorium 232	TH-232	U		0.19		U	GAM
Uranium 235	15117-96-1	U		0.19		U	GAM
Uranium 238	U-238	U		7.4		U	GAM
Americium 241	14596-10-2	U		0.38		U	GAM

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/15/01

B L A N K , c o n t .

SDG	7114	Client/Case no	Hanford	SDG H1547	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R110102-08	Client sample id	Method Blank		
Dept sample id	7114-008	Material/Matrix		SOLID	
		SAF No	B01-103		

QC-BLANK 40204

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

R110102-07

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7114
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1547
Case no No. 630

Lab sample id R110102-07
Dept sample id 7114-007

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B01-103

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	23.7	0.55	0.25	400	J	H	24.5	0.98	97	84-116	80-120
Carbon 14	10400	210	29	50		C	11300	450	92	85-115	80-120
Nickel 63	250	4.6	2.0	30		NI_L	264	11	95	84-116	80-120
Total Strontium	24.6	0.59	0.15	1.0		SR	22.9	0.92	107	82-118	80-120
Americium 241	20.1	1.9	0.17	1.0		AM	21.0	0.84	96	84-116	80-120
Technetium 99	135	2.3	0.55	15		TC	131	5.2	103	83-117	80-120
Thorium 230	45.4	4.7	0.83	1.0		TH	44.8	1.8	101	82-118	80-120
Uranium 233	19.1	1.9	0.85	1.0		U	19.3	0.77	99	82-118	80-120
Uranium 235	13.6	1.5	0.21	1.0		U	15.7	0.63	87	83-117	80-120
Uranium 238	20.2	1.9	0.81	1.0		U	21.0	0.84	96	84-116	80-120
Neptunium 237	20.8	1.7	0.22	1.0		NP	22.2	0.89	94	85-115	80-120
Plutonium 238	26.0	2.5	0.20	1.0		PU	27.2	1.1	96	83-117	80-120
Plutonium 239/240	29.0	2.7	0.20	1.0		PU	29.0	1.2	100	83-117	80-120
Cobalt 60	3.90	0.30	0.14	0.050		GAM	3.94	0.16	99	74-126	80-120
Cesium 137	4.55	0.26	0.17	0.10		GAM	4.58	0.18	99	75-125	80-120

200 Area RCRA Drilling Waste Desig.

QC-LCS 40203

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

R110102-09 B10058

DUPLICATE

SDG	7114			Client/Case no	Hanford SDG H1547
Contact	Melissa C. Mannion			Case no	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R110102-09	Lab sample id	R110102-04	Client sample id	B10058
Dept sample id	7114-009	Dept sample id	7114-004	Location/Matrix	200 East SOLID
		Received	10/18/01	Collected/Weight	10/10/01 11:05 1593 g
% solids	79.1	% solids	79.1	Custody/SAF No	B01-103-014 B01-103

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Tritium	0.537	0.083	0.11	400	J	H	0.477	0.079	0.11	J	12	40
Carbon 14	1.77	2.3	3.8	50	U	C	2.16	2.3	3.9	U	-	
Nickel 63	-1.68	1.2	2.1	30	U	NI_L	-0.262	1.2	2.1	U	-	
Total Strontium	-0.077	0.12	0.21	1.0	U	SR	-0.024	0.12	0.25	U	-	
Americium 241	0.050	0.10	0.19	1.0	U	AM	0.122	0.16	0.31	U	-	
Technetium 99	-0.164	0.19	0.59	15	U	TC	-0.071	0.16	0.55	U	-	
Thorium 228	1.04	0.27	0.24			TH	0.391	0.39	0.54	U	91	100
Thorium 230	0.255	0.24	0.39	1.0	U	TH	0.195	0.39	0.65	U	-	
Thorium 232	1.02	0.24	0.19	1.0		TH	0.634	0.39	0.37	J	47	84
Uranium 233	0.328	0.18	0.17	1.0	J	U	0.203	0.16	0.19	J	47	136
Uranium 235	0.026	0.053	0.20	1.0	U	U	0.025	0.098	0.19	U	-	
Uranium 238	0.262	0.13	0.17	1.0	J	U	0.244	0.12	0.16	J	7	105
Neptunium 237	0.083	0.11	0.083	1.0	J	NP	-0.004	0.017	0.048	U	200	384
Plutonium 238	-0.010	0.013	0.040	1.0	U	PU	-0.034	0.068	0.26	U	-	
Plutonium 239/240	-0.003	0.019	0.040	1.0	U	PU	0.034	0.068	0.26	U	-	
Potassium 40	10.5	0.88	0.62			GAM	9.47	1.0	0.72		10	38
Cobalt 60	U		0.044	0.050	U	GAM	U		0.048	U	-	
Cesium 137	U		0.035	0.10	U	GAM	U		0.038	U	-	
Radium 226	0.362	0.062	0.062	0.10		GAM	0.341	0.088	0.089		6	56
Radium 228	0.620	0.22	0.21	0.20		GAM	0.620	0.21	0.22		0	80
Europium 152	U		0.095	0.10	U	GAM	U		0.11	U	-	
Europium 154	U		0.13	0.10	U	GAM	U		0.16	U	-	
Europium 155	U		0.10	0.10	U	GAM	U		0.11	U	-	
Thorium 228	0.585	0.048	0.048			GAM	0.520	0.050	0.053		12	37
Thorium 232	0.620	0.22	0.21			GAM	0.620	0.21	0.22		0	80
Uranium 235	U		0.14		U	GAM	U		0.15	U	-	
Uranium 238	U		4.8		U	GAM	U		5.2	U	-	
Americium 241	U		0.13		U	GAM	U		0.15	U	-	

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	12/15/01

DUPLICATE, cont.

SDG	7114		Client/Case no	Hanford	SDG H1547
Contact	Melissa C. Mannion		Case no	No. 630	
DUPLICATE		**ORIGINAL**			
Lab sample id	R110102-09	Lab sample id	R110102-04	Client sample id	B10058
Dept sample id	7114-009	Dept sample id	7114-004	Location/Matrix	200 East SOLID
		Received	10/18/01	Collected/Weight	10/10/01 11:05 1593 g
% solids	79.1	% solids	79.1	Custody/SAF No	B01-103-014 B01-103

QC-DUP#4 40205

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

R110102-10 B10058

MATRIX SPIKE

SDG	7114			Client/Case no	Hanford SDG H1547
Contact	Melissa C. Mannion			Case no	No. 630
MATRIX SPIKE		ORIGINAL			
Lab sample id	R110102-10	Lab sample id	R110102-04	Client sample id	B10058
Dept sample id	7114-010	Dept sample id	7114-004	Location/Matrix	200 East SOLID
		Received	10/18/01	Collected/Weight	10/10/01 11:05 1593 g
		% solids	79.1	Custody/SAF No	B01-103-014 B01-103

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	49.0	0.50	0.11	400	JX	H	54.9	2.2	0.477	0.079	88	85-115	60-140

200 Area RCRA Drilling Waste Desig.

QC-MS#4 40206

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-MS
Version 3.06
Report date 12/15/01

E B E R L I N E S E R V I C E S / R I C H M O N D

SAMPLE DELIVERY GROUP H1547

R110102-01 **B10055**

D A T A S H E E T

SDG	7114	Client/Case no	Hanford SDG H1547
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R110102-01	Client sample id	B10055
Dept sample id	7114-001	Location/Matrix	200 East SOLID
Received	10/18/01	Collected/Weight	10/10/01 09:20 1081 g
% solids	85.7	Custody/SAF No	B01-103-014 B01-103

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.001	0.059	0.10	400	U	H
Carbon 14	14762-75-5	2.13	2.6	4.3	50	U	C
Nickel 63	13981-37-8	-1.52	1.3	2.2	30	U	NI_L
Total Strontium	SR-RAD	0.016	0.14	0.28	1.0	U	SR
Americium 241	14596-10-2	0.026	0.051	0.20	1.0	U	AM
Technetium 99	14133-76-7	0.048	0.19	0.58	15	U	TC
Thorium 228	14274-82-9	1.78	0.74	0.75			TH
Thorium 230	14269-63-7	1.09	0.53	0.50	1.0		TH
Thorium 232	TH-232	0.780	0.42	0.40	1.0	J	TH
Uranium 233	U-233/234	0.505	0.23	0.18	1.0	J	U
Uranium 235	15117-96-1	0.111	0.11	0.21	1.0	U	U
Uranium 238	U-238	0.688	0.28	0.18	1.0	J	U
Neptunium 237	13994-20-2	0.029	0.058	0.088	1.0	U	NP
Plutonium 238	13981-16-3	-0.025	0.050	0.19	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.049	0.19	1.0	U	PU
Potassium 40	13966-00-2	15.3	1.1	0.68			GAM
Cobalt 60	10198-40-0	U		0.050	0.050	U	GAM
Cesium 137	10045-97-3	U		0.048	0.10	U	GAM
Radium 226	13982-63-3	0.774	0.12	0.12	0.10		GAM
Radium 228	15262-20-1	1.16	0.25	0.27	0.20		GAM
Europium 152	14683-23-9	U		0.14	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Europium 155	14391-16-3	U		0.14	0.10	U	GAM
Thorium 228	14274-82-9	1.30	0.063	0.059			GAM
Thorium 232	TH-232	1.16	0.25	0.27			GAM
Uranium 235	15117-96-1	U		0.18		U	GAM
Uranium 238	U-238	U		6.1		U	GAM
Americium 241	14596-10-2	U		0.18		U	GAM

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
Protocol	Hanford
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

R110102-02 B10056

DATA SHEET

SDG	7114	Client/Case no	Hanford	SDG H1547	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R110102-02	Client sample id	B10056		
Dept sample id	7114-002	Location/Matrix	200 East	SOLID	
Received	10/18/01	Collected/Weight	10/10/01 09:45	1658 g	
% solids	76.5	Custody/SAF No	B01-103-014	B01-103	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.647	0.077	0.095	400	J	H
Carbon 14	14762-75-5	0.953	2.3	3.8	50	U	C
Nickel 63	13981-37-8	-0.387	1.2	2.1	30	U	NI_L
Total Strontium	SR-RAD	0.032	0.14	0.27	1.0	U	SR
Americium 241	14596-10-2	0.074	0.099	0.19	1.0	U	AM
Technetium 99	14133-76-7	-0.057	0.16	0.55	15	U	TC
Thorium 228	14274-82-9	0.720	0.45	0.60			TH
Thorium 230	14269-63-7	0.358	0.45	0.55	1.0	U	TH
Thorium 232	TH-232	0.627	0.36	0.34	1.0	J	TH
Uranium 233	U-233/234	0.492	0.24	0.22	1.0	J	U
Uranium 235	15117-96-1	0.028	0.11	0.22	1.0	U	U
Uranium 238	U-238	0.234	0.14	0.18	1.0	J	U
Neptunium 237	13994-20-2	0.026	0.051	0.077	1.0	U	NP
Plutonium 238	13981-16-3	0.025	0.098	0.19	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.025	0.049	0.19	1.0	U	PU
Potassium 40	13966-00-2	14.4	0.83	0.38			GAM
Cobalt 60	10198-40-0	U		0.043	0.050	U	GAM
Cesium 137	10045-97-3	U		0.041	0.10	U	GAM
Radium 226	13982-63-3	0.992	0.088	0.079	0.10		GAM
Radium 228	15262-20-1	1.40	0.18	0.16	0.20		GAM
Europium 152	14683-23-9	U		0.096	0.10	U	GAM
Europium 154	15585-10-1	U		0.15	0.10	U	GAM
Europium 155	14391-16-3	U		0.15	0.10	U	GAM
Thorium 228	14274-82-9	1.39	0.060	0.052			GAM
Thorium 232	TH-232	1.40	0.18	0.16			GAM
Uranium 235	15117-96-1	U		0.16		U	GAM
Uranium 238	U-238	U		5.1		U	GAM
Americium 241	14596-10-2	U		0.33		U	GAM

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

R110102-03 B10057

DATA SHEET

SDG	7114	Client/Case no	Hanford	SDG H1547	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R110102-03	Client sample id	B10057		
Dept sample id	7114-003	Location/Matrix	200 East	SOLID	
Received	10/18/01	Collected/Weight	10/10/01 10:45	1372 g	
% solids	96.7	Custody/SAF No	B01-103-014	B01-103	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.111	0.047	0.073	400	J	H
Carbon 14	14762-75-5	2.44	2.3	3.7	50	U	C
Nickel 63	13981-37-8	-1.11	1.2	2.1	30	U	NI_L
Total Strontium	SR-RAD	-0.028	0.11	0.24	1.0	U	SR
Americium 241	14596-10-2	-0.032	0.13	0.31	1.0	U	AM
Technetium 99	14133-76-7	-0.021	0.17	0.58	15	U	TC
Thorium 228	14274-82-9	0.679	0.49	0.74		U	TH
Thorium 230	14269-63-7	0.290	0.39	0.54	1.0	U	TH
Thorium 232	TH-232	0.533	0.29	0.37	1.0	J	TH
Uranium 233	U-233/234	0.271	0.18	0.17	1.0	J	U
Uranium 235	15117-96-1	0.027	0.055	0.21	1.0	U	U
Uranium 238	U-238	0.519	0.23	0.17	1.0	J	U
Neptunium 237	13994-20-2	0	0.048	0.072	1.0	U	NP
Plutonium 238	13981-16-3	-0.030	0.059	0.23	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.059	0.23	1.0	U	PU
Potassium 40	13966-00-2	12.0	0.97	0.57			GAM
Cobalt 60	10198-40-0	U		0.051	0.050	U	GAM
Cesium 137	10045-97-3	U		0.044	0.10	U	GAM
Radium 226	13982-63-3	0.505	0.090	0.087	0.10		GAM
Radium 228	15262-20-1	0.563	0.23	0.22	0.20		GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.18	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Thorium 228	14274-82-9	0.587	0.049	0.050			GAM
Thorium 232	TH-232	0.563	0.23	0.22			GAM
Uranium 235	15117-96-1	U		0.15		U	GAM
Uranium 238	U-238	U		6.1		U	GAM
Americium 241	14596-10-2	U		0.15		U	GAM

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

R110102-04 **B10058**

DATA SHEET

SDG	7114	Client/Case no	Hanford SDG H1547
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R110102-04	Client sample id	B10058
Dept sample id	7114-004	Location/Matrix	200 East SOLID
Received	10/18/01	Collected/Weight	10/10/01 11:05 1593 g
% solids	79.1	Custody/SAF No	B01-103-014 B01-103

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.477	0.079	0.11	400	J	H
Carbon 14	14762-75-5	2.16	2.3	3.9	50	U	C
Nickel 63	13981-37-8	-0.262	1.2	2.1	30	U	NI_L
Total Strontium	SR-RAD	-0.024	0.12	0.25	1.0	U	SR
Americium 241	14596-10-2	0.122	0.16	0.31	1.0	U	AM
Technetium 99	14133-76-7	-0.071	0.16	0.55	15	U	TC
Thorium 228	14274-82-9	0.391	0.39	0.54		U	TH
Thorium 230	14269-63-7	0.195	0.39	0.65	1.0	U	TH
Thorium 232	TH-232	0.634	0.39	0.37	1.0	J	TH
Uranium 233	U-233/234	0.203	0.16	0.19	1.0	J	U
Uranium 235	15117-96-1	0.025	0.098	0.19	1.0	U	U
Uranium 238	U-238	0.244	0.12	0.16	1.0	J	U
Neptunium 237	13994-20-2	-0.004	0.017	0.048	1.0	U	NP
Plutonium 238	13981-16-3	-0.034	0.068	0.26	1.0	U	PU
Plutonium 239/240	PU-239/240	0.034	0.068	0.26	1.0	U	PU
Potassium 40	13966-00-2	9.47	1.0	0.72			GAM
Cobalt 60	10198-40-0	U		0.048	0.050	U	GAM
Cesium 137	10045-97-3	U		0.038	0.10	U	GAM
Radium 226	13982-63-3	0.341	0.088	0.089	0.10		GAM
Radium 228	15262-20-1	0.620	0.21	0.22	0.20		GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Thorium 228	14274-82-9	0.520	0.050	0.053			GAM
Thorium 232	TH-232	0.620	0.21	0.22			GAM
Uranium 235	15117-96-1	U		0.15		U	GAM
Uranium 238	U-238	U		5.2		U	GAM
Americium 241	14596-10-2	U		0.15		U	GAM

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

R110102-05 **B135C2**

DATA SHEET

SDG	7114	Client/Case no	Hanford	SDG H1547	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R110102-05	Client sample id	B135C2		
Dept sample id	7114-005	Location/Matrix	200 East	SOLID	
Received	10/18/01	Collected/Weight	10/10/01 11:40	1317 g	
% solids	97.2	Custody/SAF No	B01-103-014	B01-103	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.015	0.051	0.086	400	U	H
Carbon 14	14762-75-5	-0.829	2.2	3.7	50	U	C
Nickel 63	13981-37-8	-1.13	1.2	2.1	30	U	NI_L
Total Strontium	SR-RAD	0.001	0.12	0.25	1.0	U	SR
Americium 241	14596-10-2	-0.026	0.11	0.25	1.0	U	AM
Technetium 99	14133-76-7	0.028	0.17	0.54	15	U	TC
Thorium 228	14274-82-9	1.13	0.57	0.68			TH
Thorium 230	14269-63-7	0.754	0.47	0.52	1.0	J	TH
Thorium 232	TH-232	0.754	0.38	0.36	1.0	J	TH
Uranium 233	U-233/234	0.419	0.20	0.19	1.0	J	U
Uranium 235	15117-96-1	0	0.060	0.23	1.0	U	U
Uranium 238	U-238	0.690	0.25	0.19	1.0	J	U
Neptunium 237	13994-20-2	0	0.077	0.12	1.0	U	NP
Plutonium 238	13981-16-3	0.027	0.054	0.21	1.0	U	PU
Plutonium 239/240	PU-239/240	0.027	0.054	0.21	1.0	U	PU
Potassium 40	13966-00-2	16.0	0.55	0.22			GAM
Cobalt 60	10198-40-0	U		0.024	0.050	U	GAM
Cesium 137	10045-97-3	U		0.021	0.10	U	GAM
Radium 226	13982-63-3	0.486	0.044	0.041	0.10		GAM
Radium 228	15262-20-1	0.730	0.11	0.10	0.20		GAM
Europium 152	14683-23-9	U		0.047	0.10	U	GAM
Europium 154	15585-10-1	U		0.084	0.10	U	GAM
Europium 155	14391-16-3	U		0.062	0.10	U	GAM
Thorium 228	14274-82-9	0.709	0.031	0.028			GAM
Thorium 232	TH-232	0.730	0.11	0.10			GAM
Uranium 235	15117-96-1	U		0.094		U	GAM
Uranium 238	U-238	U		3.1		U	GAM
Americium 241	14596-10-2	U		0.085		U	GAM

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

R110102-06 B135C3

DATA SHEET

SDG	7114	Client/Case no	Hanford	SDG H1547	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R110102-06	Client sample id	B135C3		
Dept sample id	7114-006	Location/Matrix	200 East	SOLID	
Received	10/18/01	Collected/Weight	10/10/01 12:10	1605 g	
% solids	85.8	Custody/SAF No	B01-103-014	B01-103	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.223	0.070	0.11	400	J	H
Carbon 14	14762-75-5	2.22	2.5	4.1	50	U	C
Nickel 63	13981-37-8	-2.01	1.2	2.1	30	U	NI_L
Total Strontium	SR-RAD	-0.002	0.12	0.25	1.0	U	SR
Americium 241	14596-10-2	-0.081	0.081	0.31	1.0	U	AM
Technetium 99	14133-76-7	-0.064	0.16	0.57	15	U	TC
Thorium 228	14274-82-9	0.294	0.39	0.71		U	TH
Thorium 230	14269-63-7	0.293	0.39	0.47	1.0	U	TH
Thorium 232	TH-232	0.538	0.30	0.37	1.0	J	TH
Uranium 233	U-233/234	0.305	0.20	0.19	1.0	J	U
Uranium 235	15117-96-1	0.031	0.062	0.24	1.0	U	U
Uranium 238	U-238	0.280	0.15	0.19	1.0	J	U
Neptunium 237	13994-20-2	-0.029	0.058	0.22	1.0	U	NP
Plutonium 238	13981-16-3	0	0.050	0.19	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.050	0.19	1.0	U	PU
Potassium 40	13966-00-2	8.13	0.92	0.36			GAM
Cobalt 60	10198-40-0	U		0.059	0.050	U	GAM
Cesium 137	10045-97-3	U		0.044	0.10	U	GAM
Radium 226	13982-63-3	0.307	0.097	0.095	0.10		GAM
Radium 228	15262-20-1	0.382	0.23	0.24	0.20		GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.15	0.10	U	GAM
Europium 155	14391-16-3	U		0.10	0.10	U	GAM
Thorium 228	14274-82-9	0.354	0.056	0.056			GAM
Thorium 232	TH-232	0.382	0.23	0.24			GAM
Uranium 235	15117-96-1	U		0.18		U	GAM
Uranium 238	U-238	U		6.8		U	GAM
Americium 241	14596-10-2	U		0.11		U	GAM

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test AM Matrix SOLID
SDG 7114
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1547

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 7012-059						
B10055	R110102-01			7114-001	U	
B10056	R110102-02			7114-002	U	
B10057	R110102-03			7114-003	U	
B10058	R110102-04			7114-004	U	
B135C2	R110102-05			7114-005	U	
B135C3	R110102-06			7114-006	U	
BLK (QC ID=40204)	R110102-08			7114-008	U	
LCS (QC ID=40203)	R110102-07			7114-007	ok	
Duplicate (R110102-04)	R110102-09			7114-009	-	U
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.				RDLs (pCi/g)	1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-059 2σ prep error 5.0 % Reference Lab Notebook 7012 pg. 059																
B10055	R110102-01			0.20	0.500			90		104			42	11/21/01	11/21	SS-049
B10056	R110102-02			0.19	0.500			89		104			42	11/21/01	11/21	SS-050
B10057	R110102-03			0.31	0.500			70		105			42	11/21/01	11/21	SS-041
B10058	R110102-04			0.31	0.500			88		65			42	11/21/01	11/21	SS-032
B135C2	R110102-05			0.25	0.500			77		116			42	11/21/01	11/21	SS-041
B135C3	R110102-06			0.31	0.500			49		116			42	11/21/01	11/21	SS-042
BLK (QC ID=40204)	R110102-08			0.18	0.500			82		116				11/21/01	11/21	SS-044
LCS (QC ID=40203)	R110102-07			0.17	0.500			86		116				11/21/01	11/21	SS-043
Duplicate (R110102-04) (QC ID=40205)	R110102-09			0.19	0.500			77		115			42	11/21/01	11/21	SS-045
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test	AM
Matrix	SOLID
SDG	7114
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	No. 630
Contract	SDG H1547

