ORIGINAL
Dayes

SDR # B02-031
Revision #: 0
Date Initiated: 11/15/01

SAMPLE DISPOSITION RECORD

SAF: B01-103
OU: N/A
Project ID: 200 Area GW
Task ID: 1
Sampling Event: 200 Area Groundwater Well Drilling Waste Designation

0056916

Laboratory: TMA/RECRA

Task Manager: R. L. Jackson

Sampling Information:
Number of Samples: 13
ID Numbers: B12D77, B12D78, B12MB7, B12MB8, B12MK9, B12ML0, B12V25, B12V26, B135C3, B139C4, B139C5, B139C6, B139D1
Matrix: Soil
Collection Date: 07/17/01 – 10/19/01

RECEIVED
APR 16 2002
EDMC

Issue Background:

Class: ☐ Project Data Use ☒ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Addition of Analyses

Description: Addition of Analysis of Arsenic By Toxic Characteristic Leach Procedure

Disposition:

Description: The Groundwater/Vadose Zone Integration Project requested that analysis of arsenic by the Toxic Characteristic Leach Procedure (TCLP) be added to the analytical request for the listed samples. The request was made after the samples had been analyzed for other TCLP constituents.

Justification: Arsenic TCLP data are needed by the project to complete the designation of waste generated during groundwater well drilling and installation.

Approval Signatures:

S. J. Trent Steve J Trent 12/19/01
Project Coordinator (Print/Sign Name) Date

R. L. Jackson Ronald L Jackson 12/19/01
Task Manager (Print/Sign Name) Date

ORIGINAL
Dayes

SDR # B02-029
Revision #: 0
Date Initiated: 11/28/01

SAMPLE DISPOSITION RECORD

SAF: B01-103
OU: N/A
Project ID: 200 Area GW
Task ID: 1
Sampling Event: 200 Area Groundwater Well Drilling Waste Designation

Laboratory: TMA/RECRA

Task Manager: R. L. Jackson

Sampling Information:
Number of Samples: 6
ID Numbers: B12D78, B12FY3, B12MB8, B12ML0, B12V26, B12XJ8
Matrix: Soil
Collection Date: 07/17/01 – 09/19/01

Issue Background:

Class: ☐ Project Data Use ☒ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Other

Description: Reissue Final Data Package Reports

Disposition:

Description: The final data packages for the listed samples identify the compound '3 + 4 Methylphenol' only as '4-Methylphenol'. The laboratory was requested to reissue the final data package reports for the listed samples with the '3 + 4 Methylphenol' composite compound name in place of '4-Methylphenol'.

Justification: Because 3-MethylPhenol and 4-Methylphenol are indistinguishable using method 8270, the final data package report needs to identify this composite compound as '3 + 4 Methylphenol'.

Approval Signatures:

S. J. Trent — 12/5/01
Project Coordinator (Print/Sign Name) — Date

R. L. Jackson Ronald L. Jackson — 12/10/01
Task Manager (Print/Sign Name) Ronald L. Jackson — Date

H1461

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1461 was composed of two 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 document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on November 3, 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 Nickel-63 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 Isotopic Thorium 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 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.10 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.11 Tritium Analyses

The H3 matrix spike percent recovery (83%) was below the 3σ limits (86 to 114%), but within the laboratory protocol limits (8σ to 120%). No other 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

11/9/01

Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

SDG 7054
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1461

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B12MB7	200 East	SOLID		R108081-01	B01-103	B01-103-05	08/13/01 11:10
B12MB8	200 East	SOLID		R108081-02	B01-103	B01-103-05	08/13/01 11:38
Method Blank		SOLID		R108081-04	B01-103		
Lab Control Sample		SOLID		R108081-03	B01-103		
Duplicate (R108081-01)	200 East	SOLID		R108081-05	B01-103		08/13/01 11:10
Spike (R108081-01)	200 East	SOLID		R108081-06	B01-103		08/13/01 11:10

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

SDG 7054
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1461

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
7054	B01-103-05	B12MB7	SOLID	99.4	1485 g		08/16/01	3	R108081-01	7054-001
		B12MB8	SOLID	95.7	1443 g		08/16/01	3	R108081-02	7054-002
		Method Blank	SOLID						R108081-04	7054-004
		Lab Control Sample	SOLID						R108081-03	7054-003
		Duplicate (R108081-01)	SOLID	99.4	1485 g		08/16/01	3	R108081-05	7054-005
		Spike (R108081-01)	SOLID	99.4	1485 g		08/16/01	3	R108081-06	7054-006

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

SDG 7054
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1461

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	6994-192	5.0	2			1	1	1/1		
NP	SOLID	Neptunium in Soil	6994-192	5.0	2			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6994-192	5.0	2			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6994-192	5.0	2			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	6994-192	5.0	2			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6994-192	10.0	2			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6994-192	10.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6994-192	15.0	2			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	6994-192	10.0	2			1	1	1/1		
H	SOLID	Tritium in Soil	6994-192	10.0	2			1	1	1/1	1/1	X
NI_L	SOLID	Nickel 63 in Soil	6994-192	10.0	2			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

SDG 7054
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1461

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B12MB7			R108081-01	7054-001	AM		09/25/01	11/03/01	MCM	Americium 241 in Soil
200 East		SOLID	08/13/01	7054-001	C		09/21/01	11/03/01	MCM	Carbon 14 in Soil
B01-103-05	B01-103		08/16/01	7054-001	GAM		09/18/01	11/03/01	MCM	Gamma Scan
				7054-001	H		09/21/01	11/03/01	MCM	Tritium in Soil
				7054-001	NI_L		09/18/01	11/03/01	MCM	Nickel 63 in Soil
				7054-001	NP		09/27/01	11/03/01	MCM	Neptunium in Soil
				7054-001	PU		09/26/01	11/03/01	MCM	Plutonium, Isotopic in Solids
				7054-001	SR		09/17/01	11/03/01	MCM	Total Strontium in Soil
				7054-001	TC		09/26/01	11/03/01	MCM	Technetium 99 in Soil
				7054-001	TH		09/18/01	11/03/01	MCM	Thorium, Isotopic in Soil
				7054-001	U		10/18/01	11/03/01	MCM	Uranium, Isotopic in Soil
B12MB8			R108081-02	7054-002	AM		09/25/01	11/03/01	MCM	Americium 241 in Soil
200 East		SOLID	08/13/01	7054-002	C		09/21/01	11/03/01	MCM	Carbon 14 in Soil
B01-103-05	B01-103		08/16/01	7054-002	GAM		09/18/01	11/03/01	MCM	Gamma Scan
				7054-002	H		09/21/01	11/03/01	MCM	Tritium in Soil
				7054-002	NI_L		09/18/01	11/03/01	MCM	Nickel 63 in Soil
				7054-002	NP		09/27/01	11/03/01	MCM	Neptunium in Soil
				7054-002	PU		09/26/01	11/03/01	MCM	Plutonium, Isotopic in Solids
				7054-002	SR		09/17/01	11/03/01	MCM	Total Strontium in Soil
				7054-002	TC		10/02/01	11/03/01	MCM	Technetium 99 in Soil
				7054-002	TH		09/18/01	11/03/01	MCM	Thorium, Isotopic in Soil
				7054-002	U		10/23/01	11/03/01	MCM	Uranium, Isotopic in Soil
Method Blank			R108081-04	7054-004	AM		09/25/01	11/03/01	MCM	Americium 241 in Soil
		SOLID		7054-004	C		09/20/01	11/03/01	MCM	Carbon 14 in Soil
	B01-103			7054-004	GAM		09/18/01	11/03/01	MCM	Gamma Scan
				7054-004	H		09/21/01	11/03/01	MCM	Tritium in Soil
				7054-004	NI_L		09/18/01	11/03/01	MCM	Nickel 63 in Soil
				7054-004	NP		09/27/01	11/03/01	MCM	Neptunium in Soil
				7054-004	PU		09/26/01	11/03/01	MCM	Plutonium, Isotopic in Solids
				7054-004	SR		09/17/01	11/03/01	MCM	Total Strontium in Soil
				7054-004	TC		09/25/01	11/03/01	MCM	Technetium 99 in Soil
				7054-004	TH		09/18/01	11/03/01	MCM	Thorium, Isotopic in Soil
				7054-004	U		10/19/01	11/03/01	MCM	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

SDG 7054
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1461

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			R108081-03	7054-003	AM		10/18/01	11/03/01	MCM	Americium 241 in Soil
		SOLID		7054-003	C		09/21/01	11/03/01	MCM	Carbon 14 in Soil
	B01-103			7054-003	GAM		10/26/01	11/03/01	MCM	Gamma Scan
				7054-003	H		09/21/01	11/03/01	MCM	Tritium in Soil
				7054-003	NI_L		09/18/01	11/03/01	MCM	Nickel 63 in Soil
				7054-003	NP		09/27/01	11/03/01	MCM	Neptunium in Soil
				7054-003	PU		09/26/01	11/03/01	MCM	Plutonium, Isotopic in Solids
				7054-003	SR		09/17/01	11/03/01	MCM	Total Strontium in Soil
				7054-003	TC		09/25/01	11/03/01	MCM	Technetium 99 in Soil
				7054-003	TH		09/18/01	11/03/01	MCM	Thorium, Isotopic in Soil
				7054-003	U		10/19/01	11/03/01	MCM	Uranium, Isotopic in Soil
Duplicate (R108081-01)			R108081-05	7054-005	AM		09/25/01	11/03/01	MCM	Americium 241 in Soil
200 East		SOLID	08/13/01	7054-005	C		09/21/01	11/03/01	MCM	Carbon 14 in Soil
	B01-103		08/16/01	7054-005	GAM		10/30/01	11/03/01	MCM	Gamma Scan
				7054-005	H		09/21/01	11/03/01	MCM	Tritium in Soil
				7054-005	NI_L		09/18/01	11/03/01	MCM	Nickel 63 in Soil
				7054-005	NP		09/27/01	11/03/01	MCM	Neptunium in Soil
				7054-005	PU		09/26/01	11/03/01	MCM	Plutonium, Isotopic in Solids
				7054-005	SR		09/17/01	11/03/01	MCM	Total Strontium in Soil
				7054-005	TC		09/25/01	11/03/01	MCM	Technetium 99 in Soil
				7054-005	TH		09/20/01	11/03/01	MCM	Thorium, Isotopic in Soil
				7054-005	U		09/18/01	11/03/01	MCM	Uranium, Isotopic in Soil
Spike (R108081-01)			R108081-06	7054-006	H		09/21/01	11/03/01	MCM	Tritium in Soil
200 East		SOLID	08/13/01							
	B01-103		08/16/01							

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

SDG 7054
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1461

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	2			1	1	1		5
C	B01-103	Carbon 14 in Soil	C14_COX_LSC	2			1	1	1		5
GAM	B01-103	Gamma Scan	GAMMA_GS	2			1	1	1		5
H	B01-103	Tritium in Soil	906.0_H3_LSC	2			1	1	1	1	6
NI_L	B01-103	Nickel 63 in Soil	NI63_LSC	2			1	1	1		5
NP	B01-103	Neptunium in Soil	NP237_LLE_PLATE_AEA	2			1	1	1		5
PU	B01-103	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	2			1	1	1		5
SR	B01-103	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	2			1	1	1		5
TC	B01-103	Technetium 99 in Soil	TC99_TR_SEP_LSC	2			1	1	1		5
TH	B01-103	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	2			1	1	1		5
U	B01-103	Uranium, Isotopic in Soil	UISO_PLATE_AEA	2			1	1	1		5
TOTALS				22			11	11	11	1	56

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

R108081-04 Method Blank

METHOD BLANK

SDG	7054	Client/Case no	Hanford	SDG H1461	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108081-04	Client sample id	Method Blank		
Dept sample id	7054-004	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	-0.180	0.19	0.33	400	U	H
Carbon 14	14762-75-5	-3.51	2.5	4.3	50	U	C
Nickel 63	13981-37-8	-0.105	1.1	1.9	30	U	NI_L
Total Strontium	SR-RAD	-0.101	0.088	0.17	1.0	U	SR
Americium 241	14596-10-2	0	0.13	0.31	1.0	U	AM
Technetium 99	14133-76-7	0.048	0.24	0.55	15	U	TC
Thorium 228	14274-82-9	-0.099	0.20	0.44		U	TH
Thorium 230	14269-63-7	-0.165	0.20	0.44	1.0	U	TH
Thorium 232	TH-232	0.066	0.13	0.25	1.0	U	TH
Uranium 233	U-233/234	-0.018	0.036	0.14	1.0	U	U
Uranium 235	15117-96-1	0.022	0.044	0.17	1.0	U	U
Uranium 238	U-238	0.018	0.036	0.14	1.0	U	U
Neptunium 237	13994-20-2	-0.008	0.008	0.036	1.0	U	NP
Plutonium 238	13981-16-3	0	0.051	0.19	1.0	U	PU
Plutonium 239/240	PU-239/240	0.025	0.051	0.19	1.0	U	PU
Potassium 40	13966-00-2	U		0.49		U	GAM
Cobalt 60	10198-40-0	U		0.019	0.050	U	GAM
Cesium 137	10045-97-3	U		0.018	0.10	U	GAM
Radium 226	13982-63-3	U		0.035	0.10	U	GAM
Radium 228	15262-20-1	U		0.072	0.20	U	GAM
Europium 152	14683-23-9	U		0.041	0.10	U	GAM
Europium 154	15585-10-1	U		0.051	0.10	U	GAM
Europium 155	14391-16-3	U		0.034	0.10	U	GAM
Thorium 228	14274-82-9	U		0.022		U	GAM
Thorium 232	TH-232	U		0.072		U	GAM
Uranium 235	15117-96-1	U		0.061		U	GAM
Uranium 238	U-238	U		2.1		U	GAM
Americium 241	14596-10-2	U		0.017		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	11/03/01

B L A N K , c o n t .