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-940	Plutonium Separation and Purification, rev 3
	CP-960	Americium-Curium Purification, Large Aliquot, rev 4
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD	MDA	0.23	±	0.12
FOR 9 SAMPLES	YIELD	79	±	26

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test NP	Matrix SOLID
SDG 7114	
Contact Melissa C. Mannion	

METHOD SUMMARY

NEPTUNIUM IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H1547	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7012-059						
B10055	R110102-01			7114-001	U	
B10056	R110102-02			7114-002	U	
B10057	R110102-03			7114-003	U	
B10058	R110102-04			7114-004	U	
B135C2	R110102-05			7114-005	U	
B135C3	R110102-06			7114-006	U	
BLK (QC ID=40204)	R110102-08			7114-008	U	
LCS (QC ID=40203)	R110102-07			7114-007	ok	
Duplicate (R110102-04)	R110102-09			7114-009	ok	J
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.				RDLs (pCi/g)	1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-059 2σ prep error 5.0 % Reference Lab Notebook 7012 pg. 059																
B10055	R110102-01			0.088	0.500			52		154			57	12/04/01	12/06	SS-032
B10056	R110102-02			0.077	0.500			60		154			57	12/04/01	12/06	SS-033
B10057	R110102-03			0.072	0.500			63		154			57	12/04/01	12/06	SS-034
B10058	R110102-04			0.048	0.500			47		1156			58	12/04/01	12/07	SS-041
B135C2	R110102-05			0.12	0.500			40		154			57	12/04/01	12/06	SS-042
B135C3	R110102-06			0.22	0.500			52		154			57	12/04/01	12/06	SS-043
BLK (QC ID=40204)	R110102-08			0.24	0.500			45		154				12/04/01	12/06	SS-045
LCS (QC ID=40203)	R110102-07			0.22	0.500			49		154				12/04/01	12/06	SS-044
Duplicate (R110102-04) (QC ID=40205)	R110102-09			0.083	0.500			54		154			57	12/04/01	12/06	SS-047
Nominal values and limits from method				1.0	0.500			20-105		100			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test NP	Matrix SOLID
SDG 7114	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

NEPTUNIUM IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H1547	

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-934	Neptunium from Solids and Water by Extraction Chromatography, rev 2

AVERAGES ± 2 SD	MDA	0.13	±	0.15
FOR 9 SAMPLES	YIELD	51	±	14

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test PU Matrix SOLID
SDG 7114
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1547

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 7012-059								
B10055	R110102-01			7114-001	U		U	
B10056	R110102-02			7114-002	U		U	
B10057	R110102-03			7114-003	U		U	
B10058	R110102-04			7114-004	U		U	
B135C2	R110102-05			7114-005	U		U	
B135C3	R110102-06			7114-006	U		U	
BLK (QC ID=40204)	R110102-08			7114-008	U		U	
LCS (QC ID=40203)	R110102-07			7114-007	ok		ok	
Duplicate (R110102-04)	R110102-09			7114-009	-	U	-	U
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.				RDLs (pCi/g)	1.0		1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-059 2σ prep error 5.0 % Reference Lab Notebook 7012 pg. 059																
B10055	R110102-01			0.19	0.500			92		109			48	11/27/01	11/27	SS-031
B10056	R110102-02			0.19	0.500			88		109			48	11/27/01	11/27	SS-032
B10057	R110102-03			0.23	0.500			84		100			51	11/27/01	11/30	SS-031
B10058	R110102-04			0.26	0.500			60		109			48	11/27/01	11/27	SS-043
B135C2	R110102-05			0.21	0.500			77		109			48	11/27/01	11/27	SS-044
B135C3	R110102-06			0.19	0.500			86		109			48	11/27/01	11/27	SS-047
BLK (QC ID=40204)	R110102-08			0.37	0.500			45		109				11/27/01	11/27	SS-049
LCS (QC ID=40203)	R110102-07			0.20	0.500			80		109				11/27/01	11/27	SS-048
Duplicate (R110102-04) (QC ID=40205)	R110102-09			0.040	0.500			53		1345			49	11/27/01	11/28	SS-048
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test PU	Matrix SOLID
SDG 7114	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H1547	

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	CP-060	Soil Preparation, rev 3
	CP-940	Plutonium Separation and Purification, rev 3
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD	MDA	0.21	±	0.17
FOR 9 SAMPLES	YIELD	74	±	34

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test TH Matrix SOLID
SDG 7114
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1547

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 7012-059							
B10055	R110102-01			7114-001	1.78	1.09	0.780 J
B10056	R110102-02			7114-002	0.720	U	0.627 J
B10057	R110102-03			7114-003	U	U	0.533 J
B10058	R110102-04			7114-004	U	U	0.634 J
B135C2	R110102-05			7114-005	1.13	0.754 J	0.754 J
B135C3	R110102-06			7114-006	U	U	0.538 J
BLK (QC ID=40204)	R110102-08			7114-008	U	U	U
LCS (QC ID=40203)	R110102-07			7114-007		ok	
Duplicate (R110102-04)	R110102-09			7114-009	ok	- U	ok
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.				RDLs (pCi/g)		1.0	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-059 2σ prep error 5.0 % Reference Lab Notebook 7012 pg. 059																
B10055	R110102-01			0.50	0.250			77		154			42	11/19/01	11/21	SS-019
B10056	R110102-02			0.55	0.250			86		154			42	11/19/01	11/21	SS-020
B10057	R110102-03			0.54	0.250			82		157			40	11/19/01	11/19	SS-021
B10058	R110102-04			0.65	0.250			85		158			40	11/19/01	11/19	SS-022
B135C2	R110102-05			0.52	0.250			80		158			40	11/19/01	11/19	SS-024
B135C3	R110102-06			0.47	0.250			83		154			42	11/19/01	11/21	SS-021
BLK (QC ID=40204)	R110102-08			0.34	0.250			72		627				11/19/01	11/20	SS-021
LCS (QC ID=40203)	R110102-07			0.83	0.250			68		154				11/19/01	11/21	SS-022
Duplicate (R110102-04) (QC ID=40205)	R110102-09			0.39	0.250			78		627			41	11/19/01	11/20	SS-022
Nominal values and limits from method				1.0	0.250			20-105		150			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test	TH
Matrix	SOLID
SDG	7114
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	No. 630
Contract	SDG H1547

PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-905	Thorium in Water and Dissolved Solid Sample Using TRU and AG 1x8 Resin, rev 1
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD	MDA	0.53	±	0.29
FOR 9 SAMPLES	YIELD	79	±	12

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test U Matrix SOLID
SDG 7114
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1547

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7012-059											
B10055	R110102-01			7114-001	0.505 J	U	0.688 J	73	45	16	17
B10056	R110102-02			7114-002	0.492 J	U	0.234 J	210	162	12	48
B10057	R110102-03			7114-003	0.271 J	U	0.519 J	52	42	5	11
B10058	R110102-04			7114-004	0.203 J	U	0.244 J	83	77	10	40
B135C2	R110102-05			7114-005	0.419 J	U	0.690 J	61	36	0	9
B135C3	R110102-06			7114-006	0.305 J	U	0.280 J	109	92	11	23
BLK (QC ID=40204)	R110102-08			7114-008	U	U	U				
LCS (QC ID=40203)	R110102-07			7114-007	ok	ok	ok				
Duplicate (R110102-04)	R110102-09			7114-009	ok J	- U	ok J	125	93	10	21
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
200 Area RCRA Drilling Waste Desig.								Averages 102		9	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-059 2σ prep error 5.0 % Reference Lab Notebook 7012 pg. 059																
B10055	R110102-01			0.21	0.500			83		164			36	11/14/01	11/15	SS-019
B10056	R110102-02			0.22	0.500			82		164			36	11/14/01	11/15	SS-021
B10057	R110102-03			0.21	0.500			104		105			37	11/14/01	11/16	SS-031
B10058	R110102-04			0.19	0.500			89		164			36	11/14/01	11/15	SS-024
B135C2	R110102-05			0.23	0.500			90		102			37	11/14/01	11/16	SS-033
B135C3	R110102-06			0.24	0.500			84		105			38	11/14/01	11/17	SS-033
BLK (QC ID=40204)	R110102-08			0.21	0.500			95		110				11/14/01	11/20	SS-049
LCS (QC ID=40203)	R110102-07			0.85	0.500			96		106				11/14/01	11/17	SS-041
Duplicate (R110102-04) (QC ID=40205)	R110102-09			0.20	0.500			95		110			41	11/14/01	11/20	SS-050
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test U	Matrix SOLID
SDG 7114	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract No. 630	
Contract SDG H1547	

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-911	Uranium in Water and Dissolved Sample by Extraction Chromatography, rev 3
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD	MDA	0.28	±	0.43
FOR 9 SAMPLES	YIELD	91	±	15

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test SR Matrix SOLID
SDG 7114
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1547

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 7012-059						
B10055	R110102-01			7114-001	U	
B10056	R110102-02			7114-002	U	
B10057	R110102-03			7114-003	U	
B10058	R110102-04			7114-004	U	
B135C2	R110102-05			7114-005	U	
B135C3	R110102-06			7114-006	U	
BLK (QC ID=40204)	R110102-08			7114-008	U	
LCS (QC ID=40203)	R110102-07			7114-007	ok	
Duplicate (R110102-04)	R110102-09			7114-009	-	U
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.				RDLs (pCi/g)	1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-059 2σ prep error 10.0 % Reference Lab Notebook 7012 pg. 059																
B10055	R110102-01			0.28	1.00			81		100			36	11/15/01	11/15	GRB-218
B10056	R110102-02			0.27	1.00			89		100			36	11/15/01	11/15	GRB-219
B10057	R110102-03			0.24	1.00			93		100			36	11/15/01	11/15	GRB-220
B10058	R110102-04			0.25	1.00			95		100			36	11/15/01	11/15	GRB-221
B135C2	R110102-05			0.25	1.00			93		100			36	11/15/01	11/15	GRB-222
B135C3	R110102-06			0.25	1.00			98		100			36	11/15/01	11/15	GRB-223
BLK (QC ID=40204)	R110102-08			0.21	1.00			90		200				11/15/01	11/15	GRB-205
LCS (QC ID=40203)	R110102-07			0.15	1.00			90		200				11/15/01	11/15	GRB-217
Duplicate (R110102-04) (QC ID=40205)	R110102-09			0.21	1.00			94		200			36	11/15/01	11/15	GRB-207
Nominal values and limits from method				1.0	1.00			30-105		100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test SR	Matrix SOLID
SDG 7114	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H1547	

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	CP-502	Strontium in Solids, rev 4
	CP-519	Strontium Planchet Demounting and Preparation for 90Y Decontamination, rev 3

AVERAGES ± 2 SD	MDA	0.23	±	0.079
FOR 9 SAMPLES	YIELD	91	±	10

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test TC Matrix SOLID
SDG 7114
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1547

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 7012-059						
B10055	R110102-01			7114-001	U	
B10056	R110102-02			7114-002	U	
B10057	R110102-03			7114-003	U	
B10058	R110102-04			7114-004	U	
B135C2	R110102-05			7114-005	U	
B135C3	R110102-06			7114-006	U	
BLK (QC ID=40204)	R110102-08			7114-008	U	
LCS (QC ID=40203)	R110102-07			7114-007	ok	
Duplicate (R110102-04)	R110102-09			7114-009	-	U
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.			RDLs (pCi/g)		15	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-059 2σ prep error 10.0 % Reference Lab Notebook 7012 pg. 059																
B10055	R110102-01			0.58	1.00			88		50			54	11/29/01	12/03	GRB-217
B10056	R110102-02			0.55	1.02			89		50			54	11/29/01	12/03	GRB-218
B10057	R110102-03			0.58	1.00			88		50			56	11/29/01	12/05	GRB-222
B10058	R110102-04			0.55	1.05			87		50			54	11/29/01	12/03	GRB-220
B135C2	R110102-05			0.54	1.06			90		50			56	11/29/01	12/05	GRB-224
B135C3	R110102-06			0.57	1.00			89		50			54	11/29/01	12/03	GRB-222
BLK (QC ID=40204)	R110102-08			0.53	1.00			94		50				11/29/01	12/05	GRB-218
LCS (QC ID=40203)	R110102-07			0.55	1.00			95		50				11/29/01	12/05	GRB-203
Duplicate (R110102-04) (QC ID=40205)	R110102-09			0.59	1.05			85		50			56	11/29/01	12/05	GRB-219
Nominal values and limits from method				15	1.00			20-105		50			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test	TC
Matrix	SOLID
SDG	7114
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	No. 630
Contract	SDG H1547

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-060	Soil Preparation, rev 3
	CP-021	Preparation of Tc-99m Tracer, rev 1
	CP-002	Q.C. Preparation, rev 3
	CP-003	Tracing, rev 3
	CP-542	Technetium-99 Purification (Soil) by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 9 SAMPLES				
MDA	0.56	±	0.041
YIELD	89	±	6

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test GAM Matrix SOLID	Client Hanford
SDG 7114	Contract No. 630
Contact Melissa C. Mannion	Contract SDG H1547

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7012-059								
B10055	R110102-01			7114-001	U		U	
B10056	R110102-02			7114-002	U		U	
B10057	R110102-03			7114-003	U		U	
B10058	R110102-04			7114-004	U		U	
B135C2	R110102-05			7114-005	U		U	
B135C3	R110102-06			7114-006	U		U	
BLK (QC ID=40204)	R110102-08			7114-008	U		U	
LCS (QC ID=40203)	R110102-07			7114-007	ok		ok	
Duplicate (R110102-04)	R110102-09			7114-009	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.10	

200 Area RCRA Drilling Waste Desig.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-059 2σ prep error 15.0 % Reference Lab Notebook 7012 pg. 059																
B10055	R110102-01			0.050	755					142			42	11/19/01	11/21	02,03,00
B10056	R110102-02			0.043	786					108			55	11/19/01	12/04	MB,05,00
B10057	R110102-03			0.051	889					102			41	11/19/01	11/20	02,03,00
B10058	R110102-04			0.048	759					112			49	11/19/01	11/28	02,03,00
B135C2	R110102-05			0.024	851					142			42	11/19/01	11/21	02,04,00
B135C3	R110102-06			0.059	215					102			41	11/19/01	11/20	JR,04,00
BLK (QC ID=40204)	R110102-08			0.062	215					113				11/19/01	11/20	MB,05,00
LCS (QC ID=40203)	R110102-07			0.14	215					133				11/19/01	11/30	01,03,00
Duplicate (R110102-04) (QC ID=40205)	R110102-09			0.044	759					137			54	11/19/01	12/03	02,03,00
Nominal values and limits from method				0.050	215					100			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test GAM Matrix SOLID
SDG 7114
Contact Melissa C. Mannion

METHOD SUMMARY, cont.

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1547

PROCEDURES	REFERENCE	GAMMA_GS
	CP-060	Soil Preparation, rev 3
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 3

AVERAGES ± 2 SD	MDA	0.058	±	0.065
FOR 9 SAMPLES	YIELD		±	

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test C Matrix SOLID
SDG 7114
Contact Melissa C. Mannion

METHOD SUMMARY

CARBON 14 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1547

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 7012-059						
B10055	R110102-01			7114-001	U	
B10056	R110102-02			7114-002	U	
B10057	R110102-03			7114-003	U	
B10058	R110102-04			7114-004	U	
B135C2	R110102-05			7114-005	U	
B135C3	R110102-06			7114-006	U	
BLK (QC ID=40204)	R110102-08			7114-008	U	
LCS (QC ID=40203)	R110102-07			7114-007	ok	
Duplicate (R110102-04)	R110102-09			7114-009	-	U
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.				RDLs (pCi/g)	50	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-059	2σ prep error 10.0 % Reference Lab Notebook 7012 pg. 059															
B10055	R110102-01			4.3	0.220			100		100			47	11/26/01	11/26	LSC-004
B10056	R110102-02			3.8	0.234			100		100			47	11/26/01	11/26	LSC-004
B10057	R110102-03			3.7	0.240			100		100			47	11/26/01	11/26	LSC-004
B10058	R110102-04			3.9	0.243			100		100			48	11/26/01	11/27	LSC-004
B135C2	R110102-05			3.7	0.252			100		100			48	11/26/01	11/27	LSC-004
B135C3	R110102-06			4.1	0.228			100		100			48	11/26/01	11/27	LSC-004
BLK (QC ID=40204)	R110102-08			4.7	0.200			100		100				11/26/01	11/26	LSC-004
LCS (QC ID=40203)	R110102-07			29	0.200			100		3				11/26/01	11/27	LSC-004
Duplicate (R110102-04) (QC ID=40205)	R110102-09			3.8	0.247			100		100			48	11/26/01	11/27	LSC-004
Nominal values and limits from method				50	0.200					50			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test C	Matrix SOLID
SDG 7114	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

CARBON 14 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H1547	

PROCEDURES	REFERENCE	C14_COX_LSC
	CP-060	Soil Preparation, rev 3
	CP-251	Tritium/Carbon-14 Oxidation, rev 3

AVERAGES ± 2 SD	MDA	6.8	±	17
FOR 9 SAMPLES	YIELD	100	±	0

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test H Matrix SOLID
SDG 7114
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1547

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 7012-059						
B10055	R110102-01			7114-001	U	
B10056	R110102-02			7114-002	0.647	J
B10057	R110102-03			7114-003	0.111	J
B10058	R110102-04			7114-004	0.477	J
B135C2	R110102-05			7114-005	U	
B135C3	R110102-06			7114-006	0.223	J
BLK (QC ID=40204)	R110102-08			7114-008	U	
LCS (QC ID=40203)	R110102-07			7114-007	ok	J
Duplicate (R110102-04)	R110102-09			7114-009	ok	J
Spike (R110102-04)	R110102-10			7114-010	ok	JX

Nominal values and limits from method RDLs (pCi/g) 400
200 Area RCRA Drilling Waste Desig.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-059 2σ prep error 10.0 % Reference Lab Notebook 7012 pg. 059																
B10055	R110102-01			0.10	20.3			84		120			42	11/21/01	11/21	LSC-005
B10056	R110102-02			0.095	23.8			78		120			42	11/21/01	11/21	LSC-005
B10057	R110102-03			0.073	24.2			100		120			42	11/21/01	11/21	LSC-005
B10058	R110102-04			0.11	21.3			78		120			42	11/21/01	11/21	LSC-005
B135C2	R110102-05			0.086	20.5			100		120			42	11/21/01	11/21	LSC-005
B135C3	R110102-06			0.11	20.7			81		120			42	11/21/01	11/21	LSC-005
BLK (QC ID=40204)	R110102-08			0.26	20.0			33		120				11/21/01	11/22	LSC-005
LCS (QC ID=40203)	R110102-07			0.25	20.0			33		120				11/21/01	11/22	LSC-005
Duplicate (R110102-04) (QC ID=40205)	R110102-09			0.11	20.9			77		120			43	11/21/01	11/22	LSC-005
Spike (R110102-04) (QC ID=40206)	R110102-10			0.11	20.7			84		119			43	11/21/01	11/22	LSC-005
Nominal values and limits from method				400	20.0					25			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test H	Matrix SOLID
SDG 7114	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract No. 630	
Contract SDG H1547	

PROCEDURES	REFERENCE	906.0_H3_LSC
	CP-060	Soil Preparation, rev 3
	CP-216	Tritium in Solid Samples by Azeotropic Distillation, rev 4

AVERAGES ± 2 SD	MDA	0.13	±	0.13
FOR 10 SAMPLES	YIELD	75	±	47

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test NI L Matrix SOLID
SDG 7114
Contact Melissa C. Mannion

METHOD SUMMARY

NICKEL 63 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1547

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 7012-059						
B10055	R110102-01			7114-001	U	
B10056	R110102-02			7114-002	U	
B10057	R110102-03			7114-003	U	
B10058	R110102-04			7114-004	U	
B135C2	R110102-05			7114-005	U	
B135C3	R110102-06			7114-006	U	
BLK (QC ID=40204)	R110102-08			7114-008	U	
LCS (QC ID=40203)	R110102-07			7114-007	ok	
Duplicate (R110102-04)	R110102-09			7114-009	-	U
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.				RDLs (pCi/g)	30	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7012-059 2σ prep error 10.0 % Reference Lab Notebook 7012 pg. 059																
B10055	R110102-01			2.2	0.500			83		100			37	11/15/01	11/16	LSC-005
B10056	R110102-02			2.1	0.500			88		100			37	11/15/01	11/16	LSC-005
B10057	R110102-03			2.1	0.500			87		100			37	11/15/01	11/16	LSC-005
B10058	R110102-04			2.1	0.500			86		100			37	11/15/01	11/16	LSC-005
B135C2	R110102-05			2.1	0.500			87		100			37	11/15/01	11/16	LSC-005
B135C3	R110102-06			2.1	0.500			86		100			37	11/15/01	11/16	LSC-005
BLK (QC ID=40204)	R110102-08			2.1	0.500			86		100				11/15/01	11/16	LSC-005
LCS (QC ID=40203)	R110102-07			2.0	0.500			94		100				11/15/01	11/16	LSC-005
Duplicate (R110102-04) (QC ID=40205)	R110102-09			2.1	0.500			87		100			38	11/15/01	11/17	LSC-005
Nominal values and limits from method				30	0.500			30-105		50			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 12/15/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1547

Test	NI L
Matrix	SOLID
SDG	7114
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client	Hanford
Contract	No. 630
Contract	SDG H1547

PROCEDURES	REFERENCE	NI63_LSC
	CP-060	Soil Preparation, rev 3
	CP-431	Nickel-63 Purification, rev 4

AVERAGES ± 2 SD	MDA	2.1	±	0.10
FOR 9 SAMPLES	YIELD	87	±	6

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	12/15/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-014	Page 1 of 2

Collector: TM Johansen	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East H1547 (7114)	SAF No.: B01-103	
Ice Chest No.: ERC.99.035	Field Logbook No.: EL-1516	COA: JRCRA14114	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A020009	Bill of Lading/Air Bill No.: 42387954 – SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS: RAD DATA < 2000 PC119

Samples stored in Ref. #2B at the 3728 Shipping Facility on 10/10/01. Collector not available to relenquish samples on 10/17/01 for shipment.