SDG	7054	Client/Case no	Hanford	SDG H1461	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108081-04	Client sample id	Method Blank		
Dept sample id	7054-004	Material/Matrix		SOLID	
		SAF No	B01-103		

QC-BLANK 39637

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

R108081-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7054
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1461
Case no No. 630

Lab sample id R108081-03
Dept sample id 7054-003

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	24.8	0.66	0.34	400	J	H	24.7	0.99	100	83-117	80-120
Carbon 14	9690	190	24	50		C	11300	450	86	86-114	80-120
Nickel 63	249	4.3	1.9	30		NI_L	264	11	94	84-116	80-120
Total Strontium	24.2	0.92	0.26	1.0		SR	23.0	0.92	105	82-118	80-120
Americium 241	21.7	1.9	0.16	1.0		AM	21.0	0.84	103	83-117	80-120
Technetium 99	132	2.6	0.70	15		TC	131	5.2	101	83-117	80-120
Thorium 230	47.1	3.8	0.52	1.0		TH	44.8	1.8	105	84-116	80-120
Uranium 233	18.0	1.5	0.70	1.0		U	18.6	0.74	97	85-115	80-120
Uranium 235	13.5	1.3	0.15	1.0		U	15.1	0.60	89	84-116	80-120
Uranium 238	19.8	1.6	0.67	1.0		U	20.2	0.81	98	85-115	80-120
Neptunium 237	23.0	1.4	0.042	1.0		NP	23.8	0.95	97	87-113	80-120
Plutonium 238	23.9	2.1	0.17	1.0		PU	27.2	1.1	88	85-115	80-120
Plutonium 239/240	26.7	2.3	0.17	1.0		PU	29.0	1.2	92	85-115	80-120
Cobalt 60	1.25	0.060	0.030	0.050		GAM	1.15	0.046	109	74-126	80-120
Cesium 137	1.52	0.054	0.031	0.10		GAM	1.33	0.053	114	73-127	80-120

200 Area RCRA Drilling Waste Desig.

QC-LCS 39636

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

R108081-05 B12MB7

DUPLICATE

SDG	7054			Client/Case no	Hanford SDG H1461
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R108081-05	Lab sample id	R108081-01	Client sample id	B12MB7
Dept sample id	7054-005	Dept sample id	7054-001	Location/Matrix	200 East SOLID
		Received	08/16/01	Collected/Weight	08/13/01 11:10 1485 g
% solids	99.4	% solids	99.4	Custody/SAF No	B01-103-05 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	-0.019	0.052	0.091	400	U	H	-0.015	0.053	0.091	U	-	
Carbon 14	-2.13	2.3	3.9	50	U	C	-1.43	2.3	3.9	U	-	
Nickel 63	-0.129	1.4	2.3	30	U	NI_L	0.536	1.2	2.0	U	-	
Total Strontium	0.029	0.12	0.22	1.0	U	SR	-0.019	0.088	0.18	U	-	
Americium 241	0.330	0.24	0.29	1.0	J	AM	-0.028	0.056	0.22	U	200	207
Technetium 99	-0.197	0.21	0.59	15	U	TC	-0.027	0.082	0.38	U	-	
Thorium 228	0.656	0.21	0.24			TH	0.438	0.35	0.54	U	40	112
Thorium 230	0.215	0.20	0.34	1.0	U	TH	0.438	0.35	0.42	J	68	186
Thorium 232	0.603	0.16	0.11	1.0	J	TH	0.657	0.35	0.34	J	9	92
Uranium 233	0.304	0.26	0.42	1.0	U	U	0.420	0.083	0.029	J	32	114
Uranium 235	0	0.11	0.40	1.0	U	U	0.027	0.027	0.035	U	-	
Uranium 238	0.130	0.17	0.33	1.0	U	U	0.393	0.076	0.029	J	101	107
Neptunium 237	0.003	0.014	0.032	1.0	U	NP	0.046	0.031	0.037	J	176	209
Plutonium 238	0	0.045	0.17	1.0	U	PU	0	0.047	0.18	U	-	
Plutonium 239/240	0.023	0.045	0.17	1.0	U	PU	0	0.047	0.18	U	-	
Potassium 40	14.3	0.71	0.29			GAM	15.1	0.78	0.28		5	34
Cobalt 60	U		0.033	0.050	U	GAM	U		0.041	U	-	
Cesium 137	U		0.030	0.10	U	GAM	U		0.031	U	-	
Radium 226	0.454	0.060	0.058	0.10		GAM	0.450	0.064	0.060		1	43
Radium 228	0.578	0.14	0.14	0.20		GAM	0.785	0.14	0.14		30	54
Europium 152	U		0.067	0.10	U	GAM	U		0.083	U	-	
Europium 154	U		0.11	0.10	U	GAM	U		0.11	U	-	
Europium 155	U		0.098	0.10	U	GAM	U		0.11	U	-	
Thorium 228	0.590	0.037	0.037			GAM	0.568	0.040	0.040		4	35
Thorium 232	0.578	0.14	0.14			GAM	0.785	0.14	0.14		30	54
Uranium 235	U		0.10		U	GAM	U		0.15	U	-	
Uranium 238	U		3.8		U	GAM	U		4.1	U	-	
Americium 241	U		0.21		U	GAM	U		0.27	U	-	

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/03/01

DUPLICATE, cont.

SDG	7054			Client/Case no	Hanford SDG H1461
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R108081-05	Lab sample id	R108081-01	Client sample id	B12MB7
Dept sample id	7054-005	*Dept sample id*	7054-001	*Location/Matrix*	*200 East SOLID*
		Received	08/16/01	Collected/Weight	08/13/01 11:10 1485 g
% solids	99.4	% solids	99.4	Custody/SAF No	B01-103-05 B01-103

QC-DUP#1 39638

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

R108081-06 B12MB7

MATRIX SPIKE

SDG	7054			Client/Case no	Hanford SDG H1461
Contact	Melissa C. Mannion			Case no	No. 630
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R108081-06	Lab sample id	R108081-01	Client sample id	B12MB7
Dept sample id	7054-006	Dept sample id	7054-001	Location/Matrix	200 East SOLID
		Received	08/16/01	Collected/Weight	08/13/01 11:10 1485 g
% solids	99.4	% solids	99.4	Custody/SAF No	B01-103-05 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	43.5	0.44	0.094	400	JX	H	52.7	2.1	-0.015	0.053	83	86-114	60-140

200 Area RCRA Drilling Waste Desig.

QC-MS#1 39639

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

R108081-01 **B12MB7**

DATA SHEET

SDG	7054	Client/Case no	Hanford	SDG H1461	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108081-01	Client sample id	B12MB7		
Dept sample id	7054-001	Location/Matrix	200 East	SOLID	
Received	08/16/01	Collected/Weight	08/13/01 11:10	1485 g	
% solids	99.4	Custody/SAF No	B01-103-05	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	0.053	0.091	400	U	H
Carbon 14	14762-75-5	-1.43	2.3	3.9	50	U	C
Nickel 63	13981-37-8	0.536	1.2	2.0	30	U	NI_L
Total Strontium	SR-RAD	-0.019	0.088	0.18	1.0	U	SR
Americium 241	14596-10-2	-0.028	0.056	0.22	1.0	U	AM
Technetium 99	14133-76-7	-0.027	0.082	0.38	15	U	TC
Thorium 228	14274-82-9	0.438	0.35	0.54		U	TH
Thorium 230	14269-63-7	0.438	0.35	0.42	1.0	J	TH
Thorium 232	TH-232	0.657	0.35	0.34	1.0	J	TH
Uranium 233	U-233/234	0.420	0.083	0.029	1.0	J	U
Uranium 235	15117-96-1	0.027	0.027	0.035	1.0	U	U
Uranium 238	U-238	0.393	0.076	0.029	1.0	J	U
Neptunium 237	13994-20-2	0.046	0.031	0.037	1.0	J	NP
Plutonium 238	13981-16-3	0	0.047	0.18	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.047	0.18	1.0	U	PU
Potassium 40	13966-00-2	15.1	0.78	0.28			GAM
Cobalt 60	10198-40-0	U		0.041	0.050	U	GAM
Cesium 137	10045-97-3	U		0.031	0.10	U	GAM
Radium 226	13982-63-3	0.450	0.064	0.060	0.10		GAM
Radium 228	15262-20-1	0.785	0.14	0.14	0.20		GAM
Europium 152	14683-23-9	U		0.083	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Thorium 228	14274-82-9	0.568	0.040	0.040			GAM
Thorium 232	TH-232	0.785	0.14	0.14			GAM
Uranium 235	15117-96-1	U		0.15		U	GAM
Uranium 238	U-238	U		4.1		U	GAM
Americium 241	14596-10-2	U		0.27		U	GAM

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
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Report date	11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

R108081-02 B12MB8

DATA SHEET

SDG	7054	Client/Case no	Hanford		SDG H1461
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R108081-02	Client sample id	B12MB8		
Dept sample id	7054-002	Location/Matrix	200 East		SOLID
Received	08/16/01	Collected/Weight	08/13/01 11:38	1443 g	
% solids	95.7	Custody/SAF No	B01-103-05	B01-103	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.053	0.059	0.097	400	U	H
Carbon 14	14762-75-5	1.24	2.1	3.5	50	U	C
Nickel 63	13981-37-8	-0.187	1.2	2.0	30	U	NI_L
Total Strontium	SR-RAD	1.17	0.22	0.24	1.0		SR
Americium 241	14596-10-2	-0.023	0.046	0.18	1.0	U	AM
Technetium 99	14133-76-7	-0.029	0.075	0.29	15	U	TC
Thorium 228	14274-82-9	0.128	0.26	0.47		U	TH
Thorium 230	14269-63-7	0	0.26	0.41	1.0	U	TH
Thorium 232	TH-232	0.384	0.26	0.33	1.0	J	TH
Uranium 233	U-233/234	0.410	0.13	0.083	1.0	J	U
Uranium 235	15117-96-1	0.026	0.052	0.10	1.0	U	U
Uranium 238	U-238	0.399	0.13	0.083	1.0	J	U
Neptunium 237	13994-20-2	0.009	0.017	0.042	1.0	U	NP
Plutonium 238	13981-16-3	0	0.045	0.17	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.045	0.17	1.0	U	PU
Potassium 40	13966-00-2	13.7	0.91	0.32			GAM
Cobalt 60	10198-40-0	U		0.030	0.050	U	GAM
Cesium 137	10045-97-3	U		0.028	0.10	U	GAM
Radium 226	13982-63-3	U		0.097	0.10	U	GAM
Radium 228	15262-20-1	0.671	0.14	0.14	0.20		GAM
Europium 152	14683-23-9	U		0.067	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.067	0.10	U	GAM
Thorium 228	14274-82-9	0.614	0.037	0.032			GAM
Thorium 232	TH-232	0.671	0.14	0.14			GAM
Uranium 235	15117-96-1	U		0.11		U	GAM
Uranium 238	U-238	U		3.8		U	GAM
Americium 241	14596-10-2	U		0.037		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	11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

Test AM Matrix SOLID
SDG 7054
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1461

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6994-192						
B12MB7	R108081-01			7054-001	U	
B12MB8	R108081-02			7054-002	U	
BLK (QC ID=39637)	R108081-04			7054-004	U	
LCS (QC ID=39636)	R108081-03			7054-003	ok	
Duplicate (R108081-01)	R108081-05			7054-005	ok	J

Nominal values and limits from method RDLs (pCi/g) 1.0
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 6994-192	2σ prep error 5.0 %				Reference Lab Notebook 6994 pg. 192											
B12MB7	R108081-01			0.22	0.500			70		120			43	09/24/01	09/25	SS-049
B12MB8	R108081-02			0.18	0.500			81		121			43	09/24/01	09/25	SS-050
BLK (QC ID=39637)	R108081-04			0.31	0.500			80		121				09/24/01	09/25	SS-021
LCS (QC ID=39636)	R108081-03			0.16	0.500			74		156				09/24/01	10/18	SS-012
Duplicate (R108081-01) (QC ID=39638)	R108081-05			0.29	0.500			84		121			43	09/24/01	09/25	SS-024
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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 FOR 5 SAMPLES
MDA 0.23 ± 0.13
YIELD 78 ± 11

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

Test NP Matrix SOLID
SDG 7054
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1461

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237
Preparation batch 6994-192					
B12MB7	R108081-01			7054-001	0.046 J
B12MB8	R108081-02			7054-002	U
BLK (QC ID=39637)	R108081-04			7054-004	U
LCS (QC ID=39636)	R108081-03			7054-003	ok
Duplicate (R108081-01)	R108081-05			7054-005	ok 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 6994-192 2σ prep error 5.0 % Reference Lab Notebook 6994 pg. 192																
B12MB7	R108081-01			0.037	0.500			55		1090			45	09/20/01	09/27	SS-043
B12MB8	R108081-02			0.042	0.500			47		1091			45	09/20/01	09/27	SS-044
BLK (QC ID=39637)	R108081-04			0.036	0.500			56		1090				09/20/01	09/27	SS-047
LCS (QC ID=39636)	R108081-03			0.042	0.500			56		1061				09/20/01	09/27	SS-046
Duplicate (R108081-01) (QC ID=39638)	R108081-05			0.032	0.500			62		1091			45	09/20/01	09/27	SS-048
Nominal values and limits from method				1.0	0.500			20-105		100			180			

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 FOR 5 SAMPLES				
MDA	0.038	±	0.009
YIELD	55	±	11

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

Test PU Matrix SOLID
SDG 7054
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1461

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6994-192								
B12MB7	R108081-01			7054-001	U		U	
B12MB8	R108081-02			7054-002	U		U	
BLK (QC ID=39637)	R108081-04			7054-004	U		U	
LCS (QC ID=39636)	R108081-03			7054-003	ok		ok	
Duplicate (R108081-01)	R108081-05			7054-005	-	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 6994-192	2σ prep error 5.0 %				Reference Lab Notebook 6994 pg. 192											
B12MB7	R108081-01			0.18	0.500			83		118			44	09/14/01	09/26	SS-043
B12MB8	R108081-02			0.17	0.500			83		119			44	09/14/01	09/26	SS-044
BLK (QC ID=39637)	R108081-04			0.19	0.500			76		119				09/14/01	09/26	SS-047
LCS (QC ID=39636)	R108081-03			0.17	0.500			87		119				09/14/01	09/26	SS-046
Duplicate (R108081-01) (QC ID=39638)	R108081-05			0.17	0.500			84		119			44	09/14/01	09/26	SS-048
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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 FOR 5 SAMPLES				
MDA	0.18	±	0.018
YIELD	83	±	8

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

Test TH Matrix SOLID
SDG 7054
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1461

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6994-192							
B12MB7	R108081-01			7054-001	U	0.438 J	0.657 J
B12MB8	R108081-02			7054-002	U	U	0.384 J
BLK (QC ID=39637)	R108081-04			7054-004	U	U	U
LCS (QC ID=39636)	R108081-03			7054-003		ok	
Duplicate (R108081-01)	R108081-05			7054-005	ok	ok U	ok J
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 6994-192 2σ prep error 5.0 % Reference Lab Notebook 6994 pg. 192																
B12MB7	R108081-01			0.42	0.250			92		155			36	09/17/01	09/18	SS-021
B12MB8	R108081-02			0.41	0.250			93		155			36	09/17/01	09/18	SS-024
BLK (QC ID=39637)	R108081-04			0.44	0.250			80		233				09/17/01	09/18	SS-024
LCS (QC ID=39636)	R108081-03			0.52	0.250			75		232				09/17/01	09/18	SS-021
Duplicate (R108081-01) (QC ID=39638)	R108081-05			0.34	0.250			87		707			38	09/17/01	09/20	SS-021
Nominal values and limits from method				1.0	0.250			20-105		150			180			

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 FOR 5 SAMPLES
MDA 0.43 ± 0.13
YIELD 85 ± 16

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

Test U Matrix SOLID
SDG 7054
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1461

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 6994-192											
B12MB7	R108081-01			7054-001	0.420 J	U	0.393 J	107	30	7	7
B12MB8	R108081-02			7054-002	0.410 J	U	0.399 J	103	47	7	13
BLK (QC ID=39637)	R108081-04			7054-004	U	U	U				
LCS (QC ID=39636)	R108081-03			7054-003	ok	ok	ok				
Duplicate (R108081-01)	R108081-05			7054-005	ok U	- U	ok U				
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
200 Area RCRA Drilling Waste Desig.								Averages 105		7	

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 6994-192 2σ prep error 5.0 % Reference Lab Notebook 6994 pg. 192																
B12MB7	R108081-01			0.035	0.500			101		615			66	09/13/01	10/18	SS-043
B12MB8	R108081-02			0.10	0.500			105		221			71	09/13/01	10/23	SS-031
BLK (QC ID=39637)	R108081-04			0.17	0.500			93		139				09/13/01	10/19	SS-042
LCS (QC ID=39636)	R108081-03			0.70	0.500			106		139				09/13/01	10/19	SS-041
Duplicate (R108081-01) (QC ID=39638)	R108081-05			0.42	0.500			62		116			36	09/13/01	09/18	SS-019
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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 FOR 5 SAMPLES
MDA 0.28 ± 0.55
YIELD 93 ± 37

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

Test SR Matrix SOLID
SDG 7054
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1461

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 6994-192					
B12MB7	R108081-01			7054-001	U
B12MB8	R108081-02			7054-002	1.17
BLK (QC ID=39637)	R108081-04			7054-004	U
LCS (QC ID=39636)	R108081-03			7054-003	ok
Duplicate (R108081-01)	R108081-05			7054-005	- 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 6994-192 2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 192																
B12MB7	R108081-01			0.18	1.00			95		100			35	09/17/01	09/17	GRB-201
B12MB8	R108081-02			0.24	1.00			98		100			35	09/17/01	09/17	GRB-208
BLK (QC ID=39637)	R108081-04			0.17	1.00			89		200				09/17/01	09/17	GRB-222
LCS (QC ID=39636)	R108081-03			0.26	1.00			88		100				09/17/01	09/17	GRB-230
Duplicate (R108081-01) (QC ID=39638)	R108081-05			0.22	1.00			96		200			35	09/17/01	09/17	GRB-205
Nominal values and limits from method				1.0	1.00			30-105		100			180			

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 FOR 5 SAMPLES				
	MDA	0.21	±	0.077
	YIELD	93	±	9

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

Test TC Matrix SOLID
SDG 7054
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1461

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6994-192						
B12MB7	R108081-01			7054-001	U	
B12MB8	R108081-02			7054-002	U	
BLK (QC ID=39637)	R108081-04			7054-004	U	
LCS (QC ID=39636)	R108081-03			7054-003	ok	
Duplicate (R108081-01)	R108081-05			7054-005	-	U

Nominal values and limits from method RDLs (pCi/g) 15
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 6994-192	2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 192															
B12MB7	R108081-01			0.38	1.03			87		100			44	09/21/01	09/26	GRB-224
B12MB8	R108081-02			0.29	1.04			84		200			50	09/21/01	10/02	GRB-201
BLK (QC ID=39637)	R108081-04			0.55	1.00			98		50				09/21/01	09/25	GRB-221
LCS (QC ID=39636)	R108081-03			0.70	1.00			72		50				09/21/01	09/25	GRB-224
Duplicate (R108081-01) (QC ID=39638)	R108081-05			0.59	1.03			88		50			43	09/21/01	09/25	GRB-221
Nominal values and limits from method				15	1.00			20-105		50			180			

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 5 SAMPLES				
	MDA	0.50	±	0.33
	YIELD	86	±	19

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

Test GAM Matrix SOLID
SDG 7054
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1461

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6994-192								
B12MB7	R108081-01			7054-001	U		U	
B12MB8	R108081-02			7054-002	U		U	
BLK (QC ID=39637)	R108081-04			7054-004	U		U	
LCS (QC ID=39636)	R108081-03			7054-003	ok		ok	
Duplicate (R108081-01)	R108081-05			7054-005	-	U	-	U
Nominal values and limits from method 200 Area RCRA Drilling Waste Desig.				RDLs (pCi/g)	0.050		0.10	

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 6994-192 2σ prep error 15.0 % Reference Lab Notebook 6994 pg. 192																
B12MB7	R108081-01			0.10	872					103			36	09/14/01	09/18	MB,05,00
B12MB8	R108081-02			0.076	743					117			36	09/14/01	09/18	MB,07,00
BLK (QC ID=39637)	R108081-04			0.035	743					123				09/14/01	09/18	MB,07,00
LCS (QC ID=39636)	R108081-03			0.030	743					131				09/14/01	10/26	MB,07,00
Duplicate (R108081-01) (QC ID=39638)	R108081-05			0.098	872					131			78	09/14/01	10/30	MB,05,00
Nominal values and limits from method				0.050	743					100			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES			
MDA	0.068	±	0.067
YIELD		±	

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

Test C Matrix SOLID
SDG 7054
Contact Melissa C. Mannion

METHOD SUMMARY

CARBON 14 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1461

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 6994-192						
B12MB7	R108081-01			7054-001	U	
B12MB8	R108081-02			7054-002	U	
BLK (QC ID=39637)	R108081-04			7054-004	U	
LCS (QC ID=39636)	R108081-03			7054-003	ok	
Duplicate (R108081-01)	R108081-05			7054-005	-	U

Nominal values and limits from method RDLs (pCi/g) 50
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 6994-192	2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 192															
B12MB7	R108081-01			3.9	0.230			100		100			39	09/20/01	09/21	LSC-005
B12MB8	R108081-02			3.5	0.242			100		100			39	09/20/01	09/21	LSC-005
BLK (QC ID=39637)	R108081-04			4.3	0.200			100		100				09/20/01	09/20	LSC-005
LCS (QC ID=39636)	R108081-03			24	0.200			100		3				09/20/01	09/21	LSC-005
Duplicate (R108081-01) (QC ID=39638)	R108081-05			3.9	0.220			100		100			39	09/20/01	09/21	LSC-005
Nominal values and limits from method				50	0.200					50			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 7.9 ± 18
YIELD 100 ± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

Test H Matrix SOLID
SDG 7054
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1461

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6994-192						
B12MB7	R108081-01			7054-001	U	
B12MB8	R108081-02			7054-002	U	
BLK (QC ID=39637)	R108081-04			7054-004	U	
LCS (QC ID=39636)	R108081-03			7054-003	ok	J
Duplicate (R108081-01)	R108081-05			7054-005	-	U
Spike (R108081-01)	R108081-06			7054-006	LOW	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 6994-192 2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 192																
B12MB7	R108081-01			0.091	23.5			100		100			39	09/17/01	09/21	LSC-005
B12MB8	R108081-02			0.097	23.9			91		100			39	09/17/01	09/21	LSC-005
BLK (QC ID=39637)	R108081-04			0.33	20.0			33		100				09/17/01	09/21	LSC-005
LCS (QC ID=39636)	R108081-03			0.34	20.0			33		100				09/17/01	09/21	LSC-005
Duplicate (R108081-01) (QC ID=39638)	R108081-05			0.091	23.6			100		100			39	09/17/01	09/21	LSC-005
Spike (R108081-01) (QC ID=39639)	R108081-06			0.094	21.8			100		100			39	09/17/01	09/21	LSC-005
Nominal values and limits from method				400	20.0					25			180			