RT 10-17-01

Preservation	Cool 4C Cool 4C	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	500mL	1000mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium, Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.	TIE TO:

10/10/01 IOUK

Sample No.	Matrix *	Sample Date	Sample Time									
B10055	SOIL	10-10-01	0920								X	B135B4
B10056	SOIL	10-10-01	0945								X	B135B5
B10057	SOIL	10-10-01	1045			(1 EACH)					X	B135B6
B10058	SOIL	10-10-01	1105								X	B135B6
B135C2	SOIL	10-10-01	1140								X	B135C4

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: [illegible]	10/10/01 1530	[illegible] #2B	10/10/01 1530
Relinquished By/Removed From: Rel 2B 3728	10-17-01 1200	Received By/Stored In: RTHorey	10-17-01 1200
Relinquished By/Removed From: RTHorey ERC	10-17-01 1200	Received By/Stored In: FEDEX	10-17-01
Relinquished By/Removed From: FED. EXPRESS	10-18-01 10:AM	Received By/Stored In: SCA-2 Chris R. Maestas	10-18-01 10:AM
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
GBA Report ASAP
Gross Alpha Beta to follow ASAP

~~(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}~~
~~(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470~~
~~(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030~~
~~(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}~~
~~(5) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) {Tributyl phosphate}~~
(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99

Tritium, Isotopic U

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DI=Drill Cuttings
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-014	Page 2 of 2

Collector: TM Johansen	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East H1547 (7114)	SAF No.: B01-103	Air Quality ☐
Ice Chest No.: ERC-99-035	Field Logbook No.: EL-1516	COA: JRCRA14114	Method of Shipment: Fed Ex
Shipped To: TMA/RCRA	Offsite Property No.: AD20009	Bill of Lading/Air Bill No.: 42001954 - SEE OSRC	

POSSIBLE SAMPLE HAZARDS/REMARKS
RAD DATA <5000DPM/g

Samples stored in Ref. 25 at the 3728 Shipping Facility on 10/18/01.
Collector not available to relenquish samples on 10/17/01 for shipment.
RT 10-17-01

Preservation	Cool 4C Cool 4C	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	1	
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	500mL	1000mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.		TLD:

Sample No.	Matrix *	Sample Date	Sample Time									
B135C3 ✓	SOIL ✓	10-10-01	1210 ✓		(1	EACH)					X ✓	B135C5

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: [illegible]	10/10/01 1530	Received By/Stored In: [illegible]	10/10/01 1530
Relinquished By/Removed From: Ref. 25 3728	10-17-01 1200	Received By/Stored In: R.T. Thore	10-17-01 1200
Relinquished By/Removed From: R.T. Thore, ERC	10-17-01 1200	Received By/Stored In: FEDEX	10-17-01 —
Relinquished By/Removed From: FED EXPRESS	10-18-01 10-18-01	Received By/Stored In: SCA-2 Elvie Maestas	10-18-01 10-18-01
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
GEA Report ASAP
Gross Alpha Beta to follow ASAP

(1) ~~ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}~~
~~(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470~~
(3) ~~IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045;~~ Sulfides - 9030
(4) ~~Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}~~
(5) ~~Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (Tributyl phosphate)~~
(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99

Tritium, Isotopic

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
LI=Liquid
V=Vegetation
X=Other

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

BHI-EE-011 (10/99)

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: BECHTEL HANFORD INC. Date/Time received 10-18-01 AT 10: AM

CoC No. B01-103-014

Container I.D. No. ERC-99-035 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: 6 SAMPLES
7. Number of containers per sample (1 EACH) (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: _____
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by Chris A. Maestas Date: 10-18-01 Time: 10: AM

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.

Analytical Report

Client: TNU-HANFORD B01-103
LVL#: 0110L119
SDG/SAF#: H1547/B01-103

W.O.#: 11343-606-001-9999-00
Date Received: 10-18-01

****Revision****

METALS CASE NARRATIVE

This report has been revised to include the addition of Arsenic.

1. This narrative covers the analyses of 6 soil samples and 6 TCLP leachate samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

3. All analyses were performed within the required holding times.

4. All cooler temperatures have been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits with the exception of CCV2 (110.5%) for Potassium in file TA1107C.

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. The preparation/method blank for 1 analyte was outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB result for Tin was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and all samples read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

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

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 27 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

Inorganics Laboratory Control Standards Report.

10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B10055	Aluminum	20,000	88.2
	Iron	25,000	112.2

12. The duplicate analyses for 4 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. The TCLP extract from samples B10055 for ICP analytes and B10056 for Mercury were selected for the matrix spikes (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

14. 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.

15. 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

11-28-01
Date

gmb/m10-119r

LVLI
LIONVILLE LABORATORY INC

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 01PM097

Initiator: OJohnson Batch: 0110C119 Parameter: Soil Metals
Date: 11/16/01 Samples: all Matrix: Soil
Client: TNuHanford Method: SW646/MCAWW/CLP/ Prep Batch:
H1547

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error ✓ Client Request __ Sampler Error on C-O-C
__ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

add Arsenic, TCLP to batch

4. Project Manager Instructions...signature/date: Orlem Johnson 11/16/01

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [illegible] 11/26/01 Other Explanation:

✓ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative [illegible] 11/26/01
✓ Hard Copy COC Revised
✓ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	2	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	1	✓ Log-in: ~~Keppel~~ Melmc
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 0110L119

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	✓6010B		__200.7				__99
Antimony	✓6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	✓6010B		__200.7				__99
Bismuth	✓6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	✓6010B	__7211 [5]	__200.7	__220.2			__99
Iron	✓6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	✓6010B		__200.7				__99
Manganese	✓6010B		__200.7				__99
Mercury	✓7470A [3]	__7471A [3]	__245.1 [3]	__245.5 [3]			__99
Molybdenum	✓6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	✓6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	✓6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	✓6010B	__7841 [5]	__200.7	__279.2__200.9			__99
Tin	✓6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	✓6010B		__200.7				__99
Zinc	✓6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other: _____ Method: _____

L-W1-033/M-03/01

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.

B = Indicates that the parameter was between the Instrument Detection Limit (IDL) and the Contract Required Detection Limit (CRDL)

Q QUALIFIERS

E = The reported value is estimated because of the presence of interference.

M = Duplicate injection precision not met.

N = Spiked sample recovery not within control limits.

S = The reported value was determined by the Method of Standard Additions (MSA).

W = Post Digestion spike for Furnace AA analysis is out of control limits (85 -115 %), while sample absorbance is less than 50% of spike absorbance.

* = Duplicate analysis not within control limits.

+ = Correlation coefficient for the MSA is less than 0.995.

ABBREVIATIONS

PB = Method or Preparation Blank.
S = Matrix Spike.
T = Matrix Spike Duplicate.
R or D = Sample Replicate

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 11/28/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B10055	Aluminum, Total	13100	MG/KG	1.6	1.0
		Bismuth, Total	0.36 u	MG/KG	0.36	1.0
		Copper, Total	20.0	MG/KG	0.06	1.0
		Iron, Total	21300	MG/KG	2.0	1.0
		Potassium, Total	2800	MG/KG	2.2	1.0
		Magnesium, Total	7300	MG/KG	0.46	1.0
		Manganese, Total	433	MG/KG	0.01	1.0
		Molybdenum, Total	0.50	MG/KG	0.12	1.0
		Sodium, Total	2500	MG/KG	0.41	1.0
		Tin, Total	2.1	MG/KG	0.27	1.0
-002	B10056	Aluminum, Total	5180	MG/KG	1.6	1.0
		Bismuth, Total	0.38 u	MG/KG	0.38	1.0
		Copper, Total	10.5	MG/KG	0.06	1.0
		Iron, Total	13600	MG/KG	2.0	1.0
		Potassium, Total	785	MG/KG	2.3	1.0
		Magnesium, Total	2650	MG/KG	0.48	1.0
		Manganese, Total	523	MG/KG	0.01	1.0
		Molybdenum, Total	1.5	MG/KG	0.13	1.0
		Sodium, Total	560	MG/KG	0.42	1.0
		Tin, Total	2.7	MG/KG	0.28	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B10057	Aluminum, Total	5440	MG/KG	1.4	1.0
		Bismuth, Total	0.33 u	MG/KG	0.33	1.0
		Copper, Total	10.1	MG/KG	0.05	1.0
		Iron, Total	15900	MG/KG	1.8	1.0
		Potassium, Total	984	MG/KG	2.0	1.0
		Magnesium, Total	3980	MG/KG	0.42	1.0
		Manganese, Total	222	MG/KG	0.01	1.0
		Molybdenum, Total	0.34	MG/KG	0.11	1.0
		Sodium, Total	361	MG/KG	0.37	1.0
		Tin, Total	1.8	MG/KG	0.25	1.0
-004	B10058	Aluminum, Total	7640	MG/KG	1.4	1.0
		Bismuth, Total	0.31 u	MG/KG	0.31	1.0
		Copper, Total	12.9	MG/KG	0.05	1.0
		Iron, Total	18500	MG/KG	1.7	1.0
		Potassium, Total	1140	MG/KG	1.9	1.0
		Magnesium, Total	3640	MG/KG	0.40	1.0
		Manganese, Total	246	MG/KG	0.01	1.0
		Molybdenum, Total	0.67	MG/KG	0.11	1.0
		Sodium, Total	688	MG/KG	0.35	1.0
		Tin, Total	1.9	MG/KG	0.23	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B135C2	Aluminum, Total	7190	MG/KG	1.4	1.0
		Bismuth, Total	0.33 u	MG/KG	0.33	1.0
		Copper, Total	11.8	MG/KG	0.05	1.0
		Iron, Total	17800	MG/KG	1.8	1.0
		Potassium, Total	1470	MG/KG	2.0	1.0
		Magnesium, Total	4860	MG/KG	0.42	1.0
		Manganese, Total	293	MG/KG	0.01	1.0
		Molybdenum, Total	2.0	MG/KG	0.11	1.0
		Sodium, Total	361	MG/KG	0.37	1.0
		Tin, Total	1.7	MG/KG	0.25	1.0
-006	B135C3	Aluminum, Total	3280	MG/KG	1.4	1.0
		Bismuth, Total	0.33 u	MG/KG	0.33	1.0
		Copper, Total	11.1	MG/KG	0.05	1.0
		Iron, Total	10200	MG/KG	1.8	1.0
		Potassium, Total	350	MG/KG	2.0	1.0
		Magnesium, Total	2550	MG/KG	0.42	1.0
		Manganese, Total	126	MG/KG	0.01	1.0
		Molybdenum, Total	1.1	MG/KG	0.11	1.0
		Sodium, Total	209	MG/KG	0.37	1.0
		Tin, Total	2.1	MG/KG	0.25	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B10055	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Arsenic, TCLP Leachate	52.1	u	UG/L	52.1	1.0
		Barium, TCLP Leachate	535		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.60		UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	11.3	u	UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	6.3		UG/L	2.8	1.0
-008	B10056	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Arsenic, TCLP Leachate	52.1	u	UG/L	52.1	1.0
		Barium, TCLP Leachate	1120		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.71		UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	30.0		UG/L	4.8	1.0
		Mercury, TCLP Leachate	0.96		UG/L	0.10	1.0
		Nickel, TCLP Leachate	24.5		UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	24.8		UG/L	2.8	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	B10057	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Arsenic, TCLP Leachate	52.1	u	UG/L	52.1	1.0
		Barium, TCLP Leachate	323		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.68		UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	8.5		UG/L	4.8	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	23.5		UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	14.2		UG/L	2.8	1.0
-010	B10058	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Arsenic, TCLP Leachate	52.1	u	UG/L	52.1	1.0
		Barium, TCLP Leachate	367		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.81		UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	11.0		UG/L	4.8	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	24.5		UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	21.4		UG/L	2.8	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	B135C2	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Arsenic, TCLP Leachate	52.1	u	UG/L	52.1	1.0
		Barium, TCLP Leachate	453		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.60		UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	11.4		UG/L	4.8	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	30.2		UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	13.3		UG/L	2.8	1.0
-012	B135C3	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Arsenic, TCLP Leachate	52.1	u	UG/L	52.1	1.0
		Barium, TCLP Leachate	153		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.67		UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	5.5		UG/L	4.8	1.0
		Mercury, TCLP Leachate	0.13		UG/L	0.10	1.0
		Nickel, TCLP Leachate	11.3	u	UG/L	11.3	1.0
		Lead, TCLP Leachate	24.2		UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	19.0		UG/L	2.8	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/28/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0723-MB1	Aluminum, Total	6.6	MG/KG	1.4	1.0
		Bismuth, Total	0.32 u	MG/KG	0.32	1.0
		Copper, Total	0.22	MG/KG	0.05	1.0
		Iron, Total	1.7 u	MG/KG	1.7	1.0
		Potassium, Total	5.7	MG/KG	1.9	1.0
		Magnesium, Total	0.84	MG/KG	0.41	1.0
		Manganese, Total	0.01	MG/KG	0.01	1.0
		Molybdenum, Total	0.11 u	MG/KG	0.11	1.0
		Sodium, Total	6.4	MG/KG	0.36	1.0
		Tin, Total	1.2	MG/KG	0.24	1.0
BLANK1	01L0695-MB1	Silver, TCLP Leachate	9.6 u	UG/L	9.6	1.0
		Arsenic, TCLP Leachate	52.1 u	UG/L	52.1	1.0
		Barium, TCLP Leachate	5.5 u	UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.40 u	UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3 u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	4.8 u	UG/L	4.8	1.0
		Nickel, TCLP Leachate	11.3 u	UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7 u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4 u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1 u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9 u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	2.8 u	UG/L	2.8	1.0
BLANK2	01L0695-MB2	Silver, TCLP Leachate	9.6 u	UG/L	9.6	1.0
		Arsenic, TCLP Leachate	52.1 u	UG/L	52.1	1.0
		Barium, TCLP Leachate	5.5 u	UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.40 u	UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3 u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	6.4	UG/L	4.8	1.0
		Nickel, TCLP Leachate	11.3 u	UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7 u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4 u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1 u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9 u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	3.3	UG/L	2.8	1.0
BLANK1	01C0341-MB1	Mercury, Total	0.10 u	UG/L	0.10	1.0
BLANK2	01C0341-MB2	Mercury, TCLP Leachate	0.10 u	UG/L	0.10	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B10055	Aluminum, Total	14300	13100	226	562.1*	1.0
		Bismuth, Total	527	0.36u	564	93.3	1.0
		Copper, Total	46.5	20.0	28.2	94.0	1.0
		Iron, Total	21500	21300	113	225.2*	1.0
		Potassium, Total	5910	2800	2820	109.9	1.0
		Magnesium, Total	9790	7300	2820	88.3	1.0
		Manganese, Total	476	433	56.5	75.9*	1.0
		Molybdenum, Total	107	0.50	113	94.2	1.0
		Sodium, Total	5010	2500	2820	89.0	1.0
		Tin, Total	104	2.1	113	90.4	1.0
-007	B10055	Silver, TCLP Leachate	3480	9.6 u	5000	69.6	1.0
		Arsenic, TCLP Leachate	4540	52.1 u	5000	90.7	1.0
		Barium, TCLP Leachate	95300	535	100000	94.7	1.0
		Beryllium, TCLP Leacha	856	0.60	1000	85.6	1.0
		Cadmium, TCLP Leachate	863	6.3 u	1000	86.3	1.0
		Chromium, TCLP Leachat	4310	4.8 u	5000	86.2	1.0
		Nickel, TCLP Leachate	895	11.3 u	1000	89.5	1.0
		Lead, TCLP Leachate	4490	22.7 u	5000	89.8	1.0
		Antimony, TCLP Leachat	932	45.4 u	1000	93.2	1.0
		Selenium, TCLP Leachat	939	62.1 u	1000	93.9	1.0
		Vanadium, TCLP Leachat	880	8.9 u	1000	88.0	1.0
		Zinc, TCLP Leachate	885	6.3	1000	87.8	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-008	B10056	Mercury, TCLP Leachate	196	0.96	200	97.7	50.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B10055	Aluminum, Total	13100	12600	3.3	1.0
		Bismuth, Total	0.36u	0.36u	NC	1.0
		Copper, Total	20.0	18.2	9.4	1.0
		Iron, Total	21300	20500	3.9	1.0
		Potassium, Total	2800	2730	2.7	1.0
		Magnesium, Total	7300	6770	7.5	1.0
		Manganese, Total	433	401	7.7	1.0
		Molybdenum, Total	0.50	0.32	43.6	1.0
		Sodium, Total	2500	2290	8.6	1.0
		Tin, Total	2.1	1.8	15.4	1.0
-007REP	B10055	Silver, TCLP Leachate	9.6 u	9.6 u	NC	1.0
		Arsenic, TCLP Leachate	52.1 u	52.1 u	NC	1.0
		Barium, TCLP Leachate	535	555	3.7	1.0
		Beryllium TCLP Leachate	0.60	0.71	16.8	1.0
		Cadmium, TCLP Leachate	6.3 u	6.3 u	NC	1.0
		Chromium, TCLP Leachate	4.8 u	6.8	NC	1.0
		Nickel, Leachate	11.3 u	17.2	NC	1.0
		Lead, TCLP Leachate	22.7 u	22.7 u	NC	1.0
		Antimony, Leachate	45.4 u	45.4 u	NC	1.0
		Selenium, TCLP Leachate	62.1 u	62.1 u	NC	1.0
		Vanadium, TCLP Leachate	8.9 u	8.9 u	NC	1.0
		Zinc, Leachate	6.3	10.0	45.4	1.0

HMP 11/28/01

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-008REP	B10056	Mercury, TCLP Leachate	0.96	1.1	13.2	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0723-LC1	Aluminum, LCS	511	500	MG/KG	102.2
		Bismuth, LCS	489	500	MG/KG	97.9
		Copper, LCS	126	125	MG/KG	100.9
		Iron, LCS	499	500	MG/KG	99.8
		Potassium, LCS	2670	2500	MG/KG	106.7
		Magnesium, LCS	2530	2500	MG/KG	101.1
		Manganese, LCS	77.8	75.0	MG/KG	103.7
		Molybdenum, LCS	506	500	MG/KG	101.2
		Sodium, LCS	2520	2500	MG/KG	100.6
		Tin, LCS	494	500	MG/KG	98.7
LCS1	01L0695-LC1	Silver, LCS	420	500	UG/L	84.0
		Arsenic, LCS	9330	10000	UG/L	93.3
		Barium, LCS	4540	5000	UG/L	90.8
		Beryllium, LCS	228	250	UG/L	91.2
		Cadmium, LCS	242	250	UG/L	96.9
		Chromium, LCS	474	500	UG/L	94.9
		Nickel, LCS	1940	2000	UG/L	97.0
		Lead, LCS	2410	2500	UG/L	96.4
		Antimony, LCS	2870	3000	UG/L	95.5
		Selenium, LCS	9410	10000	UG/L	94.1
		Vanadium, LCS	2280	2500	UG/L	91.2
		Zinc, LCS	948	1000	UG/L	94.8
LCS1	01C0341-LC1	Mercury, LCS	5.1	5.0	UG/L	102.5

(8) BNA From Metals WET

Lionville Laboratory Use Only

0110L119

Custody Transfer Record/Lab Work Request

Page 1 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU - Hanford SAF # B01-103

Est. Final Proj. Sampling Date:

Project #: 11343-606-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

dc: SPEC Del: STD TAT: 30

Date Rec'd: 10-18-01 Date Due: 11-17-01

		A	B	C					D		E	F	G	H		
Refrigerator #		1	6	6					6		6	6	6	6		
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG					1AG		1AG	1AG	1AG	1AG		
Volume	Liquid															
	Solid	120	500	250					500		500	500	60	120		
Preservatives								LEACHATE								
ANALYSES REQUESTED →	ORGANIC: VOA	BNA	Pest/PCB	Herb					INORG: TCA Metal	CN	Metals by ICP (TCLP)	I.C Anions Cyanide	HER Alcohols Glycols Ketones			

Lionville Laboratory Use Only

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625X	OPCB			MET (2)	MET (1)		ITCLP	INORG (1) IC (1)	XCRG	ODRO OGRO		
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	001	B10055			S	10-10-01	0920	X	X	X				X		X	X	X	X		
	002	B10056					0945	X	X	X				X		X	X	X	X		
	003	B10057					1045	X	X	X				X		X	X	X	X		
	004	B10058					1105	X	X	X				X		X	X	X	X		
	005	B135C2					1140	X	X	X				X		X	X	X	X		
	006	B135C3					1210	X	X	X				X		X	X	X	X		
	007	B10055 tclp of 001			L	*							✓								
	008	B10056 002											✓								
	009	B10057 003											✓								
	010	B10058 004											✓								

Special Instructions:

Run Matrix QC

SAF # B01-103

10-19-01 Add Ammonia (INH3N), ICNTO, IPH, ISFD

11-26-01 Add As, tclp Met (2) (INORG 1)

DATE/REVISIONS: * See labchron

1. REC. A CRACKED LID ON
2. SAMPLE B135C3 - ITEM NO. 2 ON
3. ORIGINAL CHAIN - (METALS by ICP (TCLP)
4. MET (1) Al, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
5. MET (2) Sb, Be, Ni, V, Zn, Hg, Ba, Cd, Cr, Pb, Se, Ag
6. IC (1) ~~IBR, ICCL, IAFG~~ (Jim initials), ICNO3, ICNO2, ~~ICPO4, ICSO4~~ (Jim)

Relinquished by	Received by	Date	Time
FEDEX	[signature]	10-18-01	0930

Relinquished	Received by	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN	

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

4235 7954 8111

4235 7954 8096

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered ___
Airbill # SEE below
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 1.3 °C
1.6, 1.9

Lionville Laboratory Use Only

01101119

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI LIONVILLE LABORATORY INC

Client: TNU-HANFORD B01-103

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #: see page 1

Lionville Laboratory Project Manager:

QC: Del: TAT:

Date Rec'd: Date Due:

Refrigerator #

#/Type Container: Liquid / Solid

Volume: Liquid / Solid

Preservatives

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN; LEACH PKG

Lionville Laboratory Use Only

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	Herb	LEACH PKG	Metal	CN
011	B135C2 Eclp of 005			L				✓ MET②		
012	B135C3 ⊥ 006			⊥				✓		

Special Instructions:

DATE/REVISIONS:

MET② 1. Sb, Be, Ni, V, Zn, Hg, Ba, Cd, Cr, Pb, Se, Ag

2.