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	0.17	± 0.25
FOR 6 SAMPLES	YIELD	76	± 67

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/03/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1461

Test NI L Matrix SOLID
SDG 7054
Contact Melissa C. Mannion

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1461

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6994-192						
B12MB7	R108081-01			7054-001	U	
B12MB8	R108081-02			7054-002	U	
BLK (QC ID=39637)	R108081-04			7054-004	U	
LCS (QC ID=39636)	R108081-03			7054-003	ok	
Duplicate (R108081-01)	R108081-05			7054-005	-	U

Nominal values and limits from method RDLs (pCi/g) 30
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 6994-192 2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 192																
B12MB7	R108081-01			2.0	0.500			89		100			36	09/14/01	09/18	LSC-007
B12MB8	R108081-02			2.0	0.500			88		100			36	09/14/01	09/18	LSC-007
BLK (QC ID=39637)	R108081-04			1.9	0.500			93		100				09/14/01	09/18	LSC-007
LCS (QC ID=39636)	R108081-03			1.9	0.500			94		100				09/14/01	09/18	LSC-007
Duplicate (R108081-01) (QC ID=39638)	R108081-05			2.3	0.500			78		100			36	09/14/01	09/18	LSC-007
Nominal values and limits from method				30	0.500			30-105		50			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 2.0 ± 0.33
YIELD 88 ± 13

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/03/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-05	Page 1 of 1

Collector: R Fahlberg	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 H1461 (7054)	SAF No.: B01-103	Air Quality ☐
Ice Chest No.: ERC 99.063	Field Logbook No.: EL 1517-2 — COA JRCRA14114 ~~XL1013CHGR~~ RF 8-13-01	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA EBERline	Offsite Property No.: A010351	Bill of Lading/Air Bill No.: 4238795 4 6477	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	None	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	250mL	1000mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions. RF	See item (2) in Special Instructions. 8-13-01	Chromium Hex - 7196	See item (3) in Special Instructions.	VOA - 8260A (TCL) RF 8-13-01	See item (4) in Special Instructions.	See item (5) in Special Instructions. RF	PCBs - 8082 8-13-01	See item (6) in Special Instructions.	
Sample No.	Matrix *	Sample Date	Sample Time							
✓ B12MB7	SOIL	8-13-01	1110						X	B12MB9
✓ B12MB8	SOIL	8-13-01	1138						X	B12MC0

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 8/13/01. Collector not available to relinquish samples on 8/15/01 for shipment. RT 8-15-01

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Received By/Stored In	Date/Time
Relinquished By/Removed From: R.Fahlberg	8-13-01 1300	R.Fahlberg	Ref 2-B	8-13-01 1300
Relinquished By/Removed From: Ref 2B 3728	8-15-01 0900	R.Thoren	RThoren	8-15-01 0900
Relinquished By/Removed From: RThoren	8-15-01 0900	RThoren	FEDEX	8-15-01
Relinquished By/Removed From: Fed EX	8-16-01 1000		Lind J Lind	8-16-01 1000
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

~~(1) ICP Metals - 6010A (TAL) {Aluminum, Calcium, 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; Isotopic Uranium; Tritium - H3

FT 8-16-01

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

BHI-EE-011 (10/99)

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 8-16-2001 1000

CoC No. B01-103-05

Container I.D. No. ERC-99-063 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: 29
7. Number of containers per sample: 1 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by James Lind Date: 8-16-01 Time: 1000

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

OCT 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1461

DATE RECEIVED: 08/16/01 LVL LOT # :0108L587

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12MB7						
TCLP	001	S	01LTO104	08/13/01	08/28/01	08/29/01
ALUMINUM, TOTAL	001	S	01L0562	08/13/01	09/08/01	09/11/01
ALUMINUM, TOTAL	001 REP	S	01L0562	08/13/01	09/08/01	09/11/01
ALUMINUM, TOTAL	001 MS	S	01L0562	08/13/01	09/08/01	09/11/01
BISMUTH, TOTAL	001	S	01L0562	08/13/01	09/08/01	09/11/01
CALCIUM, TOTAL	001	S	01L0562	08/13/01	09/08/01	09/11/01
CALCIUM, TOTAL	001 REP	S	01L0562	08/13/01	09/08/01	09/11/01
CALCIUM, TOTAL	001 MS	S	01L0562	08/13/01	09/08/01	09/11/01
COPPER, TOTAL	001	S	01L0562	08/13/01	09/08/01	09/11/01
COPPER, TOTAL	001 REP	S	01L0562	08/13/01	09/08/01	09/11/01
COPPER, TOTAL	001 MS	S	01L0562	08/13/01	09/08/01	09/11/01
IRON, TOTAL	001	S	01L0562	08/13/01	09/08/01	09/11/01
IRON, TOTAL	001 REP	S	01L0562	08/13/01	09/08/01	09/11/01
IRON, TOTAL	001 MS	S	01L0562	08/13/01	09/08/01	09/11/01
POTASSIUM, TOTAL	001	S	01L0562	08/13/01	09/08/01	09/11/01
POTASSIUM, TOTAL	001 REP	S	01L0562	08/13/01	09/08/01	09/11/01
POTASSIUM, TOTAL	001 MS	S	01L0562	08/13/01	09/08/01	09/11/01
MAGNESIUM, TOTAL	001	S	01L0562	08/13/01	09/08/01	09/11/01
MAGNESIUM, TOTAL	001 REP	S	01L0562	08/13/01	09/08/01	09/11/01
MAGNESIUM, TOTAL	001 MS	S	01L0562	08/13/01	09/08/01	09/11/01
MANGANESE, TOTAL	001	S	01L0562	08/13/01	09/08/01	09/11/01
MANGANESE, TOTAL	001 REP	S	01L0562	08/13/01	09/08/01	09/11/01
MANGANESE, TOTAL	001 MS	S	01L0562	08/13/01	09/08/01	09/11/01
MOLYBDENUM, TOTAL	001	S	01L0562	08/13/01	09/08/01	09/11/01
MOLYBDENUM, TOTAL	001 REP	S	01L0562	08/13/01	09/08/01	09/11/01
MOLYBDENUM, TOTAL	001 MS	S	01L0562	08/13/01	09/08/01	09/11/01
SODIUM, TOTAL	001	S	01L0562	08/13/01	09/08/01	09/11/01
SODIUM, TOTAL	001 REP	S	01L0562	08/13/01	09/08/01	09/11/01
SODIUM, TOTAL	001 MS	S	01L0562	08/13/01	09/08/01	09/11/01
TIN, TOTAL	001	S	01L0562	08/13/01	09/08/01	09/11/01
TIN, TOTAL	001 REP	S	01L0562	08/13/01	09/08/01	09/11/01
TIN, TOTAL	001 MS	S	01L0562	08/13/01	09/08/01	09/11/01
B12MB8						
TCLP	002	S	01LTO104	08/13/01	08/28/01	08/29/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1461

DATE RECEIVED: 08/16/01 LVL LOT # :0108L587

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ALUMINUM, TOTAL	002	S	01L0562	08/13/01	09/08/01	09/11/01
BISMUTH, TOTAL	002	S	01L0562	08/13/01	09/08/01	09/11/01
CALCIUM, TOTAL	002	S	01L0562	08/13/01	09/08/01	09/11/01
COPPER, TOTAL	002	S	01L0562	08/13/01	09/08/01	09/11/01
IRON, TOTAL	002	S	01L0562	08/13/01	09/08/01	09/11/01
POTASSIUM, TOTAL	002	S	01L0562	08/13/01	09/08/01	09/11/01
MAGNESIUM, TOTAL	002	S	01L0562	08/13/01	09/08/01	09/11/01
MANGANESE, TOTAL	002	S	01L0562	08/13/01	09/08/01	09/11/01
MOLYBDENUM, TOTAL	002	S	01L0562	08/13/01	09/08/01	09/11/01
SODIUM, TOTAL	002	S	01L0562	08/13/01	09/08/01	09/11/01
TIN, TOTAL	002	S	01L0562	08/13/01	09/08/01	09/11/01
B12MB7						
SILVER, TCLP LEACHAT	003	W	01L0544	08/29/01	08/30/01	08/30/01
SILVER, TCLP LEACHAT	003 REP	W	01L0544	08/29/01	08/30/01	08/30/01
SILVER, TCLP LEACHAT	003 MS	W	01L0544	08/29/01	08/30/01	08/30/01
BARIUM, TCLP LEACHAT	003	W	01L0544	08/29/01	08/30/01	08/30/01
BARIUM, TCLP LEACHAT	003 REP	W	01L0544	08/29/01	08/30/01	08/30/01
BARIUM, TCLP LEACHAT	003 MS	W	01L0544	08/29/01	08/30/01	08/30/01
BERYLLIUM, TCLP LEAC	003	W	01L0544	08/29/01	08/30/01	08/30/01
BERYLLIUM, TCLP LEAC	003 REP	W	01L0544	08/29/01	08/30/01	08/30/01
BERYLLIUM, TCLP LEAC	003 MS	W	01L0544	08/29/01	08/30/01	08/30/01
CADMIUM, TCLP LEACHA	003	W	01L0544	08/29/01	08/30/01	08/30/01
CADMIUM, TCLP LEACHA	003 REP	W	01L0544	08/29/01	08/30/01	08/30/01
CADMIUM, TCLP LEACHA	003 MS	W	01L0544	08/29/01	08/30/01	08/30/01
CHROMIUM, TCLP LEACH	003	W	01L0544	08/29/01	08/30/01	08/30/01
CHROMIUM, TCLP LEACH	003 REP	W	01L0544	08/29/01	08/30/01	08/30/01
CHROMIUM, TCLP LEACH	003 MS	W	01L0544	08/29/01	08/30/01	08/30/01
MERCURY, TCLP LEACHA	003	W	01C0271	08/29/01	09/05/01	09/06/01
NICKEL, TCLP LEACHAT	003	W	01L0544	08/29/01	08/30/01	08/30/01
NICKEL, TCLP LEACHAT	003 REP	W	01L0544	08/29/01	08/30/01	08/30/01
NICKEL, TCLP LEACHAT	003 MS	W	01L0544	08/29/01	08/30/01	08/30/01
LEAD, TCLP LEACHATE	003	W	01L0544	08/29/01	08/30/01	08/30/01
LEAD, TCLP LEACHATE	003 REP	W	01L0544	08/29/01	08/30/01	08/30/01
LEAD, TCLP LEACHATE	003 MS	W	01L0544	08/29/01	08/30/01	08/30/01
ANTIMONY, TCLP LEACH	003	W	01L0544	08/29/01	08/30/01	08/30/01
ANTIMONY, TCLP LEACH	003 REP	W	01L0544	08/29/01	08/30/01	08/30/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1461

DATE RECEIVED: 08/16/01 LVL LOT # :0108L587

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ANTIMONY, TCLP LEACH	003 MS	W	01L0544	08/29/01	08/30/01	08/30/01
SELENIUM, TCLP LEACH	003	W	01L0544	08/29/01	08/30/01	08/30/01
SELENIUM, TCLP LEACH	003 REP	W	01L0544	08/29/01	08/30/01	08/30/01
SELENIUM, TCLP LEACH	003 MS	W	01L0544	08/29/01	08/30/01	08/30/01
VANADIUM, TCLP LEACH	003	W	01L0544	08/29/01	08/30/01	08/30/01
VANADIUM, TCLP LEACH	003 REP	W	01L0544	08/29/01	08/30/01	08/30/01
VANADIUM, TCLP LEACH	003 MS	W	01L0544	08/29/01	08/30/01	08/30/01
ZINC, TCLP LEACHATE	003	W	01L0544	08/29/01	08/30/01	08/30/01
ZINC, TCLP LEACHATE	003 REP	W	01L0544	08/29/01	08/30/01	08/30/01
ZINC, TCLP LEACHATE	003 MS	W	01L0544	08/29/01	08/30/01	08/30/01
B12MB8						
SILVER, TCLP LEACHAT	004	W	01L0544	08/29/01	08/30/01	08/30/01
BARIUM, TCLP LEACHAT	004	W	01L0544	08/29/01	08/30/01	08/30/01
BERYLLIUM, TCLP LEAC	004	W	01L0544	08/29/01	08/30/01	08/30/01
CADMIUM, TCLP LEACHA	004	W	01L0544	08/29/01	08/30/01	08/30/01
CHROMIUM, TCLP LEACH	004	W	01L0544	08/29/01	08/30/01	08/30/01
MERCURY, TCLP LEACHA	004	W	01C0271	08/29/01	09/05/01	09/06/01
MERCURY, TCLP LEACHA	004 REP	W	01C0271	08/29/01	09/05/01	09/06/01
MERCURY, TCLP LEACHA	004 MS	W	01C0271	08/29/01	09/05/01	09/06/01
NICKEL, TCLP LEACHAT	004	W	01L0544	08/29/01	08/30/01	08/30/01
LEAD, TCLP LEACHATE	004	W	01L0544	08/29/01	08/30/01	08/30/01
ANTIMONY, TCLP LEACH	004	W	01L0544	08/29/01	08/30/01	08/30/01
SELENIUM, TCLP LEACH	004	W	01L0544	08/29/01	08/30/01	08/30/01
VANADIUM, TCLP LEACH	004	W	01L0544	08/29/01	08/30/01	08/30/01
ZINC, TCLP LEACHATE	004	W	01L0544	08/29/01	08/30/01	08/30/01

LAB QC:

ALUMINUM LABORTORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
ALUMINUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
BISMUTH, LCS	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
BISMUTH, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
CALCIUM LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
CALCIUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
COPPER LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
COPPER, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1461

DATE RECEIVED: 08/16/01 LVL LOT # :0108L587

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
IRON LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
IRON, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
POTASSIUM LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
POTASSIUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
MAGNESIUM LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
MAGNESIUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
MANGANESE LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
MANGANESE, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
MOLYBDENUM LABORATOR	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
MOLYBDENUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
SODIUM LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
SODIUM, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
TIN LABORATORY	LC1 BS	S	01L0562	N/A	09/08/01	09/11/01
TIN, TOTAL	MB1	S	01L0562	N/A	09/08/01	09/11/01
SILVER LABORATORY	LC1 BS	W	01L0544	N/A	08/30/01	08/30/01
SILVER, TCLP LEACHAT	MB1	W	01L0544	N/A	08/30/01	08/30/01
SILVER, TCLP LEACHAT	MB2	W	01L0544	N/A	08/30/01	08/30/01
SILVER, TCLP LEACHAT	MB3	W	01L0544	N/A	08/30/01	08/30/01
BARIUM LABORATORY	LC1 BS	W	01L0544	N/A	08/30/01	08/30/01
BARIUM, TCLP LEACHAT	MB1	W	01L0544	N/A	08/30/01	08/30/01
BARIUM, TCLP LEACHAT	MB2	W	01L0544	N/A	08/30/01	08/30/01
BARIUM, TCLP LEACHAT	MB3	W	01L0544	N/A	08/30/01	08/30/01
BERYLLIUM LABORATORY	LC1 BS	W	01L0544	N/A	08/30/01	08/30/01
BERYLLIUM, TCLP LEAC	MB1	W	01L0544	N/A	08/30/01	08/30/01
BERYLLIUM, TCLP LEAC	MB2	W	01L0544	N/A	08/30/01	08/30/01
BERYLLIUM, TCLP LEAC	MB3	W	01L0544	N/A	08/30/01	08/30/01
CADMIUM LABORATORY	LC1 BS	W	01L0544	N/A	08/30/01	08/30/01
CADMIUM, TCLP LEACHA	MB1	W	01L0544	N/A	08/30/01	08/30/01
CADMIUM, TCLP LEACHA	MB2	W	01L0544	N/A	08/30/01	08/30/01
CADMIUM, TCLP LEACHA	MB3	W	01L0544	N/A	08/30/01	08/30/01
CHROMIUM LABORATORY	LC1 BS	W	01L0544	N/A	08/30/01	08/30/01
CHROMIUM, TCLP LEACH	MB1	W	01L0544	N/A	08/30/01	08/30/01
CHROMIUM, TCLP LEACH	MB2	W	01L0544	N/A	08/30/01	08/30/01
CHROMIUM, TCLP LEACH	MB3	W	01L0544	N/A	08/30/01	08/30/01
MERCURY LABORATORY	LC1 BS	W	01C0271	N/A	09/05/01	09/06/01
MERCURY, TOTAL	MB1	W	01C0271	N/A	09/05/01	09/06/01
MERCURY, TCLP LEACHA	MB2	W	01C0271	N/A	09/05/01	09/06/01
MERCURY, TCLP LEACHA	MB3	W	01C0271	N/A	09/05/01	09/06/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1461

DATE RECEIVED: 08/16/01 LVL LOT # :0108L587

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NICKEL LABORATORY	LC1 BS	W	01L0544	N/A	08/30/01	08/30/01
NICKEL, TCLP LEACHAT	MB1	W	01L0544	N/A	08/30/01	08/30/01
NICKEL, TCLP LEACHAT	MB2	W	01L0544	N/A	08/30/01	08/30/01
NICKEL, TCLP LEACHAT	MB3	W	01L0544	N/A	08/30/01	08/30/01
LEAD LABORATORY	LC1 BS	W	01L0544	N/A	08/30/01	08/30/01
LEAD, TCLP LEACHATE	MB1	W	01L0544	N/A	08/30/01	08/30/01
LEAD, TCLP LEACHATE	MB2	W	01L0544	N/A	08/30/01	08/30/01
LEAD, TCLP LEACHATE	MB3	W	01L0544	N/A	08/30/01	08/30/01
ANTIMONY LABORATORY	LC1 BS	W	01L0544	N/A	08/30/01	08/30/01
ANTIMONY, TCLP LEACH	MB1	W	01L0544	N/A	08/30/01	08/30/01
ANTIMONY, TCLP LEACH	MB2	W	01L0544	N/A	08/30/01	08/30/01
ANTIMONY, TCLP LEACH	MB3	W	01L0544	N/A	08/30/01	08/30/01
SELENIUM LABORATORY	LC1 BS	W	01L0544	N/A	08/30/01	08/30/01
SELENIUM, TCLP LEACH	MB1	W	01L0544	N/A	08/30/01	08/30/01
SELENIUM, TCLP LEACH	MB2	W	01L0544	N/A	08/30/01	08/30/01
SELENIUM, TCLP LEACH	MB3	W	01L0544	N/A	08/30/01	08/30/01
VANADIUM LABORATORY	LC1 BS	W	01L0544	N/A	08/30/01	08/30/01
VANADIUM, TCLP LEACH	MB1	W	01L0544	N/A	08/30/01	08/30/01
VANADIUM, TCLP LEACH	MB2	W	01L0544	N/A	08/30/01	08/30/01
VANADIUM, TCLP LEACH	MB3	W	01L0544	N/A	08/30/01	08/30/01
ZINC LABORATORY	LC1 BS	W	01L0544	N/A	08/30/01	08/30/01
ZINC, TCLP LEACHATE	MB1	W	01L0544	N/A	08/30/01	08/30/01
ZINC, TCLP LEACHATE	MB2	W	01L0544	N/A	08/30/01	08/30/01
ZINC, TCLP LEACHATE	MB3	W	01L0544	N/A	08/30/01	08/30/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-103
LVL#: 0108L587
SDG/SAF#: H1461/B01-103

W.O.#: 11343-606-001-9999-00
Date Received: 08-16-01

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 soil samples and 2 TCLP leachate samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. All TCLP leachate samples were reported with a six fold dilution for ICP analytes due to sample matrix.

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

4. The cooler temperature has been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.

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

7. 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 soil MB, 01L0562, result for Tin was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and all samples for Tin 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.

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 20 pages.

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
B12MB7	Aluminum	20,000	99.5
	Iron	20,000	106.9

12. The TCLP leachate duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. The TCLP extract from sample B12MB7 was selected for the matrix spike (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