3.

4.

5.

6.

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Lionville Laboratory Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___
Airbill # ___
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Samples Properly Preserved Y or N
5) Received Within Holding Times Y or N

Tamper Resistant Seal was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. ___ °C

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-103
LVL #: 0110L119
SDG/SAF #: H1547/B01-103

W.O. #: 11343-606-001-9999-00
Date Received: 10-18-2001

GC/MS VOLATILE

Six (6) soil samples were collected on 10-10-2001.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260B for client specified Volatile target compounds on 10-20,22,23-2001.

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

1. The cooler temperatures upon receipt have been recorded on the chain-of-custody.

2. The samples were analyzed within required holding time.

3. A non-target compound was detected in sample B10056.

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 blanks contained the common laboratory contaminants Methylene Chloride and/or Acetone at levels less than 5x 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

11/7/01
Date

som\group\data\voa\tnu-hanford\0110-119.doc

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 2 4 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

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.

VLI
VONVILLE LABORATORY INC.

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.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan 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 quan modifications:

MP - Missed Peak: manually added peak not found by automatic quan program.

PA - Peak Assignment: quan 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.

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List
Report Date: 11/06/01 12:26

RFW Batch Number: **0110L119** Client: **TNUHANFORD B01-103 H1547** Work Order: 11343606001 Page: 1a

	Cust ID:	B10055		B10055		B10055		B10056		B10057		B10058	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		004	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.09		1.00		0.926		0.962		0.980		0.926	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	103	%	106	%	103	%	103	%	100	%	102	%
	Bromofluorobenzene	88	%	90	%	88	%	90	%	89	%	91	%
	1,2-Dichloroethane-d4	92	%	93	%	96	%	96	%	92	%	97	%
			fl		fl		fl		fl		fl		fl
Chloromethane		12	U	11	U	11	U	12	U	10	U	12	U
Bromomethane		12	U	11	U	11	U	12	U	10	U	12	U
Vinyl Chloride		12	U	11	U	11	U	12	U	10	U	12	U
Chloroethane		12	U	11	U	11	U	12	U	10	U	12	U
Methylene Chloride		11	B	17	B	7	B	9	B	8	B	9	B
Acetone		17	B	11	JB	9	J	12	U	20	B	12	U
Carbon Disulfide		6	U	6	U	6	U	6	U	5	U	6	U
1,1-Dichloroethene		6	U	90	%	95	%	6	U	5	U	6	U
1,1-Dichloroethane		6	U	6	U	6	U	6	U	5	U	6	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	6	U	5	U	6	U
Chloroform		49		6	U	6	U	6	U	5	U	6	U
1,2-Dichloroethane		6	U	6	U	6	U	6	U	5	U	6	U
2-Butanone		17		11	U	11	U	12	U	10	U	12	U
1,1,1-Trichloroethane		6	U	6	U	6	U	6	U	5	U	6	U
Carbon Tetrachloride		6	U	6	U	6	U	6	U	5	U	6	U
Bromodichloromethane		6	U	6	U	6	U	6	U	5	U	6	U
1,2-Dichloropropane		6	U	6	U	6	U	6	U	5	U	6	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	6	U	5	U	6	U
Trichloroethene		6	U	93	%	97	%	6	U	5	U	6	U
Dibromochloromethane		6	U	6	U	6	U	6	U	5	U	6	U
1,1,2-Trichloroethane		6	U	6	U	6	U	6	U	5	U	6	U
Benzene		6	U	95	%	98	%	6	U	5	U	6	U
Trans-1,3-Dichloropropene		6	U	6	U	6	U	6	U	5	U	6	U
Bromoform		6	U	6	U	6	U	6	U	5	U	6	U
4-Methyl-2-pentanone		12	U	11	U	11	U	12	U	10	U	12	U
2-Hexanone		12	U	11	U	11	U	12	U	10	U	12	U
Tetrachloroethene		6	U	6	U	6	U	6	U	5	U	6	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	6	U	5	U	6	U
Toluene		6	U	103	%	104	%	6	U	5	U	6	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0110L119 Client: TNUHANFORD B01-103 H1547 Work Order: 11343606001 Page: 1b

Cust ID:	B10055	B10055	B10055	B10056	B10057	B10058
RFW#:	001	001 MS	001 MSD	002	003	004
Chlorobenzene	6 U	96 %	98 %	6 U	5 U	6 U
Ethylbenzene	6 U	6 U	6 U	6 U	5 U	6 U
Styrene	6 U	6 U	6 U	6 U	5 U	6 U
Xylene (total)	6 U	6 U	6 U	6 U	5 U	6 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.

Volatiles by GC/MS, HSL List

Report Date: 11/06/01 12:26

RFW Batch Number: 0110L119 Client: TNUHANFORD B01-103 H1547 Work Order: 11343606001 Page: 2a

	Cust ID:	B135C2		B135C3		VBLKWX		VBLKWX BS		VBLKWD		VBLKWD BS	
Sample Information	RFW#:	005		006		01LVH445-MB1		01LVH445-MB1		01LVH447-MB1		01LVH447-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.02		0.962		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	101	%	105	%	106	%	100	%	106	%	104	%
	Bromofluorobenzene	85	%	89	%	88	%	90	%	87	%	93	%
	1,2-Dichloroethane-d4	94	%	90	%	104	%	95	%	85	%	95	%
			fl		fl		fl		fl		fl		fl
Chloromethane		10	U	10	U	10	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U	10	U	10	U	10	U
Methylene Chloride		8	B	14	B	25		22	B	5	J	12	B
Acetone		10	U	10	U	4	J	10	U	1	J	5	JB
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	5	U	5	U	85	%	5	U	91	%
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	10	U	10	U	10	U	10	U	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	5	U	5	U	95	%	5	U	95	%
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	5	U	5	U	98	%	5	U	95	%
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	10	U	10	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U	10	U	10	U	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	5	U	5	U	100	%	5	U	100	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0110L119** Client: **TNUHANFORD B01-103 H1547** Work Order: 11343606001 Page: 2b

Cust ID:	B135C2	B135C3	VBLKWX	VBLKWX BS	VBLKWD	VBLKWD BS
RFW#:	005	006	01LVH445-MB1	01LVH445-MB1	01LVH447-MB1	01LVH447-MB1
Chlorobenzene	5 U	5 U	5 U	99 %	5 U	95 %
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List
Report Date: 11/06/01 12:26

RFW Batch Number: **0110L119** Client: **TNUHANFORD B01-103 H1547** Work Order: 11343606001 Page: 3a

10

	Cust ID:	**VBLKWY**		**VBLKWY BS**	
Sample Information	RFW#:	**01LVH448-MB1**		**01LVH448-MB1**	
	Matrix:	SOIL		SOIL	
	D.F.:	1.00		1.00	
	Units:	ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	106	%	102	%
	Bromofluorobenzene	88	%	88	%
	1,2-Dichloroethane-d4	96	%	96	%
Chloromethane		10	U	10	U
Bromomethane		10	U	10	U
Vinyl Chloride		10	U	10	U
Chloroethane		10	U	10	U
Methylene Chloride		7		5	JB
Acetone		10	U	10	U
Carbon Disulfide		5	U	5	U
1,1-Dichloroethene		5	U	92	%
1,1-Dichloroethane		5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U
Chloroform		5	U	5	U
1,2-Dichloroethane		5	U	5	U
2-Butanone		10	U	10	U
1,1,1-Trichloroethane		5	U	5	U
Carbon Tetrachloride		5	U	5	U
Bromodichloromethane		5	U	5	U
1,2-Dichloropropane		5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U
Trichloroethene		5	U	96	%
Dibromochloromethane		5	U	5	U
1,1,2-Trichloroethane		5	U	5	U
Benzene		5	U	98	%
Trans-1,3-Dichloropropene		5	U	5	U
Bromoform		5	U	5	U
4-Methyl-2-pentanone		10	U	10	U
2-Hexanone		10	U	10	U
Tetrachloroethene		5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U
Toluene		5	U	102	%

*= Outside of EPA CLP QC limits.

Cust ID:	VBLKWY	VBLKWY BS
RFW#:	01LVH448-MB1	01LVH448-MB1

Chlorobenzene	5	U	97	%
Ethylbenzene	5	U	5	U
Styrene	5	U	5	U
Xylene (total)	5	U	5	U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B10055

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-103 H1547

Matrix: SOIL

Lab Sample ID: 0110L119-001

Sample wt/vol: 4.60 (g/mL) G

Lab File ID: h102015

Level: (low/med) LOW

Date Received: 10/18/01

% Moisture: not dec. 12

Date Analyzed: 10/20/01

Column: (pack/cap) CAP

Dilution Factor: 1.09

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B10056

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-103 H1547

Matrix: SOIL Lab Sample ID: 0110L119-002

Sample wt/vol: 5.20 (g/mL) G Lab File ID: h102016

Level: (low/med) LOW Date Received: 10/18/01

% Moisture: not dec. 21 Date Analyzed: 10/20/01

Column: (pack/cap) CAP Dilution Factor: 0.962

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 104767	1-HEXANOL, 2-ETHYL-	24.506	6	J

FORM 1 VOA-TIC 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B10057

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-103 H1547

Matrix: SOIL

Lab Sample ID: 0110L119-003

Sample wt/vol: 5.10 (g/mL) G

Lab File ID: h102017

Level: (low/med) LOW

Date Received: 10/18/01

% Moisture: not dec. 3

Date Analyzed: 10/20/01

Column: (pack/cap) CAP

Dilution Factor: 0.980

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC

12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B10058

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-103 H1547

Matrix: SOIL Lab Sample ID: 0110L119-004

Sample wt/vol: 5.40 (g/mL) G Lab File ID: h102018

Level: (low/med) LOW Date Received: 10/18/01

% Moisture: not dec. 23 Date Analyzed: 10/20/01

Column: (pack/cap) CAP Dilution Factor: 0.926

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B135C2

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-103 H1547

Matrix: SOIL

Lab Sample ID: 0110L119-005

Sample wt/vol: 4.90 (g/mL) G

Lab File ID: h102019

Level: (low/med) LOW

Date Received: 10/18/01

% Moisture: not dec. 3

Date Analyzed: 10/20/01

Column: (pack/cap) CAP

Dilution Factor: 1.02

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B135C3

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-103 H1547

Matrix: SOIL

Lab Sample ID: 0110L119-006

Sample wt/vol: 5.20 (g/mL) G

Lab File ID: h102210

Level: (low/med) LOW

Date Received: 10/18/01

% Moisture: not dec. 7

Date Analyzed: 10/22/01

Column: (pack/cap) CAP

Dilution Factor: 0.962

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC

12/88 Rev.

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1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLKWX

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-103 H1547

Matrix: SOIL

Lab Sample ID: 01LVH445-MB1

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: h102005

Level: (low/med) LOW

Date Received: 10/20/01

% Moisture: not dec. 0

Date Analyzed: 10/20/01

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC 12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLKWD

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-103 H1547

Matrix: SOIL

Lab Sample ID: 01LVH447-MB1

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: h102207

Level: (low/med) LOW

Date Received: 10/22/01

% Moisture: not dec. 0

Date Analyzed: 10/22/01

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC

12/88 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

VBLKWY

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-103 H1547

Matrix: SOIL

Lab Sample ID: 01LVH448-MB1

Sample wt/vol: 5.00 (g/mL) G

Lab File ID: h102305

Level: (low/med) LOW

Date Received: 10/23/01

% Moisture: not dec. 0

Date Analyzed: 10/23/01

Column: (pack/cap) CAP

Dilution Factor: 1.00

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC 12/88 Rev.

(U) BNA From Metals WET

Lionville Laboratory Use Only

01101L119

Custody Transfer Record/Lab Work Request

Page 1 of 2

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: [illegible] SAF # B01-103

Est. Final Report Delivery Date: [illegible]

Project #: [illegible]

Project Contact/Phone #: [illegible]

Lionville Laboratory Project Manager: [illegible]

QC: SPEC Del: STD TAT: 30

Date Rec'd: 10-18-01 Date Due: 11-17-01

	A	B	C	D	E	F	G	H
Refrigerator #	1	6	6	6	6	6	6	6
#/Type Container								
Volume								
Preservatives								
ANALYSES REQUESTED	ORGANIC: VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	ORGANIC: Herb	INORG: TCLP Metals	INORG: CN		

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	0624H	0625X	OPCB				MET(2)	MET(1)		ITCLP	ZNO3/ZNO2 IC(1)	ICAG	ODRO OGRO	
001	B10053					0921	X	X	X					X		X	X	X	X	
002	B10054					0945	X	X	X					X		X	X	X	X	
003	B10055					[illegible]	X	X	X					X		X	X	X	X	
004	[illegible]					[illegible]	X	X	X					X		X	X	X	X	
005	[illegible]																			
006	[illegible]																			
007	[illegible]																			
008	[illegible]																			
009	B10059					[illegible]														
010	B10060					[illegible]														

Special Instructions:

Run Matrix QC

SAF # B01-103

10-19-01 Add ZNH3N Ammonia, ICNTO, IPH, ISFD

ZNO3/ZNO2 (1)

DATE/REVISIONS: * See labchron

1. REC A CRACKED LID ON
2. SAMPLE B135C3 - ITEM NO. 2 ON
3. ORIGINAL CHAIN - (METALS by ICP (TCLP)
4. MET(1) Al, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
5. MET(2) Sb, Be, Ni, V, Zn, Hg; Ba, Cd, Cr, Pb, Se, Ag
6. IC(1) ~~ICBR, ICCL, ICFL~~, ICNO3, ICNO2, ~~ICPO4, ICSO4~~ Jim initials

Relinquished by	Received by	Date	Time
FEDEX	[illegible]	10-18-01	0930

Relinquished	Received by	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN	

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # SEE below

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was: 1) Present on Outer Package (Y) or N

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 1.3 °C

1.6, 1.9

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

4235 7954 8111

7475 7954 8006

Lionville Laboratory Use Only
0110L119

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: TNU-HANFORD BOI-103

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #: see page 1

Lionville Laboratory Project Manager:

QC: Del: TAT:

Date Rec'd: Date Due:

Refrigerator #																
#/Type Container	Liquid															
	Solid															
Volume	Liquid															
	Solid															
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb			LL AC + ARS	Metal	CN						
		Lionville Laboratory Use Only														
								MET②								

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													
011	B135C2 Felp of 005			L								✓							
012	B135C3 ⊥ 006			⊥								✓							

Special Instructions:

DATE/REVISIONS:

MET② 1. Sb, Be, Ni, V, Zn, Hg, Ba, Cd, Cr, Pb, Se, Ag

2.

3.

4.

5.

6.

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Lionville Laboratory Use Only

Samples were:
1) Shipped ____ or Hand Delivered ____
Airbill # ____
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Samples Properly Preserved Y or N
5) Received Within Holding Times Y or N

Tamper Resistant Seal was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec'd Y or N

Cooler Temp. ____ °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-014	Page 1 of 2

Collector: TM Johansen	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: MULTIPLE SEE OSPC	Field Logbook No.: EL-1516	COA: JRCRA14114	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A020022	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
RAD DATA < 2000 PCI/g

Samples stored in Ref. #2B at the 3728 Shipping Facility on 10/10/01. Collector not available to relenquish samples on 10/17/01 for shipment.

RJ 10/17/01

SAMPLE ANALYSIS											
Preservation	Cool 4C Cool 4C	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1	1		
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	~~500mL~~ 250mL	1000mL		
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time								
B10055	SOIL	10-10-01	~~0945~~ 0900	X	X	X	X	X	X	X	X	B135B4
B10056	SOIL	10-10-01	0945	X	X	X	X	X	X	X	X	B135B5
B10057	SOIL	10-10-01	1045	X	X	X	X	X	X	X	X	B135B6
B10058	SOIL	10-10-01	1105	X	X	X	X	X	X	X	X	B135B7
B135C2	SOIL	10-10-01	1140	X	X	X	X	X	X	X	X	B135C4

TILTO:

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: TM Johansen/Trent	Date/Time: 10/10/01 1530	Received By/Stored In: RCF #2B	Date/Time: 10/10/01 1530
Relinquished By/Removed From: RCF 2B 3728	Date/Time: 10/17/01 1200	Received By/Stored In: R L Arthur	Date/Time: 10-17-01 1200
Relinquished By/Removed From: R L Arthur ERC	Date/Time: 10/17/01 1200	Received By/Stored In: [illegible]	Date/Time:
Relinquished By/Removed From: FEDEX	Date/Time: 10-18-01 0930	Received By/Stored In: Cadas Hanford	Date/Time: 10-18-01 0930
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
~~ORA Report ASAP~~
~~Gross Alpha Data to follow ASAP~~ TMJ 10/10/01

(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {Tributyl phosphate}
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec – Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 – Total Sr; Technetium-~~ TMJ 10/10/01

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

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

ERC-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-014	Page 2 of 2

Collector: TM Johansen	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: Multiple See OSPC	Field Logbook No.: EL-1516	COA: JRCRA14114	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A020022	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
RAD DATA < 2000 PCI/g

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 10/10/01.
Collector not available to relenquish samples on 10/17/01 for shipment.
RT 10-17-01

Preservation	Cool 4C Cool 4C	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	~~500mL~~ 250mL	~~500mL~~ 500mL	
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See Item (4) in Special Instructions.	See Item (5) in Special Instructions.	PCBs - 8082	See Item (6) in Special Instructions.	
Sample Time										
B135C3 1210	X	X	X	X	X	X	X	X		B135C5

TILTO:

TOTAL ACTIVITIES NOT THIS OCC.
SHIPPED WITH DATA
PRELIMINARY < 2000 PCI/g
INDICATES PER DISCUSSION WITH
PER DISCUSS. RIAN WEISS.
RT 10-17-01

CHAIN OF

Relinquished By/Rec	Date/Time
[illegible]	10/10/01 1530
Relinquished By/Rec	Date/Time 1200
[illegible]	Thorp 10-17-01
Relinquished By/Rec	Date/Time
[illegible]	
Relinquished By/Rec	Date/Time
[illegible]	2 10-18-01 0930
Relinquished By/Rec	Date/Time
Relinquished By/Rec	Date/Time

LABORATORY SECTION

FINAL SAMPLE DISPOSITION

SPECIAL INSTRUCTIONS
~~GBA Report ASAP~~
~~Gross Alpha/Beta to follow ASAP~~ TMJ 10/10/01
(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec. Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-~~ TMJ 10/10/01

Title | Date/Time

Disposed By | Date/Time

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
Ve=Vegetation
X=Other

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-103
LVL #: 0110L119
SDG/SAF #: H1547B01-103

W.O. #: 11343-606-001-9999-00
Date Received: 10-18-2001

SEMIVOLATILE

Six (6) soil samples were collected on 10-10-2001.

The samples and their associated QC samples were extracted on 10-19-2001 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 10-23,24-2001.

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 temperatures upon receipt have been recorded on the chain-of-custody.
2. Samples were extracted and analyzed within required holding time.
3. Non-target compounds were 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

11/5/01
Date

som\gorup\data\bna\tnu-hanford-0110-119.doc

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 2 0 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

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.

VLI
DONVILLE LABORATORY INC

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.