09-24-01
Date

gmb/m08-587

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#: 0108L587

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

08

Other:_____ Method:_____

L-WI-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.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/17/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12MB7	Aluminum, Total	7200	MG/KG	1.6	1.0
		Bismuth, Total	0.31 u	MG/KG	0.31	1.0
		Calcium, Total	6680	MG/KG	0.78	1.0
		Copper, Total	12.1	MG/KG	0.05	1.0
		Iron, Total	19500	MG/KG	1.6	1.0
		Potassium, Total	1230	MG/KG	1.1	1.0
		Magnesium, Total	4840	MG/KG	0.80	1.0
		Manganese, Total	285	MG/KG	0.01	1.0
		Molybdenum, Total	1.0	MG/KG	0.10	1.0
		Sodium, Total	428	MG/KG	0.16	1.0
		Tin, Total	1.8	MG/KG	0.39	1.0
-002	B12MB8	Aluminum, Total	5210	MG/KG	1.6	1.0
		Bismuth, Total	0.32 u	MG/KG	0.32	1.0
		Calcium, Total	4470	MG/KG	0.80	1.0
		Copper, Total	12.7	MG/KG	0.05	1.0
		Iron, Total	16200	MG/KG	1.6	1.0
		Potassium, Total	643	MG/KG	1.1	1.0
		Magnesium, Total	2720	MG/KG	0.82	1.0
		Manganese, Total	213	MG/KG	0.01	1.0
		Molybdenum, Total	1.5	MG/KG	0.10	1.0
		Sodium, Total	526	MG/KG	0.16	1.0
		Tin, Total	3.5	MG/KG	0.40	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/17/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B12MB7	Silver, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Barium, TCLP Leachate	599		UG/L	0.60	6.0
		Beryllium,TCLP Leachate	1.2	u	UG/L	1.2	6.0
		Cadmium, TCLP Leachate	1.8	u	UG/L	1.8	6.0
		Chromium, TCLP Leachate	8.4	u	UG/L	8.4	6.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	17.8		UG/L	10.2	6.0
		Lead, TCLP Leachate	14.4	u	UG/L	14.4	6.0
		Antimony, TCLP Leachate	13.8	u	UG/L	13.8	6.0
		Selenium, TCLP Leachate	19.2	u	UG/L	19.2	6.0
		Vanadium, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Zinc, TCLP Leachate	21.5		UG/L	2.4	6.0
-004	B12MB8	Silver, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Barium, TCLP Leachate	289		UG/L	0.60	6.0
		Beryllium,TCLP Leachate	1.2	u	UG/L	1.2	6.0
		Cadmium, TCLP Leachate	1.8	u	UG/L	1.8	6.0
		Chromium, TCLP Leachate	8.4	u	UG/L	8.4	6.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	10.2	u	UG/L	10.2	6.0
		Lead, TCLP Leachate	20.0		UG/L	14.4	6.0
		Antimony, TCLP Leachate	16.9		UG/L	13.8	6.0
		Selenium, TCLP Leachate	19.2	u	UG/L	19.2	6.0
		Vanadium, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Zinc, TCLP Leachate	2240		UG/L	2.4	6.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/17/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0562-MB1	Aluminum, Total	2.1		MG/KG	1.6	1.0
		Bismuth, Total	0.31	u	MG/KG	0.31	1.0
		Calcium, Total	3.0		MG/KG	0.78	1.0
		Copper, Total	0.05		MG/KG	0.05	1.0
		Iron, Total	6.3		MG/KG	1.6	1.0
		Potassium, Total	2.2		MG/KG	1.1	1.0
		Magnesium, Total	0.95		MG/KG	0.80	1.0
		Manganese, Total	0.02		MG/KG	0.01	1.0
		Molybdenum, Total	0.10	u	MG/KG	0.10	1.0
		Sodium, Total	9.7		MG/KG	0.16	1.0
		Tin, Total	1.4		MG/KG	0.39	1.0
BLANK1	01L0544-MB1	Silver, TCLP Leachate	0.50	u	UG/L	0.50	1.0
		Barium, TCLP Leachate	0.49		UG/L	0.10	1.0
		Beryllium,TCLP Leachate	0.20	u	UG/L	0.20	1.0
		Cadmium, TCLP Leachate	0.30	u	UG/L	0.30	1.0
		Chromium, TCLP Leachate	1.4	u	UG/L	1.4	1.0
		Nickel, TCLP Leachate	1.7	u	UG/L	1.7	1.0
		Lead, TCLP Leachate	2.4	u	UG/L	2.4	1.0
		Antimony, TCLP Leachate	2.3	u	UG/L	2.3	1.0
		Selenium, TCLP Leachate	3.2		UG/L	3.2	1.0
		Vanadium, TCLP Leachate	0.50	u	UG/L	0.50	1.0
		Zinc, TCLP Leachate	2.7		UG/L	0.40	1.0
BLANK2	01L0544-MB2	Silver, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Barium, TCLP Leachate	1.4		UG/L	0.60	6.0
		Beryllium,TCLP Leachate	1.2	u	UG/L	1.2	6.0
		Cadmium, TCLP Leachate	1.8	u	UG/L	1.8	6.0
		Chromium, TCLP Leachate	8.4	u	UG/L	8.4	6.0
		Nickel, TCLP Leachate	10.2	u	UG/L	10.2	6.0
		Lead, TCLP Leachate	14.4	u	UG/L	14.4	6.0
		Antimony, TCLP Leachate	13.8	u	UG/L	13.8	6.0
		Selenium, TCLP Leachate	19.2	u	UG/L	19.2	6.0
		Vanadium, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Zinc, TCLP Leachate	6.0		UG/L	2.4	6.0
BLANK3	01L0544-MB3	Silver, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Barium, TCLP Leachate	1.7		UG/L	0.60	6.0
		Beryllium,TCLP Leachate	1.2	u	UG/L	1.2	6.0
		Cadmium, TCLP Leachate	1.8	u	UG/L	1.8	6.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/17/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK3	01L0544-MB3	Chromium, TCLP Leachate	8.4	u	UG/L	8.4	6.0
		Nickel, TCLP Leachate	10.2	u	UG/L	10.2	6.0
		Lead, TCLP Leachate	14.4	u	UG/L	14.4	6.0
		Antimony, TCLP Leachate	13.8	u	UG/L	13.8	6.0
		Selenium, TCLP Leachate	19.2	u	UG/L	19.2	6.0
		Vanadium, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Zinc, TCLP Leachate	5.8		UG/L	2.4	6.0
BLANK1	01C0271-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	01C0271-MB2	Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
BLANK3	01C0271-MB3	Mercury, TCLP Leachate	1.3		UG/L	0.10	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/17/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12MB7	Aluminum, Total	7730	7200	201	263.7*	1.0
		Calcium, Total	9380	6680	2510	107.4	1.0
		Copper, Total	33.3	12.1	25.1	84.5	1.0
		Iron, Total	18500	19500	100	-1100. *	1.0
		Potassium, Total	3770	1230	2510	100.9	1.0
		Magnesium, Total	7190	4840	2510	93.4	1.0
		Manganese, Total	329	285	50.2	88.2*	1.0
		Molybdenum, Total	91.9	1.0	100	90.4	1.0
		Sodium, Total	2880	428	2510	97.4	1.0
		Tin, Total	92.6	1.8	100	90.3	1.0
-003	B12MB7	Silver, TCLP Leachate	4660	3.0 u	5000	93.2	6.0
		Barium, TCLP Leachate	97100	599	100000	96.5	6.0
		Beryllium, TCLP Leacha	1020	1.2 u	1000	102.4	6.0
		Cadmium, TCLP Leachate	998	1.8 u	1000	99.8	6.0
		Chromium, TCLP Leachat	5020	8.4 u	5000	100.3	6.0
		Nickel, TCLP Leachate	1040	17.8	1000	102.0	6.0
		Lead, TCLP Leachate	4960	14.4 u	5000	99.2	6.0
		Antimony, TCLP Leachat	1030	13.8 u	1000	103.2	6.0
		Selenium, TCLP Leachat	1020	19.2 u	1000	102.2	6.0
		Vanadium, TCLP Leachat	1010	3.0 u	1000	101.4	6.0
		Zinc, TCLP Leachate	1060	21.5	1000	103.5	6.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/17/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108LS87

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-004	B12MB8	Mercury, TCLP Leachate	148	0.10u	200	74.0	50.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/17/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12MB7	Aluminum, Total	7200	7220	0.35	1.0
		Calcium, Total	6680	6860	2.6	1.0
		Copper, Total	12.1	11.2	7.7	1.0
		Iron, Total	19500	18700	4.4	1.0
		Potassium, Total	1230	1320	6.4	1.0
		Magnesium, Total	4840	4820	0.45	1.0
		Manganese, Total	285	283	0.70	1.0
		Molybdenum, Total	1.0	0.85	15.8	1.0
		Sodium, Total	428	425	0.89	1.0
		Tin, Total	1.8	1.6	11.8	1.0
-003REP	B12MB7	Silver, TCLP Leachate	3.0 u	3.0 u	NC	6.0
		Barium, TCLP Leachate	599	602	0.53	6.0
		Beryllium TCLP Leachate	1.2 u	1.2 u	NC	6.0
		Cadmium, TCLP Leachate	1.8 u	1.8 u	NC	6.0
		Chromium, TCLP Leachate	8.4 u	8.4 u	NC	6.0
		Nickel, Leachate	17.8	25.9	37.1	6.0
		Lead, TCLP Leachate	14.4 u	14.4 u	NC	6.0
		Antimony, Leachate	13.8 u	13.8 u	NC	6.0
		Selenium, TCLP Leachate	19.2 u	19.2 u	NC	6.0
		Vanadium, TCLP Leachate	3.0 u	3.0 u	NC	6.0
		Zinc, Leachate	21.5	16.7	25.1	6.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/17/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L5B7

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-004REP	B12MB8	Mercury, TCLP Leachate	0.10u	0.10u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/17/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0562-LC1	Aluminum, LCS	496	500	MG/KG	99.1
		Bismuth, LCS	484	500	MG/KG	96.9
		Calcium, LCS	2430	2500	MG/KG	97.1
		Copper, LCS	123	125	MG/KG	98.1
		Iron, LCS	493	500	MG/KG	98.6
		Potassium, LCS	2520	2500	MG/KG	100.8
		Magnesium, LCS	2500	2500	MG/KG	99.8
		Manganese, LCS	75.5	75.0	MG/KG	100.7
		Molybdenum, LCS	494	500	MG/KG	98.8
		Sodium, LCS	2450	2500	MG/KG	98.0
		Tin, LCS	489	500	MG/KG	97.8
LCS1	01L0544-LC1	Silver, LCS	497	500	UG/L	99.4
		Barium, LCS	4910	5000	UG/L	98.1
		Beryllium, LCS	252	250	UG/L	100.9
		Cadmium, LCS	249	250	UG/L	99.6
		Chromium, LCS	509	500	UG/L	101.9
		Nickel, LCS	2000	2000	UG/L	100.0
		Lead, LCS	2440	2500	UG/L	97.7
		Antimony, LCS	2980	3000	UG/L	99.3
		Selenium, LCS	9410	10000	UG/L	94.1
		Vanadium, LCS	2580	2500	UG/L	103.2
		Zinc, LCS	1000	1000	UG/L	100.2
LCS1	01C0271-LC1	Mercury, LCS	4.9	5.0	UG/L	98.3

Lionville Laboratory Use Only
0108L587

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: TRU-Hanford B01-103
Est. Final Proj. Sampling Date:
Project #: 11343-6006-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day

Date Rec'd: 8-16-01 Date Due: 9-15-01

		A	B	C		D		E	F		G	H			
Refrigerator #		1	5	5		1		5	5		5	5			5
#/Type Container	Liquid														
	Solid	1AG	1AG	1AG		1AG		1AG	1AG		1AG	1AG			1
Volume	Liquid														
	Solid	120	500	250		120		500	500		60	500			50
Preservatives		-	-	-								-			-
ANALYSES REQUESTED		ORGANIC							INORG						
		VOA	BNA	Pest/PCB	Herb	TIC Gly Ret		TCLP Met	Metal	CN		IC			TCC

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

Lionville Laboratory Use Only

Lab ID	Client ID/Description	Matrix OC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Ola24H	Ola25X	OPCB		ODPO OGPO		ITCLP	Mrt(1)		ICP(1)	Inorg(1)			Mrt(2)
001	B12MB7			S	8-13-01	1110	✓	✓	✓		✓		✓	✓		✓	✓			✓
002	1 8			L	1	1138	✓	✓	✓		✓		✓	✓		✓	✓			✓
003	7 tcp of 001			L	1	1														✓
004	1 8 1 002			L	1	1														✓

Special Instructions: Saf B01-103
Run Matrix QC
* See lab chron

DATE/REVISIONS:
Mrt(1) 1. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
Inorg(1) 2. TCNO2, TCNO3, TNH3N, TCNTO, TPH,
1 3. TSED
Mrt(2) 4. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V,
1 5. Zn, Hg (leachates)
6.

Relinquished by	Received by	Date	Time
FEDEX	[illegible]	8-16-01	9:40

Relinquished by	Received by	Date	Time
COMPOSITE		ORIGINAL	

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. 4.4° °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-05	Page 1 of 1

Collector: R Fahlberg	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.: ERC 96-036	Field Logbook No.: EL 1517-2 — COA JRCRA14114 ~~XL1013GHGR~~ RF 8-13-01	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA	Offsite Property No.: A010323	Bill of Lading/Air Bill No.: 4235 7954 — 6461	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref. 2B at the 3728 Shipping Facility on 8/13/01. Collector not available to relinquish samples on 8/15/01 for shipment. RT 8-15-01

Preservation	Cool 4C	None	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	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. RG 8-15-01		
Sample No.	Matrix*	Sample Date	Sample Time								
B12MB7	SOIL	8-13-01	1110	X	X	X	X	X	X	X	X	B12MB9
B12MB8	SOIL	8-13-01	1138	X	X	X	X	X	X	X	X	B12MC0

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
K. Fahlberg / R. Fahlberg	8-13-01 1300	KAF 2B	8-13-01 1300
KAF 2B	8-15-01 0900	R Thore	8-15-01 0900
R Thore	8-15-01 0900	FEDEX	
FEDEX	8-16-01 9:40	Carlos Barrios	8-16-01 9:40

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Aluminum, Calcium, 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-99; Isotopic Uranium; Tritium-H3~~ RT 8-15-01

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

BHI-EE-011 (10/99)

OCT 2001
RECEIVED

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1461

DATE RECEIVED: 08/16/01 LVL LOT # :0108L587

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12MB7	001	S	01LE0967	08/13/01	08/17/01	08/28/01
B12MB8	002	S	01LE0967	08/13/01	08/17/01	08/28/01
B12MB8	002 MS	S	01LE0967	08/13/01	08/17/01	08/28/01
B12MB8	002 MSD	S	01LE0967	08/13/01	08/17/01	08/28/01
LAB QC:						
SBLKDY	MB1	S	01LE0967	N/A	08/17/01	08/28/01
SBLKDY	MB1 BS	S	01LE0967	N/A	08/17/01	08/28/01

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-103
LVL #: 0108L587
SDG/SAF #: H1461/B01-103

W.O. #: 11343-606-001-9999-00
Date Received: 08-16-2001

SEMIVOLATILE

Two (2) soil samples were collected on 08-13-2001.

The samples and their associated QC samples were extracted on 08-17-2001 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 08-28-2001.

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 temperature upon receipt has been recorded on the chain-of-custody.

2. The samples were extracted and analyzed within required holding times.

3. Non-target compounds were detected in these samples.

4. All surrogate recoveries were within EPA QC limits.

5. All matrix spike recoveries were within EPA QC limits.

6. One (1) of eleven (11) blank spike recoveries was outside EPA QC limits.

7. Internal standard area and retention time criteria were met.

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.

J. Michael Taylor
President
Lionville Laboratory Incorporated

9/13/01
Date

pef\gorup\data\bna\tnu-hanford-0108-587.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 • Exton, PA 19341-1313 • (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.

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.

LEONVILLE LABORATORY INC

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

RFW Batch Number: 0108L587 Client: TMHANFORD B01-103 H1461 Work Order: 11343606001 Report Date: 12/12/01 07:33 Page: 1a

	Cust ID:	B12MB7		B12MB8		B12MB8		B12MB8		SBLKDY		SBLKDY BS	
Sample Information	RFW#:	001		002		002 MS		002 MSD		01LK0967-MB1		01LK0967-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	
Surrogate Recovery	Nitrobenzene-d5	63	%	76	%	64	%	60	%	84	%	87	%
	2-Fluorobiphenyl	73	%	76	%	66	%	62	%	88	%	92	%
	p-Terphenyl-d14	93	%	98	%	89	%	87	%	107	%	102	%
	Phenol-d5	59	%	68	%	61	%	52	%	77	%	78	%
	2-Fluorophenol	55	%	70	%	59	%	50	%	75	%	77	%
	2,4,6-Tribromophenol	81	%	80	%	72	%	78	%	89	%	94	%
			fl		fl		fl		fl		fl		fl
Phenol		340	U	350	U	58	%	50	%	330	U	77	%
bis(2-Chloroethyl)ether		340	U	350	U	350	U	350	U	330	U	330	U
2-Chlorophenol		340	U	350	U	58	%	52	%	330	U	80	%
1,3-Dichlorobenzene		340	U	350	U	350	U	350	U	330	U	330	U
1,4-Dichlorobenzene		340	U	350	U	54	%	47	%	330	U	80	%
1,2-Dichlorobenzene		340	U	350	U	350	U	350	U	330	U	330	U
2-Methylphenol		340	U	350	U	350	U	350	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		340	U	350	U	350	U	350	U	330	U	330	U
3- and/or 4-Methylphenol		340	U	350	U	350	U	350	U	330	U	330	U
N-Nitroso-Di-n-propylamine		340	U	350	U	64	%	57	%	330	U	83	%
Hexachloroethane		340	U	350	U	350	U	350	U	330	U	330	U
Nitrobenzene		340	U	350	U	350	U	350	U	330	U	330	U
Isophorone		340	U	350	U	350	U	350	U	330	U	330	U
2-Nitrophenol		340	U	350	U	350	U	350	U	330	U	330	U
2,4-Dimethylphenol		340	U	350	U	350	U	350	U	330	U	330	U
bis(2-Chloroethoxy)methane		340	U	350	U	350	U	350	U	330	U	330	U
2,4-Dichlorophenol		340	U	350	U	350	U	350	U	330	U	330	U
1,2,4-Trichlorobenzene		340	U	350	U	59	%	53	%	330	U	86	%
Naphthalene		340	U	350	U	350	U	350	U	330	U	330	U
4-Chloroaniline		340	U	350	U	350	U	350	U	330	U	330	U
Hexachlorobutadiene		340	U	350	U	350	U	350	U	330	U	330	U
4-Chloro-3-methylphenol		340	U	350	U	62	%	60	%	330	U	84	%
2-Methylnaphthalene		340	U	350	U	350	U	350	U	330	U	330	U
Hexachlorocyclopentadiene		340	U	350	U	350	U	350	U	330	U	330	U
2,4,6-Trichlorophenol		340	U	350	U	350	U	350	U	330	U	330	U
2,4,5-Trichlorophenol		840	U	870	U	870	U	870	U	830	U	830	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0108L587 Client: TMUHANFORD B01-103 H1461 Work Order: 11343606001 Page: 1b

Cust ID:	B12MB7		B12MB8		B12MB8		B12MB8		SBLKDY		SBLKDY BS	
RFW#:	001		002		002 MS		002 MSD		01LB0967-MB1		01LB0967-MB1	
2-Chloronaphthalene	340	U	350	U	350	U	350	U	330	U	330	U
2-Nitroaniline	840	U	870	U	870	U	870	U	830	U	830	U
Dimethylphthalate	340	U	350	U	350	U	350	U	330	U	330	U
Acenaphthylene	340	U	350	U	350	U	350	U	330	U	330	U
2,6-Dinitrotoluene	340	U	350	U	350	U	350	U	330	U	330	U
3-Nitroaniline	840	U	870	U	870	U	870	U	830	U	830	U
Acenaphthene	340	U	350	U	67	%	63	%	330	U	88	%
2,4-Dinitrophenol	840	U	870	U	870	U	870	U	830	U	830	U
4-Nitrophenol	840	U	870	U	57	%	65	%	830	U	72	%
Dibenzofuran	340	U	350	U	350	U	350	U	330	U	330	U
2,4-Dinitrotoluene	340	U	350	U	71	%	73	%	330	U	90 *	%
Diethylphthalate	340	U	350	U	350	U	350	U	330	U	330	U
4-Chlorophenyl-phenylether	340	U	350	U	350	U	350	U	330	U	330	U
Fluorene	340	U	350	U	350	U	350	U	330	U	330	U
4-Nitroaniline	840	U	870	U	870	U	870	U	830	U	830	U
4,6-Dinitro-2-methylphenol	840	U	870	U	870	U	870	U	830	U	830	U
N-Nitrosodiphenylamine (1)	340	U	350	U	350	U	350	U	330	U	330	U
4-Bromophenyl-phenylether	340	U	350	U	350	U	350	U	330	U	330	U
Hexachlorobenzene	340	U	350	U	350	U	350	U	330	U	330	U
Pentachlorophenol	840	U	870	U	56	%	69	%	830	U	81	%
Phenanthrene	340	U	350	U	350	U	350	U	330	U	330	U
Anthracene	340	U	350	U	350	U	350	U	330	U	330	U
Carbazole	340	U	350	U	350	U	350	U	330	U	330	U
Di-n-Butylphthalate	340	U	350	U	350	U	350	U	330	U	330	U
Fluoranthene	340	U	350	U	350	U	350	U	330	U	330	U
Pyrene	340	U	350	U	75	%	74	%	330	U	90	%
Butylbenzylphthalate	340	U	350	U	350	U	350	U	330	U	330	U
3,3'-Dichlorobenzidine	340	U	350	U	350	U	350	U	330	U	330	U
Benzo(a)anthracene	340	U	350	U	350	U	350	U	330	U	330	U
Chrysene	340	U	350	U	350	U	350	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	340	U	350	U	350	U	350	U	330	U	330	U
Di-n-Octyl phthalate	340	U	350	U	350	U	350	U	330	U	330	U
Benzo(b)fluoranthene	340	U	350	U	350	U	350	U	330	U	330	U
Benzo(k)fluoranthene	340	U	350	U	350	U	350	U	330	U	330	U
Benzo(a)pyrene	340	U	350	U	350	U	350	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	340	U	350	U	350	U	350	U	330	U	330	U
Dibenzo(a,h)anthracene	340	U	350	U	350	U	350	U	330	U	330	U
Benzo(g,h,i)perylene	340	U	350	U	350	U	350	U	330	U	330	U
Tributylphosphate	340	U	350	U	350	U	350	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.

B12MB7

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

Client: TNUHANFORD B01-103 H1461

Matrix: (soil/water) SOIL

Lab Sample ID: 0108L587-001

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

Lab File ID: C082810

Level: (low/med) LOW

Date Received: 08/16/01

% Moisture: 1 decanted: (Y/N)__

Date Extracted: 08/17/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 08/28/01

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	7.593	100	J
2.	ALKANE	9.622	100	J
3.	UNKNOWN	25.942	100	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B12MB8

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

Client: TNUHANFORD B01-103 H1461

Matrix: (soil/water) SOIL

Lab Sample ID: 0108L587-002

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: C082811

Level: (low/med) LOW

Date Received: 08/16/01

% Moisture: 4 decanted: (Y/N)__

Date Extracted: 08/17/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 08/28/01

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	7.59	100	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKDY

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

Client: TNUHANFORD B01-103 H1461

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE0967-MB1

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

Lab File ID: C082808

Level: (low/med) LOW

Date Received: 08/17/01

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

Date Extracted: 08/17/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 08/28/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: _____

Number TICs found: 0

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

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

Lionville Laboratory Use Only
0108L587

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI — Lionville Laboratory Inc.

Client: TNU-Hanford B01-103
Est. Final Proj. Sampling Date:
Project #: 11343-6006-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 8-16-01 Date Due: 9-15-01

		A	B	C		D		E	F		G	H				
Refrigerator #		1	5	5		1		5	5		5	5			5	
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG		1AG		1AG	1AG		1AG	1AG			1	
Volume	Liquid														10	
	Solid	120	500	250		120		500	500		600	500			500	
Preservatives		-	-	-		-		-	-		-	-			-	
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	Alc. Ext.		TCLP Mct	Metal	CN		TC/H			TCLP	
Lionville Laboratory Use Only		OLA24H	OLA25X	OPCB		ODPO OGPO		ITCLP	Mrt(1)		ICPAO	Inorg(1)			Mrt(2)	

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OLA24H	OLA25X	OPCB		ODPO OGPO		ITCLP	Mrt(1)		ICPAO	Inorg(1)			Mrt(2)	
	001	B12MB7			S	8-13-01	1110	✓	✓	✓		✓		✓	✓		✓	✓				
	002	8			I	I	1138	✓	✓	✓		✓		✓	✓		✓	✓				
	003	7 tclp of 001			L	*	I														✓	
	004	8 002			I	I															✓	

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

Special Instructions: Saf B01-103
Run Matrix QC
* See lab chron

DATE/REVISIONS:
Mrt(1) 1. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
Inorg(1) 2. ICNO2, ICNO3, INH3N, ICNTO, IPH.
I 3. ISED
Mrt(2) 4. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V.
I 5. Zn, Hg (leachates)
6.

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. 4.4° °C

Relinquished by	Received by	Date	Time
FEDEX	Carla Hernandez	8-16-01	9:40

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL DOWNITTER		

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
4235 7954 5461

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-05	Page 1 of 1

Collector: R Fahlberg	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.: ERC 96-036	Field Logbook No.: EL 1517-2 — COA JRCRA14114 ~~XL1013CHGR~~ RF 8-13-01	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA	Offsite Property No.: A010323	Bill of Lading/Air Bill No.: 4235 7954 — 6461	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref. #2B at the 3728 Shipping Facility on 8/13/01. Collector not available to relinquish samples on 8/15/01 for shipment. RT 8-15-01

Preservation	Cool 4C	None	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	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. RT 8-15-01		
Sample No.	Matrix *	Sample Date	Sample Time								
B12MB7	SOIL	8-13-01	1110	X	X	X	X	X	X	X	X		B12MB9
B12MB8	SOIL	8-13-01	1138	X	X	X	X	X	X	X	X		B12MC0

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg / R. Fahlberg	8-13-01 1300	RF 2-B	8-13-01 1300
RF 2B	8-15-01 0900	R Thore	8-15-01 0900
R Thore	8-15-01 0900	FEDEX	
FEDEX	8-16-01 9:40	Carlos Barrera	8-16-01 9:40

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Aluminum, Calcium, 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, Isotopic Uranium, Tritium-3H~~ 8-15-01 RT

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

BHI-EE-011 (10/99)

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-103
LVL#: 0108L587
SDG/SAF#: H1461/B01-103

W.O.#: 11343-606-001-9999-00
Date Received: 08-16-01

****Revision****

METALS CASE NARRATIVE

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

1. This narrative covers the analyses of 2 soil samples and 2 TCLP leachate samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. All TCLP leachate samples were reported with a six fold dilution for ICP analytes due to sample matrix.

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

4. The cooler temperature has been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.

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

7. 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 soil MB, 01L0562, result for Tin was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and all samples for Tin 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.

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 20 pages.

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

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.