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

Report Date: 10/25/01 12:58

RFW Batch Number: 0110L119 Client: TNU-HANFORD B01-103 Work Order: 11343606001 Page: 1a

	Cust ID:	B10055		B10056		B10057		B10057		B10057		B10058	
Sample Information	RFW#:	001		002		003		003 MS		003 MSD		004	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	80	%	85	%	81	%	75	%	76	%	78	%
	2-Fluorobiphenyl	72	%	84	%	75	%	72	%	72	%	74	%
	p-Terphenyl-d14	99	%	110	%	110	%	98	%	101	%	100	%
	Phenol-d5	76	%	80	%	80	%	70	%	74	%	74	%
	2-Fluorophenol	71	%	72	%	72	%	65	%	69	%	69	%
	2,4,6-Tribromophenol	75	%	88	%	86	%	73	%	77	%	77	%
			fl		fl		fl		fl		fl		fl
Phenol		380	U	420	U	340	U	66	%	68	%	440	U
bis(2-Chloroethyl)ether		380	U	420	U	340	U	340	U	340	U	440	U
2-Chlorophenol		380	U	420	U	340	U	67	%	68	%	440	U
1,3-Dichlorobenzene		380	U	420	U	340	U	340	U	340	U	440	U
1,4-Dichlorobenzene		380	U	420	U	340	U	63	%	64	%	440	U
1,2-Dichlorobenzene		380	U	420	U	340	U	340	U	340	U	440	U
2-Methylphenol		380	U	420	U	340	U	340	U	340	U	440	U
2,2'-oxybis(1-Chloropropane)		380	U	420	U	340	U	340	U	340	U	440	U
4-Methylphenol		380	U	420	U	340	U	340	U	340	U	440	U
N-Nitroso-Di-n-propylamine		380	U	420	U	340	U	73	%	76	%	440	U
Hexachloroethane		380	U	420	U	340	U	340	U	340	U	440	U
Nitrobenzene		380	U	420	U	340	U	340	U	340	U	440	U
Isophorone		380	U	420	U	340	U	340	U	340	U	440	U
2-Nitrophenol		380	U	420	U	340	U	340	U	340	U	440	U
2,4-Dimethylphenol		380	U	420	U	340	U	340	U	340	U	440	U
bis(2-Chloroethoxy)methane		380	U	420	U	340	U	340	U	340	U	440	U
2,4-Dichlorophenol		380	U	420	U	340	U	340	U	340	U	440	U
1,2,4-Trichlorobenzene		380	U	420	U	340	U	68	%	66	%	440	U
Naphthalene		380	U	420	U	340	U	340	U	340	U	440	U
4-Chloroaniline		380	U	420	U	340	U	340	U	340	U	440	U
Hexachlorobutadiene		380	U	420	U	340	U	340	U	340	U	440	U
4-Chloro-3-methylphenol		380	U	420	U	340	U	74	%	77	%	440	U
2-Methylnaphthalene		380	U	420	U	340	U	340	U	340	U	440	U
Hexachlorocyclopentadiene		380	U	420	U	340	U	340	U	340	U	440	U
2,4,6-Trichlorophenol		380	U	420	U	340	U	340	U	340	U	440	U
2,4,5-Trichlorophenol		950	U	1100	U	860	U	860	U	860	U	1100	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0110L119 Client: TNU-HANFORD B01-103 Work Order: 11343606001 Page: 1b

Cust ID:	B10055		B10056		B10057		B10057		B10057		B10058	
RFW#:	001		002		003		003 MS		003 MSD		004	
2-Chloronaphthalene	380	U	420	U	340	U	340	U	340	U	440	U
2-Nitroaniline	950	U	1100	U	860	U	860	U	860	U	1100	U
Dimethylphthalate	380	U	420	U	340	U	340	U	340	U	440	U
Acenaphthylene	380	U	420	U	340	U	340	U	340	U	440	U
2,6-Dinitrotoluene	380	U	420	U	340	U	340	U	340	U	440	U
3-Nitroaniline	950	U	1100	U	860	U	860	U	860	U	1100	U
Acenaphthene	380	U	420	U	340	U	70	%	71	%	440	U
2,4-Dinitrophenol	950	U	1100	U	860	U	860	U	860	U	1100	U
4-Nitrophenol	950	U	1100	U	860	U	72	%	78	%	1100	U
Dibenzofuran	380	U	420	U	340	U	340	U	340	U	440	U
2,4-Dinitrotoluene	380	U	420	U	340	U	79	%	84	%	440	U
Diethylphthalate	380	U	420	U	340	U	340	U	340	U	440	U
4-Chlorophenyl-phenylether	380	U	420	U	340	U	340	U	340	U	440	U
Fluorene	380	U	420	U	340	U	340	U	340	U	440	U
4-Nitroaniline	950	U	1100	U	860	U	860	U	860	U	1100	U
4,6-Dinitro-2-methylphenol	950	U	1100	U	860	U	860	U	860	U	1100	U
N-Nitrosodiphenylamine (1)	380	U	420	U	340	U	340	U	340	U	440	U
4-Bromophenyl-phenylether	380	U	420	U	340	U	340	U	340	U	440	U
Hexachlorobenzene	380	U	420	U	340	U	340	U	340	U	440	U
Pentachlorophenol	950	U	1100	U	860	U	65	%	69	%	1100	U
Phenanthrene	380	U	420	U	340	U	340	U	340	U	440	U
Anthracene	380	U	420	U	340	U	340	U	340	U	440	U
Carbazole	380	U	420	U	340	U	340	U	340	U	440	U
Di-n-Butylphthalate	380	U	420	U	340	U	340	U	340	U	440	U
Fluoranthene	380	U	420	U	340	U	340	U	340	U	440	U
Pyrene	24	J	420	U	340	U	88	%	89	%	33	J
Butylbenzylphthalate	380	U	420	U	340	U	340	U	340	U	440	U
3,3'-Dichlorobenzidine	380	U	420	U	340	U	340	U	340	U	440	U
Benzo(a)anthracene	380	U	420	U	340	U	340	U	340	U	440	U
Chrysene	380	U	420	U	340	U	340	U	340	U	440	U
bis(2-Ethylhexyl)phthalate	380	U	26	JB	340	U	340	U	340	U	440	U
Di-n-Octyl phthalate	380	U	420	U	340	U	340	U	340	U	440	U
Benzo(b)fluoranthene	380	U	420	U	340	U	340	U	340	U	440	U
Benzo(k)fluoranthene	380	U	420	U	340	U	340	U	340	U	440	U
Benzo(a)pyrene	380	U	420	U	340	U	340	U	340	U	440	U
Indeno(1,2,3-cd)pyrene	380	U	420	U	340	U	340	U	340	U	440	U
Dibenzo(a,h)anthracene	380	U	420	U	340	U	340	U	340	U	440	U
Benzo(g,h,i)perylene	380	U	420	U	340	U	340	U	340	U	440	U
Tributylphosphate	380	U	420	U	340	U	340	U	340	U	440	U

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

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

RFW Batch Number: 0110L119 Client: TNU-HANFORD B01-103 Work Order: 11343606001 Report Date: 10/25/01 12:58 Page: 2a

	Cust ID:	B135C2		B135C3		SBLKIC		SBLKIC BS	
Sample Information	RFW#:	005		006		01LE1264-MB1		01LE1264-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	58	%	79	%	67	%	68	%
	2-Fluorobiphenyl	58	%	74	%	63	%	64	%
	p-Terphenyl-d14	92	%	108	%	90	%	92	%
	Phenol-d5	55	%	76	%	65	%	67	%
	2-Fluorophenol	49	%	67	%	61	%	63	%
	2,4,6-Tribromophenol	71	%	81	%	60	%	71	%
Phenol		340	U	360	U	330	U	62	%
bis(2-Chloroethyl)ether		340	U	360	U	330	U	330	U
2-Chlorophenol		340	U	360	U	330	U	63	%
1,3-Dichlorobenzene		340	U	360	U	330	U	330	U
1,4-Dichlorobenzene		340	U	360	U	330	U	60	%
1,2-Dichlorobenzene		340	U	360	U	330	U	330	U
2-Methylphenol		340	U	360	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		340	U	360	U	330	U	330	U
4-Methylphenol		340	U	360	U	330	U	330	U
N-Nitroso-Di-n-propylamine		340	U	360	U	330	U	65	%
Hexachloroethane		340	U	360	U	330	U	330	U
Nitrobenzene		340	U	360	U	330	U	330	U
Isophorone		340	U	360	U	330	U	330	U
2-Nitrophenol		340	U	360	U	330	U	330	U
2,4-Dimethylphenol		340	U	360	U	330	U	330	U
bis(2-Chloroethoxy)methane		340	U	360	U	330	U	330	U
2,4-Dichlorophenol		340	U	360	U	330	U	330	U
1,2,4-Trichlorobenzene		340	U	360	U	330	U	63	%
Naphthalene		340	U	360	U	330	U	330	U
4-Chloroaniline		340	U	360	U	330	U	330	U
Hexachlorobutadiene		340	U	360	U	330	U	330	U
4-Chloro-3-methylphenol		340	U	360	U	330	U	71	%
2-Methylnaphthalene		340	U	360	U	330	U	330	U
Hexachlorocyclopentadiene		340	U	360	U	330	U	330	U
2,4,6-Trichlorophenol		340	U	360	U	330	U	330	U
2,4,5-Trichlorophenol		860	U	900	U	830	U	830	U

*= Outside of EPA CLP QC limits.

Cust ID:	B135C2		B135C3		SBLKIC		SBLKIC BS	
RFW#:	005		006		01LE1264-MB1		01LE1264-MB1	
2-Chloronaphthalene	340	U	360	U	330	U	330	U
2-Nitroaniline	860	U	900	U	830	U	830	U
Dimethylphthalate	340	U	360	U	330	U	330	U
Acenaphthylene	340	U	360	U	330	U	330	U
2,6-Dinitrotoluene	340	U	360	U	330	U	330	U
3-Nitroaniline	860	U	900	U	830	U	830	U
Acenaphthene	340	U	360	U	330	U	65	%
2,4-Dinitrophenol	860	U	900	U	830	U	830	U
4-Nitrophenol	860	U	900	U	830	U	76	%
Dibenzofuran	340	U	360	U	330	U	330	U
2,4-Dinitrotoluene	340	U	360	U	330	U	81	%
Diethylphthalate	340	U	360	U	330	U	330	U
4-Chlorophenyl-phenylether	340	U	360	U	330	U	330	U
Fluorene	340	U	360	U	330	U	330	U
4-Nitroaniline	860	U	900	U	830	U	830	U
4,6-Dinitro-2-methylphenol	860	U	900	U	830	U	830	U
N-Nitrosodiphenylamine (1)	340	U	360	U	330	U	330	U
4-Bromophenyl-phenylether	340	U	360	U	330	U	330	U
Hexachlorobenzene	340	U	360	U	330	U	330	U
Pentachlorophenol	860	U	900	U	830	U	29	%
Phenanthrene	340	U	360	U	330	U	330	U
Anthracene	340	U	360	U	330	U	330	U
Carbazole	340	U	360	U	330	U	330	U
Di-n-Butylphthalate	340	U	360	U	330	U	330	U
Fluoranthene	340	U	360	U	330	U	330	U
Pyrene	340	U	360	U	330	U	80	%
Butylbenzylphthalate	340	U	360	U	330	U	330	U
3,3'-Dichlorobenzidine	340	U	360	U	330	U	330	U
Benzo(a)anthracene	340	U	360	U	330	U	330	U
Chrysene	340	U	360	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	300	JB	69	JB	29	J	330	U
Di-n-Octyl phthalate	340	U	360	U	330	U	330	U
Benzo(b)fluoranthene	340	U	360	U	330	U	330	U
Benzo(k)fluoranthene	340	U	360	U	330	U	330	U
Benzo(a)pyrene	340	U	360	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	340	U	360	U	330	U	330	U
Dibenzo(a,h)anthracene	340	U	360	U	330	U	330	U
Benzo(g,h,i)perylene	340	U	360	U	330	U	330	U
Tributylphosphate	340	U	360	U	330	U	330	U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B10055

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNU-HANFORD B01-103

Matrix: (soil/water) SOIL

Lab Sample ID: 0110L119-001

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: D102316

Level: (low/med) LOW

Date Received: 10/18/01

% Moisture: 12 decanted: (Y/N)__

Date Extracted: 10/19/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 10/23/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: _____

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.086	400	JB

10

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B10056

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNU-HANFORD B01-103

Matrix: (soil/water) SOIL

Lab Sample ID: 0110L119-002

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: D102317

Level: (low/med) LOW

Date Received: 10/18/01

% Moisture: 21 decanted: (Y/N)__

Date Extracted: 10/19/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 10/23/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: _____

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.086	600	JB
2.	ALKANE	22.259	200	J
3.	ALKANE	22.677	200	J
4.	ALKANE	23.155	100	J
5.	ALKANE	24.363	100	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B10057

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNU-HANFORD B01-103

Matrix: (soil/water) SOIL

Lab Sample ID: 0110L119-003

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: D102318

Level: (low/med) LOW

Date Received: 10/18/01

% Moisture: 3 decanted: (Y/N)

Date Extracted: 10/19/01

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 10/23/01

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH:

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.085	500	JB
2.	UNKNOWN	21.320	90	J

p2

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B10058

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNU-HANFORD B01-103

Matrix: (soil/water) SOIL

Lab Sample ID: 0110L119-004

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: D102406

Level: (low/med) LOW

Date Received: 10/18/01

% Moisture: 23 decanted: (Y/N)__

Date Extracted: 10/19/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 10/24/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: _____

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.087	600	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B135C2

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNU-HANFORD B01-103

Matrix: (soil/water) SOIL

Lab Sample ID: 0110L119-005

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: D102407

Level: (low/med) LOW

Date Received: 10/18/01

% Moisture: 3 decanted: (Y/N)__

Date Extracted: 10/19/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 10/24/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: _____

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.086	400	JB
2.	UNKNOWN	20.156	400	J
3.	UNKNOWN	21.321	200	J

1C

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B135C3

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNU-HANFORD B01-103

Matrix: (soil/water) SOIL

Lab Sample ID: 0110L119-006

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: D102408

Level: (low/med) LOW

Date Received: 10/18/01

% Moisture: 7 decanted: (Y/N)__

Date Extracted: 10/19/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 10/24/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: _____

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.089	600	JB
2.	UNKNOWN	20.159	200	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKIC

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNU-HANFORD B01-103

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE1264-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: D102314

Level: (low/med) LOW

Date Received: 10/19/01

% Moisture: _____ decanted: (Y/N)__

Date Extracted: 10/19/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 10/23/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: _____

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.077	300	J

(0) BNA From Metals WET

Lionville Laboratory Use Only

01101L119

Custody Transfer Record/Lab Work Request

Page 1 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: INW - HANFORD SAF # B01-103

Est. Final Proj. Sampling Date:

Project #: 10343.606.000.9991.00

Project Correspondence #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30

Date Rec'd: 10-18-01 Date Due: 11-17-01

		A	B	C					D		E	F	G	H		
Refrigerator #		1	6	6					6		6	6	6	6		
#/Type Container	Liquid															
	Solid															
Volume	Liquid															
	Solid	120														
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb			LEAD	TCLP Metal	CN						

Lionville Laboratory Use Only

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	0624H	0625X	OPCB				MET (2)	MET (1)		ITCLP	INORG (1) IC (1)	ICRG	ODRO OGRO		
001	B10055			S	10-18-01	0920	X	X	X					X		X	X	X	X		
002	B10056					0945	X	X	X					X		X	X	X	X		
003	B10057					1040	X	X	X					X		X	X	X	X		
004	B10058					1105	X	X	X					X		X	X	X	X		
005	B10059					1210	X	X	X					X		X	X	X	X		
006	B10060					1210	X	X	X					X		X	X	X	X		
007	B10061																				
008	B10062																				
009	B10063																				
010	B10064																				

Special Instructions:

Run Matrix QC

SAF # B01-103

10-19-01 Add INWN Ammonia, ICNO, IPH, ISFD

INORG (1)

DATE/REVISIONS: * See Labchron

1. REC A CRACKED LID ON
2. SAMPLE B135C3 - ITEM NO. 2 ON
3. ORIGINAL chain (METALS by ICP (TCLP)
4. MET (1) Al, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
5. MET (2) Sb, Be, Ni, V, Zn, Hg, Ba, Cd, Cr, Pb, Se, Ag
6. IC (1) ~~ICBR, ICCL, ICF6~~, ICNO3, ICNO2, ~~ICPO4, ICSO4~~ See infofor

Relinquished by	Received by	Date	Time
FEDEX	[signature]	10-18-01	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

4235 7954 8111

4235 7954 8180

4235 7954 8096

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. 1.3 °C

1.6, 1.9

Lionville Laboratory Use Only
01101119

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: TNU-HANFORD B01-103

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #: see page 1

Lionville Laboratory Project Manager:

QC: Del: TAT:

Date Rec'd: Date Due:

Refrigerator #																
#/Type Container	Liquid															
	Solid															
Volume	Liquid															
	Solid															
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb			LEACH #1	Metal	CN						
		Lionville Laboratory Use Only														
								MET②								

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected												
S - Soil	011	B135C2 Felp oF 005			L								✓						
SE - Sediment	012	B135C3 L 006			L								✓						
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																			

Special Instructions:

DATE/REVISIONS:

MET② 1. Sb, Be, Ni, V, Zn, Hg, Ba, CD, Cr, Pb, Se, Ag

2.

3.

4.

5.

6.

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Lionville Laboratory Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___
Airbill # ___
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Samples Properly Preserved Y or N
5) Received Within Holding Times Y or N

Tamper Resistant Seal was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. ___ °C

5

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-014	Page 1 of 2

Collector: TM Johansen	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: MULTIPLE SEE OSPC	Field Logbook No.: EL-1516	COA: JRCRA14114	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A020022	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
RAD DATA < 2000 PCI/g

Samples stored in Ref.#2B at the 3728 Shipping Facility on 10/10/01.
Collector not available to relenquish samples on 10/17/01 for shipment.
RJ 10/17/01

Preservation	Cool 4C Cool 4C	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	~~500mL~~ 250mL	1000mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.	TILTO:

Sample No.	Matrix *	Sample Date	Sample Time										
B10055	SOIL	10-10-01	~~0945~~ 0900	X	X	X	X	X	X	X	X		B135B4
B10056	SOIL	10-10-01	0945	X	X	X	X	X	X	X	X		B135B5
B10057	SOIL	10-10-01	1045	X	X	X	X	X	X	X	X		B135B6
B10058	SOIL	10-10-01	1105	X	X	X	X	X	X	X	X		B135B7
B135C2	SOIL	10-10-01	1140	X	X	X	X	X	X	X	X		B135C4

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: TM Johansen/Trainor	10/10/01	Received By/Stored In: RJF #2B	10/10/01 1530
Relinquished By/Removed From: RJF 2B 3728	10/10/01 1200	Received By/Stored In: R J Arthur	10/17/01 1200
Relinquished By/Removed From: R J Arthur ERC	10/17/01 1200	Received By/Stored In: [illegible]	
Relinquished By/Removed From: FEDEX	10-18-01 0930	Received By/Stored In: Carlos Ramos	10-18-01 0930
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS
~~OBA Report ASAP~~
~~Gross Alpha Beta to follow ASAP~~ TMT 10/10/01

(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(6) ~~Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total U; Technetium-~~ TMT 10/10/01

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

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

011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-014	Page 2 of 2
Collector: TM Johansen	Company Contact: D Weekes; Telephone No.: 372-9130	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	Air Quality ☐
Ice Chest No.: Multiple See OSPC	Field Logbook No.: EL-1516; COA: JRCRA14114	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A020022	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
RAD DATA < 2000 PCI/g

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 10/10/01. Collector not available to relenquish samples on 10/10/01 for shipment.
RT 10-17-01

Preservation	Cool 4C Cool 4C	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG	sG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	~~500mL~~ 250mL	500mL	
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.	
Sample Time										
B135C3 1210	X	X	X	X	X	X	X	X		B135C5

TILTO:

TOTAL ACTIVITIES NOT SHIPPED WITH THIS COC. RELINQUISHED WITH DATA < 2000 PCI/g INDICATES PER DISCUSSION WITH RICH WEISS. RT 10-17-01

CHAIN OF

		Date/Time
Relinquished By/Rec	TMJohansen	10/10/01 1530
Relinquished By/Rec	RTF	Thorp 1200 10-17-01
Relinquished By/Rec	RTF	
Relinquished By/Rec	FEE	2 10-18-01 0930
Relinquished By/Rec		
Relinquished By/Rec		

LABORATORY SECTION

FINAL SAMPLE DISPOSITION

SPECIAL INSTRUCTIONS
~~GBA Report ASAP~~
~~Gross Alpha Data to follow ASAP~~ TMJ 10/10/01
(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {Tributyl phosphate}
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 – Total Sr; Technetium~~ TMJ 10/10/01

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

Title | Date/Time

Disposed By | Date/Time

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-103
LVL#: 0110L119
SDG/SAF#: H1547/B01-103

W.O.#: 11343-606-001-9999-00
Date Received: 10-18-01

DIESEL RANGE ORGANICS

The set of samples consisted of six (6) soil samples collected on 10-10-01.

The samples and their associated QC samples were prepared on 10-19-01 and analyzed according to Lionville Laboratory OPs based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 10-22,23-01. The analysis met the intent of method WTPH-D.

1. All cooler temperatures have been recorded on the chain-of-custodies.

2. All required holding times for extraction and analysis were met.

3. All initial calibrations associated with this data set were within acceptance criteria.

4. All diesel continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.

5. All surrogate recoveries were within acceptance criteria.

6. All blank spike recoveries were within acceptance criteria.

7. 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

11/1/01
Date

R:\share\dro\10-119.doc

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 10 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

GLOSSARY OF ODRO DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification 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.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking 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 = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF ODRO DATA

P	=	This flag is used for an ODRO target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by HPLC.

R:/SHARE/HPLC/OLCSCGLOS

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 10/24/01 12:04

RFW Batch Number: 0110L119 Client: TNU-HANFORD B01-103 Work Order: 11343606001 Page: 1

	Cust ID:	B10055	B10055	B10055	B10056	B10057	B10058
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
	p-Terphenyl	102 %	101 %	121 %	114 %	112 %	106 %
Diesel Range Organics		13.7 U	72 %	95 %	15.0 U	12.3 U	15.4 U
Kerosene		13.7 U	NS	NS	15.0 U	12.3 U	15.4 U

	Cust ID:	B135C2	B135C3	BLK	BLK BS
Sample Information	RFW#:	005	006	01LE1259-MB1	01LE1259-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg
	p-Terphenyl	112 %	111 %	106 %	105 %
Diesel Range Organics		12.3 U	12.8 U	12.0 U	72 %
Kerosene		12.3 U	12.8 U	12.0 U	NS

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

LIC 10-24-01

(U) BNA From Metals WET

Lionville Laboratory Use Only
01101L119

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client TAU - HARTFORD SAF # B01-103
Est. Final Prof. Sampling Date
Project # 115 CS - 6000 - 0002 - 9971-00
Project Contact/Phone #
Lionville Laboratory Project Manager 03
QC SPEC Del STD TAT 30

Date Rec'd 10-18-01 Date Due 11-17-01

	A	B	C	D	E	F	G	H
Refrigerator #	1	6	6	6	6	6	6	6
#/Type Container								
Volume								
Preservatives								
ANALYSES REQUESTED	ORGANIC: VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	ORGANIC: Herb	INORG: TCLP Metals	INORG: CN		
Lionville Laboratory Use Only	0624H	0625X	OPCB		MET ②	MET ①	ZTCLP	ZNOAG ① IC ① ZCRG ODRO OGRO

MATRIX CODES: S - Soil; SE - Sediment; SG - Solid; SL - Sludge; W - Water; O - Oil; A - Air; DS - Drum Solids; DL - Drum Liquids; L - EP/TCLP Liquids; WI - Wipe; X - Other; F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625X	OPCB				MET ②	MET ①		ZTCLP	ZNOAG ① IC ①	ZCRG	ODRO OGRO		
001	B10055			SO	10/10/01	0920	X	X	X					X		X	X	X	X		
002	B10056					0945	X	X	X					X		X	X	X	X		
003	B10057					1015	X	X	X					X		X	X	X	X		
004	B1						X	X	X					X		X	X	X	X		
005									X					X		X	X	X	X		
006	B135C3						X	X	X					X		X	X	X	X		
007	B1																				
008	B1																				
009	B10059																				
010	B10058																				

Special Instructions:

Run Matrix QC

SAF # B01-103

10-19-01 Add ZNHN Ammonia, ICNIO, IPH, ISFD

ZNORG ①

DATE/REVISIONS: * See Matrix

1. REC A CRACKED LID ON
2. SAMPLE B135C3 - ITEM NO. 2 ON
3. ORIGINAL CHAIN - (METALS by ICP (TCLP)
4. MET ① Al, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
5. MET ② Sb, Be, Ni, V, Zn, Hg, Ba, Cd, Cr, Pb, Se, Ag
6. IC ① ~~IBR, ICCL, IBF6~~, ICN03, ICN02, ~~ICPO4, ICSO4~~

Relinquished by	Received by	Date	Time
FEDEX	[signature]	10-18-01	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered
Airbill # SEE below
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Samples Properly Preserved Y or N
5) Received Within Holding Times Y or N

Tamper Resistant Seal was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 1.3 °C
1.6, 1.9

Lionville Laboratory Use Only
0110L119

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD B01-103

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #: see page 1

Lionville Laboratory Project Manager:

QC: Del: TAT:

Date Rec'd: Date Due:

Refrigerator #																
#/Type Container	Liquid															
	Solid															
Volume	Liquid															
	Solid															
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb			LEACH	Metal	CN						
		Lionville Laboratory Use Only														
								MET②								

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													
011	B135C2 Felp of 005			L									X						
012	B135C3 ⊥ 006			⊥									✓						

Special Instructions:

DATE/REVISIONS:

MET② 1. Sb, Be, Ni, V, Zn, Hg, Ba, Cd, Cr, Pb, Se, Ag

2.

3.

4.

5.

6.

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Lionville Laboratory Use Only

Samples were:
1) Shipped ____ or Hand Delivered ____
Airbill # ____
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Samples Properly Preserved Y or N
5) Received Within Holding Times Y or N

Tamper Resistant Seal was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. ____ °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-014	Page 1 of 200

Collector: TM Johansen	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: MULTIPLE SEE OSPC	Field Logbook No.: EL-1516	COA: JRCRA14114	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A020022	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
RAD DATA < 2000 PCI/g

Samples stored in Ref.#2B at the 3728 Shipping Facility on 10/10/01. Collector not available to relenquish samples on 10/17/01 for shipment.

RJ 10/17/01

SAMPLE ANALYSIS

Preservation	Cool 4C Cool 4C	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	~~500mL~~ 250mL	1000mL	
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.	

Sample No.	Matrix *	Sample Date	Sample Time										TILTO:
B10055	SOIL	10-10-01	~~0945~~ 0920	X	X	X	X	X	X	X	X		B135B4
B10056	SOIL	10-10-01	0945	X	X	X	X	X	X	X	X		B135B5
B10057	SOIL	10-10-01	1045	X	X	X	X	X	X	X	X		B135B6
B10058	SOIL	10-10-01	1105	X	X	X	X	X	X	X	X		B135B7
B135C2	SOIL	10-10-01	1140	X	X	X	X	X	X	X	X		B135C4

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: TM Johansen	Date/Time: 10/10/01 1530	Received By/Stored In: RJF #2B	Date/Time: 10/10/01 1530
Relinquished By/Removed From: RJF 2B 3728	Date/Time: 10/10/01 1200	Received By/Stored In: R J Thore	Date/Time: 10-17-01 1200
Relinquished By/Removed From: R J Thore ERC	Date/Time: 10/10/01 1200	Received By/Stored In:	Date/Time:
Relinquished By/Removed From: FEDEX	Date/Time: 10-18-01 0930	Received By/Stored In: Carlos Ramirez	Date/Time: 10-18-01 0930
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
~~OSA Report ASAP~~
~~Gross Alpha Beta to follow ASAP~~ TMT 10/10/01

(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium); ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec -- Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-~~ TMT 10/10/01

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

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

EF-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-014	Page 2 of 2
Collector: TM Johansen	Company Contact: D Weekes; Telephone No.: 372-9130	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	Air Quality ☐
Ice Chest No.: Multiple See OSPC	Field Logbook No.: EL-1516; COA: JRCRA14114	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A020022	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
RAD DATA < 2000 PCI/g

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 10/10/01.
Collector not available to relenquish samples on 10/10/01 for shipment.
RT 10-17-01

Preservation	Cool 4C Cool 4C	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG	sG	
No. of Container(s)	1	1	1	1	1	1	1	1 TMT 10/10/01	1	
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	~~500mL~~ 250mL	~~500mL~~	
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.	
Sample Time										TILTO:
B135C3 1210	X	X	X	X	X	X	X	X		B135C5

TOTAL ACTIVITIES NOT SHIPPED WITH THIS COC.
PRELIMINARY DATA INDICATES < 2000 PCI/g
PER DISCUSSION WITH RICH WEISS.
RT 10-17-01

CHAIN OF POSSESSION

Relinquished By/Received	Date/Time
TMJohansen	10/10/01 1530
Relinquished By/Received: Thorsen	10-17-01 1200
Relinquished By/Received: RT	
Relinquished By/Received: EL	10-18-01 0930
Relinquished By/Received	
Relinquished By/Received	

LABORATORY SECTION

FINAL SAMPLE DISPOSITION

SPECIAL INSTRUCTIONS
~~GEA Report ASAP~~
~~Gross Alpha Data to follow ASAP~~ TMT 10/10/01
(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-~~ TMT 10/10/01

Title | Date/Time

Disposed By | Date/Time

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

BHI-EE-011 (10/98)

Figure 1. Sample Check-in List

Date/Time Received: 10-18-01 0930

SDG#: 01101119

Work Order Number: ERC-96-040 ERC#96-002 SAF# B01-103

Shipping Container ID: ERC 99-062 Chain of Custody # B01-103-14

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 1.3 1.6 1.9
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 3 coolers = 48
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   - ____ tape
   - ____ hazard labels
   - ✓ custody seals
   - ____ appropriate sample labels

9. Samples are:
   - ____ in good condition
   - ____ leaking
   - ✓ broken
   - ____ have air bubbles

10. Were any anomalies identified in sample receipt? Yes [ ] No [✓]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: Calvin Hemp Date: 10-18-01

Telephoned to: _____ On _____ By _____

LIONVILLE LABORATORY INC.

Analytical Report

Client : TNU-HANFORD B01-103
LVL# : 0110L119
SDG/SAF#: H1547/B01-103

W.O #: 11343-606-001-9999-00
Date Received: 10-18-01

GASOLINE RANGE ORGANICS

The set of samples consisted of six (6) soil samples collected on 10-10-01

The samples and their associated QC samples were initially analyzed according to criteria set forth in Lionville Laboratory OPs based on Method 8015B for Gasoline Range Organic (GRO) target compounds on 10-23-01 and re-analyzed on 10-24,25-01

1. All cooler temperatures have been recorded on the chain-of-custodies.

2. All required holding times for analysis have been met with the exception of sample B135C3, which was analyzed in excess of 14 days after collection. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

3. One (1) of twenty-two (22) surrogate recoveries was outside acceptance criteria.

4. All blank spike recoveries were within acceptance criteria.

5. All matrix spikes recoveries was within acceptance criteria.

6. All initial calibrations associated with this data set were within acceptance criteria.

7. All continuing calibration standards analyzed prior to the samples were within acceptance criteria.

8. 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

11/1/01
Date

r:\share\gcpest\narr temp\tnu119gro.doc

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.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 01 GC 472.

Initiator: John Lach. Batch: 0110L119. Parameter: 0GRO
Date: 10/25/01 Samples: #6. Matrix: Soil
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: 01LUJA24.

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
X Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

Sample #6 run 1½ hour past 14 days of collection

2. Known or Probable Causes(s) The samples required a medium level dilution due to the sample matrix. The extraction/dilution took place on 10/23/01 and a portion of the methanol solvent was saved. When the samples were prepared and run ~~[illegible]~~ from this extract on 10/25/01, some evidence of possible laboratory contamination was discovered in the method blank.
The samples were prepared and run again from the original extract on the 24th; sample B13SC3

3. Discussion and Proposed Action

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description: run at 1231 AM on the 25th.
Since any volitiles were contained in the methanol extract, there is no impact on the data. Both sets of data are being reported to reflect this. This will be added to the narrative

4. Project Manager Instructions...signature/date: [signature] 10.25.01
(X) Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
(X) Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 10/25/01 Other Explanation:
__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Keppel
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

GLOSSARY OF GASOLINE RANGE ORGANICS DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification 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.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking 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 = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF GASOLINE RANGE ORGANICS DATA

D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by GC/MS.

R:/SHARE/GCVOLATILE/GCVOLATILEGLOS.DOC

Lionville Laboratory, Inc.

GAS RANGE ORGANICS

Report Date: 10/25/01 13:10

RFW Batch Number: 0110L119 Client: TNU-HANFORD B01-103 Work Order: 11343606001 Page: 1

	Cust ID:	B10055	B10055	B10056	B10056	B10057	B10057
Sample Information	RFW#:	001	001	002	002	003	003
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
	Level:	MED	MED REPREP	MED	MED REPREP	MED	MED REPREP
Fluorobenzene		83 %	97 %	63 %	95 %	73 %	95 %
Gasoline Range Organics (GRO)		2300 U	2300 U	2300 U	2300 U	2000 U	2000 U

	Cust ID:	B10057	B10057	B10057	B10057	B10058	B10058
Sample Information	RFW#:	003 MS	003 MS	003 MSD	003 MSD	004	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
	Level:	MED	MED REPREP	MED	MED REPREP	MED	MED REPREP
Fluorobenzene		83 %	110 %	81 %	73 %	39 * %	74 %
Gasoline Range Organics (GRO)		79 %	74 %	71 %	62 %	2700 U	2700 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Lionville Laboratory, Inc.

GAS RANGE ORGANICS

Report Date: 10/25/01 13:10

RFW Batch Number: 0110L119 Client: TNU-HANFORD B01-103 Work Order: 11343606001 Page: 2

	Cust ID:	B135C2	B135C2	B135C3	B135C3	TBLKAI	TBLKAI BS
Sample Information	RFW#:	005	005	006	006	01LVJA23-MB1	01LVJA23-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
	Level:	MED	MED	MED	MED	MED	MED
			REPREP		REPREP		
Fluorobenzene		79 %	63 %	75 %	76 %	88 %	97 %
Gasoline Range Organics (GRO)		2100 U	2100 U	2100 U	2100 U	6400	86 %

	Cust ID:	TBLKAI BSD	TBLKAK	TBLKAK BS	TBLKAK BSD
Sample Information	RFW#:	01LVJA23-MB1	01LVJA24-MB1	01LVJA24-MB1	01LVJA24-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG
	Level:	MED	MED	MED	MED
			REPREP	REPREP	REPREP
Fluorobenzene		85 %	76 %	93 %	87 %
Gasoline Range Organics (GRO)		66 %	4000 U	90 %	81 %

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

10/25/01

(U) BNA From Metals WET

Lionville Laboratory Use Only

01101119

Custody Transfer Record/Lab Work Request

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU - HANFORD SAF # B01-103

Est. Final Proj. Sampling Date:

Project #: 11343-606-001-9998-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30

Date Rec'd: 10-18-01 Date Due: 11-17-01

	A	B	C	D	E	F	G	H
Refrigerator #	1	6	6	6	6	6	6	6
#/Type Container								
Volume								
Preservatives								
ANALYSES REQUESTED	ORGANIC: VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	ORGANIC: Herb	INORG: TCLP Metals	INORG: CN		

Lionville Laboratory Use Only

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	0624H	0625X	OPCB	MET(2)	MET(1)		ZTCLP	ZNORG(1) IC(1)	ZCRG	ODRO OGRO		
001	B100S5			SL	10/10/01	0920	X	X	X		X		X	X	X	X		
002	B100SL					0945	X	X	X		X		X	X	X	X		
003	B100S7					1045	X	X	X		X		X	X	X	X		
004	B100S8					1105	X	X	X		X		X	X	X	X		
005	B135C1					1110	X	X	X		X		X		X	X		
006	B135C3					1210	X	X	X									
007	B100S7																	
008	B100S8																	
009	B100S1					003												
010	B100S8					004												

Special Instructions:

Run Matrix QC

SAF # B01-103

10-19-01 Add ZNHN3 Ammonia, ZCN10, ZPH, ZSFD

ZNORG(1)

DATE/REVISIONS: * See labchron

1. REC A CRACKED LID ON
2. SAMPLE B135C3 - ITEM NO. 2 ON
3. ORIGINAL CHAIN - (METALS by ICP (TCLP)
4. MET(1) Al, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
5. MET(2) Sb, Be, Ni, V, Zn, Hg, Ba, Cd, Cr, Pb, Se, Ag
6. IC(1) ~~ZBR, ZCL, ZF6~~, ZCN03, ZCN02, ~~ZCP04, ZCS04~~

Relinquished by	Received by	Date	Time
FEDEX	[signature]	10-18-01	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

4235 7954 8111

4235 7954 8096

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. 1.3 °C

1.6, 1.9

Lionville Laboratory Use Only

01101119

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD B01-103

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #: see page 1

Lionville Laboratory Project Manager:

QC: Del: TAT:

Date Rec'd: Date Due:

Refrigerator #																	
#/Type Container	Liquid																
	Solid																
Volume	Liquid																
	Solid																
Preservatives																	
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb			LEACH	Metal	CN							
		Lionville Laboratory Use Only															
								MET②									

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected													
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	011	B13SC2 Belp of 005			L									X						
	012	B13SC3 ⊥ 006			⊥									X						

Special Instructions:

DATE/REVISIONS:

MET② 1. Sb, Be, Ni, V, Zn, Hg, Ba, Cd, Cr, Pb, Se, Ag

2.

3.

4.

5.

6.

Lionville Laboratory Use Only

Samples were:
1) Shipped ____ or Hand Delivered ____
Airbill # ____
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Samples Properly Preserved Y or N
5) Received Within Holding Times Y or N

Tamper Resistant Seal was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. ____ °C

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-014	Page 1 of 2

Collector: TM Johansen	Company Contact: D Weekes — Telephone No.: 372-9130	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	Air Quality ☐
Ice Chest No.: MULTIPLE See OSPC	Field Logbook No.: EL-1516 — COA: JRCRA14114	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A020022	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
RAD DATA < 2000 PCI/g

Samples stored in Ref.#2B at the 3728 Shipping Facility on 10/10/01.
Collector not available to relenquish samples on 10/17/01 for shipment.
RT 10/17/01

Preservation	Cool 4C Cool 4C	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1	1		
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	~~500mL~~ 260mL	1000mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.		

Sample No.	Matrix *	Sample Date	Sample Time										TIL ID:
B10055	SOIL	10-10-01	~~0945~~ 0900	X	X	X	X	X	X	X	X		B13584
B10056	SOIL	10-10-01	0945	X	X	X	X	X	X	X	X		B13585
B10057	SOIL	10-10-01	1045	X	X	X	X	X	X	X	X		B13586
B10058	SOIL	10-10-01	1105	X	X	X	X	X	X	X	X		B13587
B135C2	SOIL	10-10-01	1140	X	X	X	X	X	X	X	X		B13584

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TMJohansen/Chain Ins	10/10/01 1530	RCF #23	10/10/01 1530
RCF 2B 3728	10-17-01 1200	R J Rhone	10-17-01 1200
R J Rhone ERC	10-17-01 1200	[illegible]	
FEDEX	10-18-01 0930	Carlos Ramos	10-18-01 0930

SPECIAL INSTRUCTIONS
~~GEA Report ASAP~~
~~Gross Alpha Beta to follow ASAP~~ TMJ 10/10/01

(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec -- Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-~~ TMJ 10/10/01

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

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

ERE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-014	Page 2 of 2

Collector: TM Johansen	Company Contact: D Weekes — Telephone No.: 372-9130	Project Coordinator: TRENT, SJ	Price Code: 8N — Date Turnaround: 45 Days
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	Air Quality ☐
Ice Chest No.: Multiple See OSPC	Field Logbook No.: EL-1516 — COA: JRCRA14114	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A020022	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
RAD DATA < 2000 PCI/g

Samples stored in Ref.# 3B at the 3728 Shipping Facility on 10/10/01. Collector not available to relenquish samples on 10/10/01 for shipment.
RT 10.17.01

Preservation	Cool 4C Cool 4C	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG	sG	
No. of Container(s)	1	1	1	1	1	1	1	1 TMT 10/10/01	1	
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	~~500mL~~ 250mL	~~1000mL~~	
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.	
Sample Time										TICTO:
B135C3 — 1210	X	X	X	X	X	X	X	X		B135C5

TOTAL ACTIVITIES NOT THIS COC. SHIPPED WITH DATA PRELIMINARY < 2000 PCI/g INDICATES PER DISCUSSION WITH RICH WEISS.
RT 10.17.01

CHAIN OF CUSTODY	Date/Time
Relinquished By/Rec: TMT	10/10/01 1530
Relinquished By/Rec: RCF	Thor 10.17.01 1200
Relinquished By/Rec:	
Relinquished By/Rec: FEE	2 10-18-01 0930
Relinquished By/Rec:	
Relinquished By/Rec:	
LABORATORY SECTION	
FINAL SAMPLE DISPOSITION	

SPECIAL INSTRUCTIONS
~~GBA Report ASAP~~
~~Gross Alpha Data to follow ASAP~~ TMT 10/10/01
(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(6) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-~~ TMT 10/10/01

Matrix *: S=Soil, SD=Sediment, SO=Solid, SL=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

Title — Date/Time

Disposed By — Date/Time

Figure 1. Sample Check-in List

Date/Time Received: 10-18-01 0930

SDG#: 01101119

Work Order Number: ERC-96-040 ERC#96-002 SAF# B01-103

Shipping Container ID: ERC 99-062 Chain of Custody # B01-103-14

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 1.3 1.6 1.9
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 3 coolers = 48
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   ____tape ____hazard labels
   ✓ custody seals ____appropriate sample labels

9. Samples are:
   ____in good condition ____leaking
   ✓ broken ____have air bubbles

10. Were any anomalies identified in sample receipt? Yes [ ] No [✓]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: Carla Humphrey Date: 10-18-01

Telephoned to: _____ On _____ By _____

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD B01-103
LVL#: 0110L119
SDG/SAF#: H1547/B01-103

W.O.#: 11343-606-001-9999-00
Date Received: 10-18-01

PCB

The set of samples consisted of six (6) soil samples collected on 10-10-01.

The samples and their associated QC samples were extracted on 10-19-01 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 11-01-01. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

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

1. All cooler temperatures have been recorded on the chain-of-custodies.
2. All required holding times for extraction and analysis have been met.
3. The samples and their associated QC samples received a sulfuric acid cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recovery was within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria, with the exception of target compound Aroclor 1260 analyzed on 10-31-01 at 21:01 on the primary column. No target compounds were found in these samples. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
10. Confirmation was not required because target compounds were not detected in any of the samples.
11. 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

11/14/01
Date

pef\r:\group\data\pest\10L-119.pcb

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 11 pages.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 01GC502

Initiator: M. Kobel Batch: 0110L119 Parameter: OPCB
Date: 11/14/01 Samples: all Matrix: soil
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: 01LE1260

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

① AR1260 decreased on primary column only @ -17% (limit = -15%) before MS+MSD.+BS
~~② AR1260 decreased on primary column only @~~ 11/14/01
* the samples are all clean of targets and the spike recoveries were calculated from the confirmation column (in calibration).

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description: Samples clean of target compounds on RTX-1701 column = no confirmation required TGJ 11/14/01

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date: [signature] 11/14/01

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: Mike Kobel 11/14/01 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
✓	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Keppel
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification 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.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking 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 = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 11/14/01 12:10

RFW Batch Number: 0110L119 Client: TNUHANFORD B01-103 H1547 Work Order: 11343606001 Page: 1

	Cust ID:	B10055	B10055	B10055	B10056	B10057	B10058
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	82 %	85 %	85 %	75 %	88 %	80 %
	Decachlorobiphenyl	80 %	78 %	83 %	73 %	84 %	82 %
Aroclor-1016		38 U	38 U	38 U	42 U	34 U	43 U
Aroclor-1221		76 U	75 U	76 U	84 U	68 U	87 U
Aroclor-1232		38 U	38 U	38 U	42 U	34 U	43 U
Aroclor-1242		38 U	38 U	38 U	42 U	34 U	43 U
Aroclor-1248		38 U	38 U	38 U	42 U	34 U	43 U
Aroclor-1254		38 U	104 %	110 %	42 U	34 U	43 U
Aroclor-1260		38 U	38 U	38 U	42 U	34 U	43 U

	Cust ID:	B135C2	B135C3	PBLKUA	PBLKUA BS
Sample Information	RFW#:	005	006	01LE1260-MB1	01LE1260-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	85 %	80 %	82 %	80 %
	Decachlorobiphenyl	83 %	70 %	76 %	76 %
Aroclor-1016		33 U	36 U	33 U	33 U
Aroclor-1221		67 U	72 U	67 U	67 U
Aroclor-1232		33 U	36 U	33 U	33 U
Aroclor-1242		33 U	36 U	33 U	33 U
Aroclor-1248		33 U	36 U	33 U	33 U
Aroclor-1254		33 U	36 U	33 U	98 %
Aroclor-1260		33 U	36 U	33 U	33 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Lionville Laboratory Use Only

01101L119

Custody Transfer Record/Lab Work Request

Page 1 of 2

BNA From Metals WET

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU - Hazard SAF # B01-103

Est. Final Proj/Sampling Date:

Project #: 11353-000-000-9991-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: 103

QC: SPEC Del: STD TAT: 30

Date Rec'd: 10-18-01 Date Due: 11-17-01

	A	B	C	D	E	F	G	H
Refrigerator #	1	6	6	6	6	6	6	6
#/Type Container								
Volume								
Preservatives								

ANALYSES REQUESTED →

ORGANIC				INORG	
VOA	BNA	Pest/PCB	Herb	TCLP Metal	CN

Lionville Laboratory Use Only

MATRIX CODES: S - Soil; SE - Sediment; SO - Solid; SL - Sludge; W - Water; O - Oil; A - Air; DS - Drum Solids; DL - Drum Liquids; L - Liquids; Sediments; WI - Wipe; X - Other; F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625X	OPCB				MET ②	MET ①		TCLP	INORG ① IC ①	ZCRG	ODRO OGRO		
001	B10955						X	X	X					X		X	X	X	X		
002	B10955																				
003	B10955																				
004	B10955																				
005	B10955																				
006	B10955																				
007	B10955																				
008	B10955																				
009	B10955																				
010	B10955																				

Special Instructions:

Run Matrix QC

SAF # B01-103

10-19-01 Add Ammonia (INHN), ICANO, IPH, ISFD

INORG ①

DATE/REVISIONS: * See labchron

1. REC A CRACKED LID ON
2. SAMPLE B13503 - ITEM NO. 2 ON
3. ORIGINAL CHAIN - METALS by ICP (TCLP)
4. MET ① Al, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
5. MET ② Sb, Be, Ni, V, Zn, Hg, Ba, Cd, Cr, Pb, Se, Ag
6. IC ① ~~IBR, ICCL, IBFE~~, ICN03, ICN02, ~~ICP04, ICS04~~ (Jim initials)

Relinquished by	Received by	Date	Time
FEDEX	[signature]	10-18-01	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

4235 7954 8111

4235 7954 8100

4235 7954 8096

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered ___
Airbill # SEE below
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 1.3 °C

1.6, 1.9

Lionville Laboratory Use Only
0110L119

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: TNU-HANFORD B01-103

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #: see page 1

Lionville Laboratory Project Manager:

QC: Del: TAT:

Date Rec'd: Date Due:

Refrigerator #																
#/Type Container	Liquid															
	Solid															
Volume	Liquid															
	Solid															
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb			LEACH	Metal	CN						
		Lionville Laboratory Use Only														
								MET(2)								

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected													
S - Soil	011	B135C2 Telp of 005			L								✓							
SE - Sediment	012	B135C3 ⊥ 006			⊥								✓							
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																				

Special Instructions:

DATE/REVISIONS:

MET(2) 1. Sb, Be, Ni, V, Zn, Hg, Ba, Cd, Cr, Pb, Se, Ag

2.

3.

4.

5.

6.

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Lionville Laboratory Use Only

Samples were:
1) Shipped ____ or Hand Delivered ____
Airbill # ____
2) Ambient or Chilled
3) Received in Good Condition Y or N
4) Samples Properly Preserved Y or N
5) Received Within Holding Times Y or N

Temper Resistant Seal was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. ____ °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-014	Page 1 of 2

Collector: TM Johansen	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: MULTIPLE SEE COSPC	Field Logbook No.: EL-1516	COA: JRCRA14114	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A020022	Bill of Lading/Air Bill No.: SEE COSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
RAD DATA < 2000 PCI/g

Samples stored in Ref.#2B at the 3728 Shipping Facility on 10/10/01. Collector not available to relenquish samples on 10/17/01 for shipment.

RJ 10/17/01

SAMPLE ANALYSIS

Preservation	Cool 4C Cool 4C	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	~~500mL~~ 260mL	000mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										TILTO:
B10055	SOIL	10-10-01	~~0945~~ 0900	X	X	X	X	X	X	X	X		B135B4
B10056	SOIL	10-10-01	0945	X	X	X	X	X	X	X	X		B135B5
B10057	SOIL	10-10-01	1045	X	X	X	X	X	X	X	X		B135B6
B10058	SOIL	10-10-01	1105	X	X	X	X	X	X	X	X		B135B7
B135C2	SOIL	10-10-01	1140	X	X	X	X	X	X	X	X		B135C4

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: TM Johansen/Constance	10/10/01 1530	Received By/Stored In: Ref #2B	10/10/01 1530
Relinquished By/Removed From: Ref 2B 3728	10/17/01 1200	Received By/Stored In: R J Thorne	10-17-01 1200
Relinquished By/Removed From: R J Thorne ERC	10/17/01 1300	Received By/Stored In: [illegible]	
Relinquished By/Removed From: FEDEX	10-18-01 0930	Received By/Stored In: Carlos Hernandez	10-18-01 0930
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS
~~OSA Report ASAP~~
~~Gross Alpha Beta to follow ASAP~~ TMT 10/10/01

(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {Tributyl phosphate}
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec – Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 – Total Sr; Technetium-~~ TMT 10/10/01

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-014	Page 2 of 2
Collector: TM Johansen	Company Contact: D Weekes; Telephone No.: 372-9130	Project Coordinator: TRENT, SJ	Price Code: 8N; Air Quality ☐	Data Turnaround: 45 Days
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: Multiple See OSPC	Field Logbook No.: EL-1516; COA: JRCRA14114	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A020022	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
RAD DATA < 2000 pCi/g

Samples stored in Ref.# JB at the 3728 Shipping Facility on 10/10/01. Collector not available to relenquish samples on 10/10/01 for shipment.
RT 10.17.01

Preservation	Cool 4C Cool 4C	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG	sG	
No. of Container(s)	1	1	1	1	1	1	1	1 TMJ 10/10/01	1	
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	~~500mL~~ 250mL	500mL	
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.	
Sample Time										TILTO:
B135C3 1210	X	X	X	X	X	X	X	X		B135C5

TOTAL ACTIVITIES NOT SHIPPED WITH THIS COC.
PRELIMINARY DATA < 2000 pCi/g
INDICATES 3 FH
PER DISCUSSION WITH RICH WEISS.
RT 10.17.01

CHAIN OF

	Date/Time
Relinquished By/Rec: TMJ	10/10/01 1530
Relinquished By/Rec: Rich	Thors 10.17.01 1200
Relinquished By/Rec:	
Relinquished By/Rec: FEL	2 10-18-01 0930
Relinquished By/Rec:	
Relinquished By/Rec:	

LABORATORY SECTION

FINAL SAMPLE DISPOSITION

SPECIAL INSTRUCTIONS

~~OHA Report ASAP~~
~~Gross Alpha/Beta to follow ASAP~~ TMJ 10/10/01

(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium~~ TMJ 10/10/01

Title | Date/Time

Disposed By | Date/Time

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

Figure 1. Sample Check-in List

Date/Time Received: 10-18-01 0930

SDG#: 01101119

Work Order Number: ERC-96-040 ERC#96-002 SAF# B01-103

Shipping Container ID: ERC 99-062 Chain of Custody # B01-103-14

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 1.3 1.6 1.9
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 3 coolers = 48
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   ____tape ____hazard labels
   ✓ custody seals ____appropriate sample labels

9. Samples are:
   ____in good condition ____leaking
   ✓ broken ____have air bubbles

10. Were any anomalies identified in sample receipt? Yes [ ] No [✓]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: Carl Hemple Date: 10-18-01

Telephoned to: _____ On _____ By _____

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1547

DATE RECEIVED: 10/18/01 LVL LOT # :0110L119

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM LABORATORY	LC1 BS	W	01L0695	N/A	10/24/01	10/27/01
SELENIUM, TCLP LEACH	MB1	W	01L0695	N/A	10/24/01	10/27/01
SELENIUM, TCLP LEACH	MB2	W	01L0695	N/A	10/24/01	10/27/01
VANADIUM LABORATORY	LC1 BS	W	01L0695	N/A	10/24/01	10/27/01
VANADIUM, TCLP LEACH	MB1	W	01L0695	N/A	10/24/01	10/27/01
VANADIUM, TCLP LEACH	MB2	W	01L0695	N/A	10/24/01	10/27/01
ZINC LABORATORY	LC1 BS	W	01L0695	N/A	10/24/01	10/27/01
ZINC, TCLP LEACHATE	MB1	W	01L0695	N/A	10/24/01	10/27/01
ZINC, TCLP LEACHATE	MB2	W	01L0695	N/A	10/24/01	10/27/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-103
LVL#: 0110L119
SDG/SAF#: H1547/B01-103

W.O.#: 11343-606-001-9999-00
Date Received: 10-18-01

METALS CASE NARRATIVE

1. This narrative covers the analyses of 6 soil samples and 6 TCLP leachate samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

3. All analyses were performed within the required holding times.

4. All cooler temperatures have been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits with the exception of CCV2 (110.5%) for Potassium in file TA1107C.

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. The preparation/method blank for 1 analyte was outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB result for Tin was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and all samples read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

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. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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 28 pages.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B10055	Aluminum	20,000	88.2
	Iron	25,000	112.2

12. The duplicate analyses for 4 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. The TCLP extract from samples B10055 for ICP analytes and B10056 for Mercury were selected for the matrix spikes (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

14. 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.

15. 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

11-14-01
Date

gmb/m10-119

LVLI
LIONVILLE LABORATORY INC

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 0110L119

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	✓6010B		__200.7				__99
Antimony	✓6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	__6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	✓6010B		__200.7				__99
Bismuth	✓6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	✓6010B	__7211 [5]	__200.7	__220.2			__99
Iron	✓6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	✓6010B		__200.7				__99
Manganese	✓6010B		__200.7				__99
Mercury	✓7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	✓6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	✓6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	✓6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2__200.9			__99
Tin	✓6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	✓6010B		__200.7				__99
Zinc	✓6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__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.

B = Indicates that the parameter was between the Instrument Detection Limit (IDL) and the Contract Required Detection Limit (CRDL)

Q QUALIFIERS

E = The reported value is estimated because of the presence of interference.

M = Duplicate injection precision not met.

N = Spiked sample recovery not within control limits.

S = The reported value was determined by the Method of Standard Additions (MSA).

W = Post Digestion spike for Furnace AA analysis is out of control limits (85 -115 %), while sample absorbance is less than 50% of spike absorbance.

* = Duplicate analysis not within control limits.

+ = Correlation coefficient for the MSA is less than 0.995.

ABBREVIATIONS

PB = Method or Preparation Blank.
S = Matrix Spike.
T = Matrix Spike Duplicate.
R or D = Sample Replicate

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 11/13/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B10055	Aluminum, Total	13100	MG/KG	1.6	1.0
		Bismuth, Total	0.36 u	MG/KG	0.36	1.0
		Copper, Total	20.0	MG/KG	0.06	1.0
		Iron, Total	21300	MG/KG	2.0	1.0
		Potassium, Total	2800	MG/KG	2.2	1.0
		Magnesium, Total	7300	MG/KG	0.46	1.0
		Manganese, Total	433	MG/KG	0.01	1.0
		Molybdenum, Total	0.50	MG/KG	0.12	1.0
		Sodium, Total	2500	MG/KG	0.41	1.0
		Tin, Total	2.1	MG/KG	0.27	1.0
-002	B10056	Aluminum, Total	5180	MG/KG	1.6	1.0
		Bismuth, Total	0.38 u	MG/KG	0.38	1.0
		Copper, Total	10.5	MG/KG	0.06	1.0
		Iron, Total	13600	MG/KG	2.0	1.0
		Potassium, Total	785	MG/KG	2.3	1.0
		Magnesium, Total	2650	MG/KG	0.48	1.0
		Manganese, Total	523	MG/KG	0.01	1.0
		Molybdenum, Total	1.5	MG/KG	0.13	1.0
		Sodium, Total	560	MG/KG	0.42	1.0
		Tin, Total	2.7	MG/KG	0.28	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/13/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B10057	Aluminum, Total	5440	MG/KG	1.4	1.0
		Bismuth, Total	0.33 u	MG/KG	0.33	1.0
		Copper, Total	10.1	MG/KG	0.05	1.0
		Iron, Total	15900	MG/KG	1.8	1.0
		Potassium, Total	984	MG/KG	2.0	1.0
		Magnesium, Total	3980	MG/KG	0.42	1.0
		Manganese, Total	222	MG/KG	0.01	1.0
		Molybdenum, Total	0.34	MG/KG	0.11	1.0
		Sodium, Total	361	MG/KG	0.37	1.0
		Tin, Total	1.8	MG/KG	0.25	1.0
-004	B10058	Aluminum, Total	7640	MG/KG	1.4	1.0
		Bismuth, Total	0.31 u	MG/KG	0.31	1.0
		Copper, Total	12.9	MG/KG	0.05	1.0
		Iron, Total	18500	MG/KG	1.7	1.0
		Potassium, Total	1140	MG/KG	1.9	1.0
		Magnesium, Total	3640	MG/KG	0.40	1.0
		Manganese, Total	246	MG/KG	0.01	1.0
		Molybdenum, Total	0.67	MG/KG	0.11	1.0
		Sodium, Total	688	MG/KG	0.35	1.0
		Tin, Total	1.9	MG/KG	0.23	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/13/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B135C2	Aluminum, Total	7190	MG/KG	1.4	1.0
		Bismuth, Total	0.33 u	MG/KG	0.33	1.0
		Copper, Total	11.8	MG/KG	0.05	1.0
		Iron, Total	17800	MG/KG	1.8	1.0
		Potassium, Total	1470	MG/KG	2.0	1.0
		Magnesium, Total	4860	MG/KG	0.42	1.0
		Manganese, Total	293	MG/KG	0.01	1.0
		Molybdenum, Total	2.0	MG/KG	0.11	1.0
		Sodium, Total	361	MG/KG	0.37	1.0
		Tin, Total	1.7	MG/KG	0.25	1.0
-006	B135C3	Aluminum, Total	3280	MG/KG	1.4	1.0
		Bismuth, Total	0.33 u	MG/KG	0.33	1.0
		Copper, Total	11.1	MG/KG	0.05	1.0
		Iron, Total	10200	MG/KG	1.8	1.0
		Potassium, Total	350	MG/KG	2.0	1.0
		Magnesium, Total	2550	MG/KG	0.42	1.0
		Manganese, Total	126	MG/KG	0.01	1.0
		Molybdenum, Total	1.1	MG/KG	0.11	1.0
		Sodium, Total	209	MG/KG	0.37	1.0
		Tin, Total	2.1	MG/KG	0.25	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/13/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B10055	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Barium, TCLP Leachate	535		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.60		UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	11.3	u	UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	6.3		UG/L	2.8	1.0
-008	B10056	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Barium, TCLP Leachate	1120		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.71		UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	30.0		UG/L	4.8	1.0
		Mercury, TCLP Leachate	0.96		UG/L	0.10	1.0
		Nickel, TCLP Leachate	24.5		UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	24.8		UG/L	2.8	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/13/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	B10057	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Barium, TCLP Leachate	323		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.68		UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	8.5		UG/L	4.8	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	23.5		UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	14.2		UG/L	2.8	1.0
-010	B10058	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Barium, TCLP Leachate	367		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.81		UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	11.0		UG/L	4.8	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	24.5		UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	21.4		UG/L	2.8	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/13/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	B135C2	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Barium, TCLP Leachate	453		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.60		UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	11.4		UG/L	4.8	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	30.2		UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	13.3		UG/L	2.8	1.0
-012	B135C3	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Barium, TCLP Leachate	153		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.67		UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	5.5		UG/L	4.8	1.0
		Mercury, TCLP Leachate	0.13		UG/L	0.10	1.0
		Nickel, TCLP Leachate	11.3	u	UG/L	11.3	1.0
		Lead, TCLP Leachate	24.2		UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	19.0		UG/L	2.8	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/13/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0723-MB1	Aluminum, Total	6.6	MG/KG	1.4	1.0
		Bismuth, Total	0.32 u	MG/KG	0.32	1.0
		Copper, Total	0.22	MG/KG	0.05	1.0
		Iron, Total	1.7 u	MG/KG	1.7	1.0
		Potassium, Total	5.7	MG/KG	1.9	1.0
		Magnesium, Total	0.84	MG/KG	0.41	1.0
		Manganese, Total	0.01	MG/KG	0.01	1.0
		Molybdenum, Total	0.11 u	MG/KG	0.11	1.0
		Sodium, Total	6.4	MG/KG	0.36	1.0
		Tin, Total	1.2	MG/KG	0.24	1.0
BLANK1	01L0695-MB1	Silver, TCLP Leachate	9.6 u	UG/L	9.6	1.0
		Barium, TCLP Leachate	5.5 u	UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.40 u	UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3 u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	4.8 u	UG/L	4.8	1.0
		Nickel, TCLP Leachate	11.3 u	UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7 u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4 u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1 u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9 u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	2.8 u	UG/L	2.8	1.0
BLANK2	01L0695-MB2	Silver, TCLP Leachate	9.6 u	UG/L	9.6	1.0
		Barium, TCLP Leachate	5.5 u	UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.40 u	UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3 u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	6.4	UG/L	4.8	1.0
		Nickel, TCLP Leachate	11.3 u	UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7 u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4 u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1 u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9 u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	3.3	UG/L	2.8	1.0
BLANK1	01C0341-MB1	Mercury, Total	0.10 u	UG/L	0.10	1.0
BLANK2	01C0341-MB2	Mercury, TCLP Leachate	0.10 u	UG/L	0.10	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/13/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B10055	Aluminum, Total	14300	13100	226	562.1*	1.0
		Bismuth, Total	527	0.36u	564	93.3	1.0
		Copper, Total	46.5	20.0	28.2	94.0	1.0
		Iron, Total	21500	21300	113	225.2*	1.0
		Potassium, Total	5910	2800	2820	109.9	1.0
		Magnesium, Total	9790	7300	2820	88.3	1.0
		Manganese, Total	476	433	56.5	75.9*	1.0
		Molybdenum, Total	107	0.50	113	94.2	1.0
		Sodium, Total	5010	2500	2820	89.0	1.0
		Tin, Total	104	2.1	113	90.4	1.0
-007	B10055	Silver, TCLP Leachate	3480	9.6 u	5000	69.6	1.0
		Barium, TCLP Leachate	95300	535	100000	94.7	1.0
		Beryllium, TCLP Leacha	856	0.60	1000	85.6	1.0
		Cadmium, TCLP Leachate	863	6.3 u	1000	86.3	1.0
		Chromium, TCLP Leachat	4310	4.8 u	5000	86.2	1.0
		Nickel, TCLP Leachate	895	11.3 u	1000	89.5	1.0
		Lead, TCLP Leachate	4490	22.7 u	5000	89.8	1.0
		Antimony, TCLP Leachat	932	45.4 u	1000	93.2	1.0
		Selenium, TCLP Leachat	939	62.1 u	1000	93.9	1.0
		Vanadium, TCLP Leachat	880	8.9 u	1000	88.0	1.0
		Zinc, TCLP Leachate	885	6.3	1000	87.8	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/13/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-008	B10056	Mercury, TCLP Leachate	196	0.96	200	97.7	50.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/13/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B10055	Aluminum, Total	13100	12600	3.3	1.0
		Bismuth, Total	0.36u	0.36u	NC	1.0
		Copper, Total	20.0	18.2	9.4	1.0
		Iron, Total	21300	20500	3.9	1.0
		Potassium, Total	2800	2730	2.7	1.0
		Magnesium, Total	7300	6770	7.5	1.0
		Manganese, Total	433	401	7.7	1.0
		Molybdenum, Total	0.50	0.32	43.6	1.0
		Sodium, Total	2500	2290	8.6	1.0
		Tin, Total	2.1	1.8	15.4	1.0
-007REP	B10055	Silver, TCLP Leachate	9.6 u	9.6 u	NC	1.0
		Barium, TCLP Leachate	535	555	3.7	1.0
		Beryllium TCLP Leachate	0.60	0.71	16.8	1.0
		Cadmium, TCLP Leachate	6.3 u	6.3 u	NC	1.0
		Chromium, TCLP Leachate	4.8 u	6.8	NC 200	1.0
		Nickel, Leachate	11.3 u	17.2	NC 200	1.0
		Lead, TCLP Leachate	22.7 u	22.7 u	NC	1.0
		Antimony, Leachate	45.4 u	45.4 u	NC	1.0
		Selenium, TCLP Leachate	62.1 u	62.1 u	NC	1.0
		Vanadium, TCLP Leachate	8.9 u	8.9 u	NC	1.0
		Zinc, Leachate	6.3	10.0	45.4	1.0

MM 11/14/01

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/13/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-008REP	B10056	Mercury, TCLP Leachate	0.96	1.1	13.2	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/13/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0723-LC1	Aluminum, LCS	511	500	MG/KG	102.2
		Bismuth, LCS	489	500	MG/KG	97.9
		Copper, LCS	126	125	MG/KG	100.9
		Iron, LCS	499	500	MG/KG	99.8
		Potassium, LCS	2670	2500	MG/KG	106.7
		Magnesium, LCS	2530	2500	MG/KG	101.1
		Manganese, LCS	77.8	75.0	MG/KG	103.7
		Molybdenum, LCS	506	500	MG/KG	101.2
		Sodium, LCS	2520	2500	MG/KG	100.6
		Tin, LCS	494	500	MG/KG	98.7
LCS1	01L0695-LC1	Silver, LCS	420	500	UG/L	84.0
		Barium, LCS	4540	5000	UG/L	90.8
		Beryllium, LCS	228	250	UG/L	91.2
		Cadmium, LCS	242	250	UG/L	96.9
		Chromium, LCS	474	500	UG/L	94.9
		Nickel, LCS	1940	2000	UG/L	97.0
		Lead, LCS	2410	2500	UG/L	96.4
		Antimony, LCS	2870	3000	UG/L	95.5
		Selenium, LCS	9410	10000	UG/L	94.1
		Vanadium, LCS	2280	2500	UG/L	91.2
		Zinc, LCS	948	1000	UG/L	94.8
LCS1	01C0341-LC1	Mercury, LCS	5.1	5.0	UG/L	102.5

(8) BNA From Metals WET

Lionville Laboratory Use Only: 0110L119

Custody Transfer Record/Lab Work Request

LVLI Lionville Laboratories Inc.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU - Hazlehurst SAF # B01-103
Est. Final Proj. Sampling Date:
Project #: 11343-606-001-19691-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: 03-1
QC: SPCC Del: STD TAT: 30

Date Rec'd: 10-18-01 Date Due: 11-17-01

		A	B	C					D		E	F	G	H		
Refrigerator #		1	6	6					6		6	6	6	6		
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG					1AG		1AG	1AG	1AG	1AG		
Volume	Liquid															
	Solid	120	500	250					500		500	500	60	120		
Preservatives																
ANALYSES REQUESTED		ORGANIC: VOA	BNA	Pest/PCB	Herb			LEACH	INORG: TCA Metal	CN	METALS by ICP (TCLP)	T.C. Anions	Ammonia	Hex Alcohols Glycols Benzene		
Lionville Laboratory Use Only		0624H	0625x	OPCB				MET (2)	MET (1)		ITCLP	INORG (1) IC (1)		ICAG	ODRO OGRO	

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 OC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625x	OPCB				MET (2)	MET (1)		ITCLP	INORG (1) IC (1)	ICAG	ODRO OGRO		
001	B10055			S	10-10-01	0920	X	X	X					X		X	X	X	X		
002	B1005C3					0945	X	X	X	X				X		X	X	X	X		
003	B1005					1045	X	X	X					X		X	X	X	X		
004	B1005					1105	X	X	X					X		X	X	X	X		
005	B135C3					1210	X	X	X	X				X		X	X	X	X		
006	B135C3					1210	X	X	X					X		X	X	X	X		
007	B1005																				
008	B1005																				
009	B1005																				
010	B1005B																				

Special Instructions:

Run Matrix QC

SAF # B01-103

10-19-01 Add INHJN Ammonia, ICAN10, IPH, ISFD

INORG (1)

DATE/REVISIONS: * See labchron

1. REC A CRACKED LID ON
2. SAMPLE B135C3 - ITEM NO. 2 ON
3. ORIGINAL CHAIN - (METALS by ICP (TCLP)
MET (1) 4. Al, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
MET (2) 5. Sb, Be, Ni, V, Zn, Hg, Ba, Cd, Cr, Pb, Se, Ag
IC (1) 6. ~~IBR, ICCL, ICF6~~, ICN03, ICN02, ~~ICP04, IC304~~ (Im infeior)

Relinquished by	Received by	Date	Time
FEDEX	[signature]	10-18-01	0930

Relinquished	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
4235 7954 8111

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # SEE below
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 1.3 °C
1.6, 1.9

Lionville Laboratory Use Only
01101119

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI LIONVILLE LABORATORIES INC

Client: TNU-HANFORD BOI-103

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #: See page 1

Lionville Laboratory Project Manager:

QC: Del: TAT:

Date Rec'd: Date Due:

Refrigerator #															
#/Type Container	Liquid														
	Solid														
Volume	Liquid														
	Solid														
Preservatives								LEACH ATE							
ANALYSES REQUESTED →		ORGANIC							INORG						
		VOA	BNA	Pest/PCB	Herb				Metal	CN					
		↓ Lionville Laboratory Use Only ↓													
								MET(2)							

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														
011	B135C2 Belp of 005			L								✓								
012	B135C3 ⊥ 006			⊥								✓								

Special Instructions:

DATE/REVISIONS:

MET(2) 1. Sb, Be, Ni, V, Zn, Hg, Ba, Cd, Cr, Pb, Se, Ag

2.

3.

4.

5.

6.

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Lionville Laboratory Use Only

Samples were:
1) Shipped ____ or Hand Delivered ____
Airbill # ____
2) Ambient or Chilled
3) Received In Good Condition Y or N
4) Samples Properly Preserved Y or N
5) Received Within Holding Times Y or N

Tamper Resistant Seal was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. ____ °C

02

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-014	Page 1 of 2

Collector: TM Johansen	Company Contact: D Weekes — Telephone No.: 372-9130	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	Air Quality ☐
Ice Chest No.: MULTIPLE See OSPC	Field Logbook No.: EL-1516 — COA: JRCRA14114	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A020022	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
RAD DATA < 2000 PCI/g

Samples stored in Ref.#2B at the 3728 Shipping Facility on 10/10/01.
Collector not available to relenquish samples on 10/17/01 for shipment.
RJ 10/17/01

Preservation	Cool 4C Cool 4C	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG	sG	
No. of Container(s)	1	1	1	1	1	1	1	1 (TMT 10/10/01)	1	
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	~~500mL~~ 250mL	1000mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.	TILTO:

Sample No.	Matrix *	Sample Date	Sample Time									
B10055	SOIL	10-10-01	~~0945~~ 0900	X	X	X	X	X	X	X	X	B13584
B10056	SOIL	10-10-01	0945	X	X	X	X	X	X	X	X	B13585
B10057	SOIL	10-10-01	1045	X	X	X	X	X	X	X	X	B13586
B10058	SOIL	10-10-01	1105	X	X	X	X	X	X	X	X	B13587
B135C2	SOIL	10-10-01	1140	X	X	X	X	X	X	X	X	B13584

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TMJohansen/TMJohansen	10/10/01 1530	RJF #2B	10/10/01 1530
RJF 2B 3728	10/10/01 1200	R.L. Thorne	10/17/01 1200
R.L. Thorne ERC	10/17/01 1200	[illegible]	
FEDEX	10-18-01 0930	Carlos Ramos	10-18-01 0930

SPECIAL INSTRUCTIONS
~~GEA Report ASAP~~
~~Gross Alpha Beta to follow ASAP~~ TMT 10/10/01
(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec -- Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-~~ TMT 10/10/01

Matrix *: S=Soil, SD=Sediment, SO=Solid, SL=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, Ve=Vegetation, X=Other

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-014	Page 2 of 2

Collector: TM Johansen	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: Multiple See OSPC	Field Logbook No.: EL-1516	COA: JRCRA14114	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A020022	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
RAD DATA < 2000 pCi/g

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 10/10/01.
Collector not available to relenquish samples on 10/10/01 for shipment.
RT 10.17.01

Preservation	Cool 4C Cool 4C	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG	sG	
No. of Container(s)	1	1	1	1	1	1	1	1 TMJ 10/10/01	1	
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	~~500mL~~ 250mL	~~1000mL~~	
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.	TICTO:
Sample Time										
8135C3 1210	X	X	X	X	X	X	X	X		B135C5

TOTAL ACTIVITIES NOT SHIPPED WITH THIS COC.
PRELIMINARY DATA
INDICATES < 2000 pCi/g
REV DISCUSSION WITH RICH WEISS.
TMJ 10.17.01

CHAIN OF CUSTODY

	Date/Time
Relinquished By/Rec: TMJohansen	10/10/01 1530
Relinquished By/Rec: Thorn	10.17.01 1200
Relinquished By/Rec: R.E.	
Relinquished By/Rec: FEL	2 10-18-01 0930
Relinquished By/Rec:	
Relinquished By/Rec:	

LABORATORY SECTION

FINAL SAMPLE DISPOSITION

SPECIAL INSTRUCTIONS
~~GBA Report ASAP~~
~~Gross Alpha Data to follow ASAP~~ TMJ 10/10/01

(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {Tributyl phosphate}
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec. Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 – Total Sr; Technetium-~~ TMJ 10/10/01

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

Title | Date/Time

Disposed By | Date/Time

BHI-EE-011 (10/98)

28

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-103 H1547
LVL#: 0110L119

W.O.#: 11343-606-001-9999-00
Date Received: 10-18-01

INORGANIC NARRATIVE

1. This narrative covers the analyses of 6 soil samples.

2. The samples were 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 Sulfide that were received past hold.

4. The cooler temperatures were 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 with the exception of Ammonia that was outside the control limit and may be attributed to sample inhomogeneity.

9. Results for solid samples are reported on a dry weight basis.

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

Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

11-13-01
Date

njp\i10-119

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 18 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/9014	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		✓ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		✓ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		__ 9095A	

Other: Nitrate + Nitrite **Method:** EPA 300.0 (mod.)

Other: Ammonia **Method** EPA 350.3 (mod.)

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 11/13/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B10055	% Solids	87.7	%	0.01	1.0
		Nitrite by IC	2.85 u	MG/KG	2.85	2.0
		Nitrate by IC	35.0	MG/KG	2.85	2.0
		Cyanide, Total	0.51 u	MG/KG	0.51	1.0
		Chromium VI	0.72	MG/KG	0.46	1.0
		Ammonia, as N	4.6 u	MG/KG	4.6	1.0
		pH	9.9	SOIL PH	0.01	1.0
		Sulfide	21.3 u	MG/KG	21.3	1.0
-002	B10056	% Solids	78.9	%	0.01	1.0
		Nitrite by IC	66.7	MG/KG	3.17	2.0
		Nitrate by IC	363	MG/KG	31.7	20.0
		Cyanide, Total	0.69 u	MG/KG	0.69	1.0
		Chromium VI	1.3	MG/KG	0.51	1.0
		Ammonia, as N	6.0 u	MG/KG	6.0	1.0
		pH	8.8	SOIL PH	0.01	1.0
		Sulfide	24.7 u	MG/KG	24.7	1.0
-003	B10057	% Solids	97.3	%	0.01	1.0
		Nitrite by IC	1.28 u	MG/KG	1.28	1.0
		Nitrate by IC	1.28 u	MG/KG	1.28	1.0
		Cyanide, Total	0.50 u	MG/KG	0.50	1.0
		Chromium VI	0.53	MG/KG	0.41	1.0
		Ammonia, as N	4.8 u	MG/KG	4.8	1.0
		pH	8.7	SOIL PH	0.01	1.0
		Sulfide	20.3 u	MG/KG	20.3	1.0
-004	B10058	% Solids	76.5	%	0.01	1.0
		Nitrite by IC	1.63 u	MG/KG	1.63	1.0
		Nitrate by IC	1.63 u	MG/KG	1.63	1.0
		Cyanide, Total	0.49 u	MG/KG	0.49	1.0
		Chromium VI	1.5	MG/KG	0.52	1.0
		Ammonia, as N	6.4	MG/KG	6.0	1.0
		pH	8.8	SOIL PH	0.01	1.0
		Sulfide	25.8 u	MG/KG	25.8	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/13/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B135C2	% Solids	97.4	%	0.01	1.0
		Nitrite by IC	1.28 u	MG/KG	1.28	1.0
		Nitrate by IC	2.53	MG/KG	1.28	1.0
		Cyanide, Total	0.43 u	MG/KG	0.43	1.0
		Chromium VI	0.80	MG/KG	0.41	1.0
		Ammonia, as N	4.9 u	MG/KG	4.9	1.0
		pH	8.6	SOIL PH	0.01	1.0
		Sulfide	37.5 u	MG/KG	37.5	1.0
-006	B135C3	% Solids	92.8	%	0.01	1.0
		Nitrite by IC	1.35 u	MG/KG	1.35	1.0
		Nitrate by IC	1.35 u	MG/KG	1.35	1.0
		Cyanide, Total	0.49 u	MG/KG	0.49	1.0
		Chromium VI	0.72	MG/KG	0.43	1.0
		Ammonia, as N	5.5 u	MG/KG	5.5	1.0
		pH	8.4	SOIL PH	0.01	1.0
		Sulfide	37.7 u	MG/KG	37.7	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/13/01

CLIENT: TNUHANFORD B01-103 H1547

LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LICA72-MB1	Nitrite by IC	1.25 u	MG/KG	1.25	1.0
		Nitrate by IC	1.25 u	MG/KG	1.25	1.0
BLANK1	01LCB96-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK10	01LVI085-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0
BLANK10	01LAM050-MB1	Ammonia, as N	2.5 u	MG/KG	2.5	1.0
BLANK10	01LSD057-MB1	Sulfide	40.0 u	MG/KG	40.0	1.0
BLANK10	01LICA73-MB1	Nitrite by IC	1.25 u	MG/KG	1.25	1.0
		Nitrate by IC	1.25 u	MG/KG	1.25	1.0
BLANK1	01LCC96-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/13/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B10055	Nitrite by IC	57.1	2.85u	57.0	100.1	2.0
		Nitrate by IC	94.9	35.0	57.0	105.1	2.0
		Soluble Chromium VI	4.3	0.72	4.6	78.8	1.0
		Insoluble Chromium VI	1450	0.72	1320	109.3	100
-006	B135C3	Cyanide, Total	4.74	0.49u	4.71	100.5	1.0
		Ammonia, as N	128	5.5 u	131	97.5	1.0
		Sulfide	312	15.1	343	86.5	1.0
BLANK10	01LICA72-MB1	Nitrite by IC	24.0	1.25u	25.0	96.2	1.0
		Nitrate by IC	25.5	1.25u	25.0	102.1	1.0
BLANK10	01LVI085-MB1	Soluble Chromium VI	3.9	0.40u	4.0	98.4	1.0
		Insoluble Chromium VI	1220	0.40u	1220	99.9	100
BLANK10	01LAM050-MB1	Ammonia, as N	103	2.5 u	100	102.8	1.0
		Ammonia, as N MSD	103	2.5 u	100	103.2	1.0
BLANK10	01LSD057-MB1	Sulfide	325	40.0 u	366	88.7	1.0
BLANK10	01LICA73-MB1	Nitrite by IC	24.4	1.25u	25.0	97.8	1.0
		Nitrate by IC	25.1	1.25u	25.0	100.6	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 11/13/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	01LAM050-MB1	Ammonia, as N	102.8	103.2	0.49

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/13/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B10055	% Solids	87.7	87.6	0.057	1.0
		Nitrite by IC	2.85u	2.85u	NC	2.0
		Nitrate by IC	35.0	34.4	1.8	2.0
		Chromium VI	0.72	0.60	19.1	1.0
		pH	9.9	9.8	0.5	1.0
-006REP	B135C3	Cyanide, Total	0.49u	0.46u	NC	1.0
		Ammonia, as N	5.5 u	32.8	~~NC~~ 143.4	1.0
		Sulfide	37.7 u	36.9 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/13/01

CLIENT: TNUHANFORD B01-103 H1547 LVL LOT #: 0110L119

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	01LCB96-LCS1	Cyanide, Total LCS	1.96	2.0	MG/KG	98.2
LCSS2	01LCB96-LCS2	Cyanide, Total LCS	10.1	10.0	MG/KG	101.2
LCSS1	01LCC96-LCS1	Cyanide, Total LCS	2.03	2.0	MG/KG	101.4
LCSS2	01LCC96-LCS2	Cyanide, Total LCS	10.6	10.0	MG/KG	106.0

(U) BNA From Metals WET

Lionville Laboratory Use Only: 0110L119

Custody Transfer Record/Lab Work Request

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU - HANFORD SAF # B01-103
Est. Final Proj. Sampling Date:
Project #: 11343-606-001-9993-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: SPEC Del: STD TAT: 30

Date Rec'd: 10-18-01 Date Due: 11-17-01

	A	B	C	D	E	F	G	H
Refrigerator #	1	6	6	6	6	6	6	6
#/Type Container (Liquid / Soil)								
Volume (Liquid / Soil)								
Preservatives								
ANALYSES REQUESTED	ORGANIC: VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	ORGANIC: Herb	INORG: TCLP Metal	INORG: CN		
Lionville Laboratory Use Only	0624H	0625X	OPCB	MET (2)	MET (1)	ITCLP	INORG (1) IC (1)	ICRG
								ODRO OGRO

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	0624H	0625X	OPCB	MET (2)	MET (1)	ITCLP	INORG (1) IC (1)	ICRG	ODRO OGRO
001	B10055			S	10-10-01	0930	X	X	X		X	X	X	X	X
002	B10056					0945	X	X	X		X	X	X	X	X
003	B10057					1000	X	X	X		X	X	X	X	X
004	B10058					1000	X	X	X		X	X	X	X	X
005	B135C2					1010	X	X	X		X	X	X	X	X
006	B135C3					1010	X	X	X		X	X	X	X	X
007	B10059														
008	B10060														
009	B10059														
010	B10058														

Special Instructions:

Run Matrix QC

SAF # B01-103

10-19-01 Add ZNHN Ammonia, ICNHO, IPH, ISFD

INORG (1)

DATE/REVISIONS: * See labchron

1. REC A CRACKED LID ON
2. SAMPLE B135C3 - ITEM NO. 2 ON
3. ORIGINAL chain - (METALS by ICP (TCLP)
4. MET (1) Al, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
5. MET (2) Sb, Be, Ni, V, Zn, Hg, Ba, Cd, Cr, Pb, Se, Ag
6. IC (1) ~~ICBR, ICCL, ICF6~~, ICNO3, ICNO2, ~~ICPO4, ICSO4~~

Relinquished by	Received by	Date	Time
FEDEX	[signature]	10-18-01	0930

Relinquished	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # SEE below
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was: 1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 1.3 °C
1.6, 1.9

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

4235 7954 8111

4235 7954 8199

4235 7954 8896

Lionville Laboratory Use Only
01101119

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD B01-103
Est. Final Proj. Sampling Date:
Project #:
Project Contact/Phone #: See page 1
Lionville Laboratory Project Manager:
QC: Del: TAT:

Date Rec'd: Date Due:

Refrigerator #																
#/Type Container	Liquid															
	Solid															
Volume	Liquid															
	Solid															
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb			LEACH PAT	Metal	CN						
		Lionville Laboratory Use Only														
								MET(2)								

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	MET(2)
011	B135C2 Eelp of 005			L			✓
012	B135C3 L 006			L			✓

Special Instructions:

DATE/REVISIONS:
MET(2) 1. Sb, Be, Ni, V, Zn, Hg, Ba, Cd, Cr, Pb, Se, Ag
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:

Lionville Laboratory Use Only

Samples were:
1) Shipped ____ or Hand Delivered ____
Airbill # ____
2) Ambient or Chilled
3) Received In Good Condition Y or N
4) Samples Properly Preserved Y or N
5) Received Within Holding Times Y or N

Tamper Resistant Seal was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. ____ °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-014	Page 1 of 2

Collector: TM Johansen	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: MULTIPLE SEE DSPC	Field Logbook No.: EL-1516	COA: JRCRA14114	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A020022	Bill of Lading/Air Bill No.: SEE DSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
RAD DATA < 2000 PCI/g

Samples stored in Ref.#2B at the 3728 Shipping Facility on 10/10/01. Collector not available to relenquish samples on 10/10/01 for shipment.
RJ 10/17/01

SAMPLE ANALYSIS												
Preservation				Cool 4C Cool 4C	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	
Type of Container				aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)				1	1	1	1	1	1	1	1	1	
Volume				500mL	500mL	60mL	500mL	120mL	120mL	500mL	~~500mL~~ 250mL	1000mL	
				See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.	
Sample No.	Matrix *	Sample Date	Sample Time										TILTO:
B10055	SOIL	10-10-01	~~0945~~ 0900	X	X	X	X	X	X	X	X		B135B4
B10056	SOIL	10-10-01	0945	X	X	X	X	X	X	X	X		B135B5
B10057	SOIL	10-10-01	1045	X	X	X	X	X	X	X	X		B135B6
B10058	SOIL	10-10-01	1105	X	X	X	X	X	X	X	X		B135B7
B135C2	SOIL	10-10-01	1140	X	X	X	X	X	X	X	X		B135C4

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TRANSPORTATION	10/10/01 1530	Ref #2B	10/10/01 1530
Ref 2B 3728	10-17-01 1200	R Thore	10-17-01 1200
R Thore ERC	10-17-01 1200	FEDEX	
FEDEX	10-18-01 0930	Carlos Hernandez	10-18-01 0930

SPECIAL INSTRUCTIONS
~~OEA Report ASAP~~
~~Gross Alpha Beta to follow ASAP~~ TMT 10/10/01
(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(6) ~~Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec -- Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-~~ TMT 10/10/01

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

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

ERF-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-014	Page 2 of 2

Collector: TM Johansen	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East	SAF No.: B01-103	
Ice Chest No.: Multiple See OSPC	Field Logbook No.: EL-1516	COA: JRCRA14114	Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A020022	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
RAD DATA < 2000 PCI/g

Samples stored in Ref.# 3B at the 3728 Shipping Facility on 10/10/01. Collector not available to relenquish samples on 10/10/01 for shipment.
RT 10-17-01

Preservation	Cool 4C Cool 4C	None	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	Cool 4C Cool 4C	None	
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG	sG	
No. of Container(s)	1	1	1	1	1	1	1	1 TMT 10/10/01	1	
Volume	500mL	500mL	60mL	500mL	120mL	120mL	500mL	~~500mL~~ 250mL	~~500mL~~ 250mL	
	See item (1) in Special Instructions.	See item (2) in Special Instructions.	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL)	See item (4) in Special Instructions.	See item (5) in Special Instructions.	PCBs - 8082	See item (6) in Special Instructions.	
Sample Time										TILTO:
B135C3 1210	X	X	X	X	X	X	X	X		B13515

TOTAL ACTIVITIES NOT SHIPPED WITH THIS COC
ORIGINAL DATA < 2000 PCI/g
INDICATES 3 THC
PER DISCUSSION
RICK DISCUSS.
RT 10-17-01

CHAIN OF	Date/Time
Relinquished By/Re: TMT	10/10/01 1530
Relinquished By/Re: RTC	Thorsen 1200 10-17-01
Relinquished By/Re:	
Relinquished By/Re: FEL	2 10-18-01 0930
Relinquished By/Re:	
Relinquished By/Re:	
LABORATORY SECTION	Title / Date/Time
FINAL SAMPLE DISPOSITION	Disposed By / Date/Time

SPECIAL INSTRUCTIONS
~~GBA Report ASAP~~
~~Gross Alpha Beta to follow ASAP~~ TMT 10/10/01
(1) ICP Metals - 6010A (TAL) {Aluminum, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(2) Metals by ICP (TCLP) - 1311/6010 {Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Metals by ICP (TCLP) Add-on - 1311/6010 {Antimony, Beryllium, Nickel, Vanadium, Zinc}; Mercury (TCLP) - 1311/7470
(3) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(4) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(5) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(6) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-~~ TMT 10/10/01

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 10-18-01 0930

SDG#: 01101119

Work Order Number: ERC-96-040 ERC-96-002 SAF# B01-103

Shipping Container ID: ERC 99-062 Chain of Custody # B01-103-14

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 1.3 1.6 1.9
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 3 coolers = 48
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   ____ tape ____ hazard labels
   ✓ custody seals ____ appropriate sample labels

9. Samples are:
   ____ in good condition ____ leaking
   ✓ broken ____ have air bubbles

10. Were any anomalies identified in sample receipt? Yes [ ] No [✓]
11. Description of anomalies (include sample numbers): _____

Sample Custodian/Laboratory: Carla Humphrey Date: 10-18-01

Telephoned to: _____ On _____ By _____