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
B12MB7	Aluminum	20,000	99.5
	Iron	20,000	106.9

12. The TCLP leachate duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. The TCLP extract from samples B12MB7 for ICP analytes and B12MB8 for Mercury were selected for the matrix spike (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/m08-587r

LVLI
LIONVILLE LABORATORY INC.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 01PM 045

Initiator: C Johnson Batch: 01082587 Parameter: Metals
Date: 11/16/01 Samples: All Matrix: soil
Client: TNu Hanford H1461 Method: SW846/MCAWW/CLP/ Prep Batch: _____

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

4. Project Manager Instructions...signature/date: [signature] 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: [signature] 11/26/01 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative [signature] 11/28/01
✓ 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 [initials]
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

QA-105-A-0801

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: G1082587

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 11/28/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12MB7	Aluminum, Total	7200	MG/KG	1.6	1.0
		Bismuth, Total	0.31 u	MG/KG	0.31	1.0
		Calcium, Total	6680	MG/KG	0.78	1.0
		Copper, Total	12.1	MG/KG	0.05	1.0
		Iron, Total	19500	MG/KG	1.6	1.0
		Potassium, Total	1230	MG/KG	1.1	1.0
		Magnesium, Total	4840	MG/KG	0.80	1.0
		Manganese, Total	285	MG/KG	0.01	1.0
		Molybdenum, Total	1.0	MG/KG	0.10	1.0
		Sodium, Total	428	MG/KG	0.16	1.0
		Tin, Total	1.8	MG/KG	0.39	1.0
-002	B12MB8	Aluminum, Total	5210	MG/KG	1.6	1.0
		Bismuth, Total	0.32 u	MG/KG	0.32	1.0
		Calcium, Total	4470	MG/KG	0.80	1.0
		Copper, Total	12.7	MG/KG	0.05	1.0
		Iron, Total	16200	MG/KG	1.6	1.0
		Potassium, Total	643	MG/KG	1.1	1.0
		Magnesium, Total	2720	MG/KG	0.82	1.0
		Manganese, Total	213	MG/KG	0.01	1.0
		Molybdenum, Total	1.5	MG/KG	0.10	1.0
		Sodium, Total	526	MG/KG	0.16	1.0
		Tin, Total	3.5	MG/KG	0.40	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B12MB7	Silver, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Arsenic, TCLP Leachate	23.4	u	UG/L	23.4	6.0
		Barium, TCLP Leachate	599		UG/L	0.60	6.0
		Beryllium,TCLP Leachate	1.2	u	UG/L	1.2	6.0
		Cadmium, TCLP Leachate	1.8	u	UG/L	1.8	6.0
		Chromium, TCLP Leachate	8.4	u	UG/L	8.4	6.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	17.8		UG/L	10.2	6.0
		Lead, TCLP Leachate	14.4	u	UG/L	14.4	6.0
		Antimony, TCLP Leachate	13.8	u	UG/L	13.8	6.0
		Selenium, TCLP Leachate	19.2	u	UG/L	19.2	6.0
		Vanadium, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Zinc, TCLP Leachate	21.5		UG/L	2.4	6.0
-004	B12MB8	Silver, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Arsenic, TCLP Leachate	23.4	u	UG/L	23.4	6.0
		Barium, TCLP Leachate	289		UG/L	0.60	6.0
		Beryllium,TCLP Leachate	1.2	u	UG/L	1.2	6.0
		Cadmium, TCLP Leachate	1.8	u	UG/L	1.8	6.0
		Chromium, TCLP Leachate	8.4	u	UG/L	8.4	6.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	10.2	u	UG/L	10.2	6.0
		Lead, TCLP Leachate	20.0		UG/L	14.4	6.0
		Antimony, TCLP Leachate	16.9		UG/L	13.8	6.0
		Selenium, TCLP Leachate	19.2	u	UG/L	19.2	6.0
		Vanadium, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Zinc, TCLP Leachate	2240		UG/L	2.4	6.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/28/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0562-MB1	Aluminum, Total	2.1	MG/KG	1.6	1.0
		Bismuth, Total	0.31 u	MG/KG	0.31	1.0
		Calcium, Total	3.0	MG/KG	0.78	1.0
		Copper, Total	0.05	MG/KG	0.05	1.0
		Iron, Total	6.3	MG/KG	1.6	1.0
		Potassium, Total	2.2	MG/KG	1.1	1.0
		Magnesium, Total	0.95	MG/KG	0.80	1.0
		Manganese, Total	0.02	MG/KG	0.01	1.0
		Molybdenum, Total	0.10 u	MG/KG	0.10	1.0
		Sodium, Total	9.7	MG/KG	0.16	1.0
		Tin, Total	1.4	MG/KG	0.39	1.0
BLANK1	01L0544-MB1	Silver, TCLP Leachate	0.50 u	UG/L	0.50	1.0
		Arsenic, TCLP Leachate	3.9 u	UG/L	3.9	1.0
		Barium, TCLP Leachate	0.49	UG/L	0.10	1.0
		Beryllium,TCLP Leachate	0.20 u	UG/L	0.20	1.0
		Cadmium, TCLP Leachate	0.30 u	UG/L	0.30	1.0
		Chromium, TCLP Leachate	1.4 u	UG/L	1.4	1.0
		Nickel, TCLP Leachate	1.7 u	UG/L	1.7	1.0
		Lead, TCLP Leachate	2.4 u	UG/L	2.4	1.0
		Antimony, TCLP Leachate	2.3 u	UG/L	2.3	1.0
		Selenium, TCLP Leachate	3.2	UG/L	3.2	1.0
		Vanadium, TCLP Leachate	0.50 u	UG/L	0.50	1.0
		Zinc, TCLP Leachate	2.7	UG/L	0.40	1.0
BLANK2	01L0544-MB2	Silver, TCLP Leachate	3.0 u	UG/L	3.0	6.0
		Arsenic, TCLP Leachate	23.4 u	UG/L	23.4	6.0
		Barium, TCLP Leachate	1.4	UG/L	0.60	6.0
		Beryllium,TCLP Leachate	1.2 u	UG/L	1.2	6.0
		Cadmium, TCLP Leachate	1.8 u	UG/L	1.8	6.0
		Chromium, TCLP Leachate	8.4 u	UG/L	8.4	6.0
		Nickel, TCLP Leachate	10.2 u	UG/L	10.2	6.0
		Lead, TCLP Leachate	14.4 u	UG/L	14.4	6.0
		Antimony, TCLP Leachate	13.8 u	UG/L	13.8	6.0
		Selenium, TCLP Leachate	19.2 u	UG/L	19.2	6.0
		Vanadium, TCLP Leachate	3.0 u	UG/L	3.0	6.0
		Zinc, TCLP Leachate	6.0	UG/L	2.4	6.0
BLANK3	01L0544-MB3	Silver, TCLP Leachate	3.0 u	UG/L	3.0	6.0
		Arsenic, TCLP Leachate	23.4 u	UG/L	23.4	6.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/28/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK3	01L0544-MB3	Barium, TCLP Leachate	1.7		UG/L	0.60	6.0
		Beryllium, TCLP Leachate	1.2	u	UG/L	1.2	6.0
		Cadmium, TCLP Leachate	1.8	u	UG/L	1.8	6.0
		Chromium, TCLP Leachate	8.4	u	UG/L	8.4	6.0
		Nickel, TCLP Leachate	10.2	u	UG/L	10.2	6.0
		Lead, TCLP Leachate	14.4	u	UG/L	14.4	6.0
		Antimony, TCLP Leachate	13.8	u	UG/L	13.8	6.0
		Selenium, TCLP Leachate	19.2	u	UG/L	19.2	6.0
		Vanadium, TCLP Leachate	3.0	u	UG/L	3.0	6.0
		Zinc, TCLP Leachate	5.8		UG/L	2.4	6.0
BLANK1	01C0271-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	01C0271-MB2	Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
BLANK3	01C0271-MB3	Mercury, TCLP Leachate	1.3		UG/L	0.10	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12MB7	Aluminum, Total	7730	7200	201	263.7*	1.0
		Calcium, Total	9380	6680	2510	107.4	1.0
		Copper, Total	33.3	12.1	25.1	84.5	1.0
		Iron, Total	18500	19500	100	-1100. *	1.0
		Potassium, Total	3770	1230	2510	100.9	1.0
		Magnesium, Total	7190	4840	2510	93.4	1.0
		Manganese, Total	329	285	50.2	88.2*	1.0
		Molybdenum, Total	91.9	1.0	100	90.4	1.0
		Sodium, Total	2880	428	2510	97.4	1.0
		Tin, Total	92.6	1.8	100	90.3	1.0
-003	B12MB7	Silver, TCLP Leachate	4660	3.0 u	5000	93.2	6.0
		Arsenic, TCLP Leachate	5040	23.4 u	5000	100.9	6.0
		Barium, TCLP Leachate	97100	599	100000	96.5	6.0
		Beryllium, TCLP Leacha	1020	1.2 u	1000	102.4	6.0
		Cadmium, TCLP Leachate	998	1.8 u	1000	99.8	6.0
		Chromium, TCLP Leachat	5020	8.4 u	5000	100.3	6.0
		Nickel, TCLP Leachate	1040	17.8	1000	102.0	6.0
		Lead, TCLP Leachate	4960	14.4 u	5000	99.2	6.0
		Antimony, TCLP Leachat	1030	13.8 u	1000	103.2	6.0
		Selenium, TCLP Leachat	1020	19.2 u	1000	102.2	6.0
		Vanadium, TCLP Leachat	1010	3.0 u	1000	101.4	6.0
		Zinc, TCLP Leachate	1060	21.5	1000	103.5	6.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-004	B12MB8	Mercury, TCLP Leachate	148	0.10u	200	74.0	50.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12MB7	Aluminum, Total	7200	7220	0.35	1.0
		Calcium, Total	6680	6860	2.6	1.0
		Copper, Total	12.1	11.2	7.7	1.0
		Iron, Total	19500	18700	4.4	1.0
		Potassium, Total	1230	1320	6.4	1.0
		Magnesium, Total	4840	4820	0.45	1.0
		Manganese, Total	285	283	0.70	1.0
		Molybdenum, Total	1.0	0.85	15.8	1.0
		Sodium, Total	428	425	0.89	1.0
		Tin, Total	1.8	1.6	11.8	1.0
-003REP	B12MB7	Silver, TCLP Leachate	3.0 u	3.0 u	NC	6.0
		Arsenic, TCLP Leachate	23.4 u	23.4 u	NC	6.0
		Barium, TCLP Leachate	599	602	0.53	6.0
		Beryllium TCLP Leachate	1.2 u	1.2 u	NC	6.0
		Cadmium, TCLP Leachate	1.8 u	1.8 u	NC	6.0
		Chromium, TCLP Leachate	8.4 u	8.4 u	NC	6.0
		Nickel, Leachate	17.8	25.9	37.1	6.0
		Lead, TCLP Leachate	14.4 u	14.4 u	NC	6.0
		Antimony, Leachate	13.8 u	13.8 u	NC	6.0
		Selenium, TCLP Leachate	19.2 u	19.2 u	NC	6.0
		Vanadium, TCLP Leachate	3.0 u	3.0 u	NC	6.0
		Zinc, Leachate	21.5	16.7	25.1	6.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-004REP	B12MB8	Mercury, TCLP Leachate	0.10u	0.10u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0562-LC1	Aluminum, LCS	496	500	MG/KG	99.1
		Bismuth, LCS	484	500	MG/KG	96.9
		Calcium, LCS	2430	2500	MG/KG	97.1
		Copper, LCS	123	125	MG/KG	98.1
		Iron, LCS	493	500	MG/KG	98.6
		Potassium, LCS	2520	2500	MG/KG	100.8
		Magnesium, LCS	2500	2500	MG/KG	99.8
		Manganese, LCS	75.5	75.0	MG/KG	100.7
		Molybdenum, LCS	494	500	MG/KG	98.8
		Sodium, LCS	2450	2500	MG/KG	98.0
		Tin, LCS	489	500	MG/KG	97.8
LCS1	01L0544-LC1	Silver, LCS	497	500	UG/L	99.4
		Arsenic, LCS	9710	10000	UG/L	97.1
		Barium, LCS	4910	5000	UG/L	98.1
		Beryllium, LCS	252	250	UG/L	100.9
		Cadmium, LCS	249	250	UG/L	99.6
		Chromium, LCS	509	500	UG/L	101.9
		Nickel, LCS	2000	2000	UG/L	100.0
		Lead, LCS	2440	2500	UG/L	97.7
		Antimony, LCS	2980	3000	UG/L	99.3
		Selenium, LCS	9410	10000	UG/L	94.1
		Vanadium, LCS	2580	2500	UG/L	103.2
		Zinc, LCS	1000	1000	UG/L	100.2
LCS1	01C0271-LC1	Mercury, LCS	4.9	5.0	UG/L	98.3

(8) Metals Dig

Lionville Laboratory Use Only
0108L587

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI Lionville Laboratory Inc.

Client: TNU-Hanford B01-103
Est. Final Proj. Sampling Date:
Project #: 11343-Code-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day

Date Rec'd: 8-16-01 Date Due: 9-15-01

	A	B	C		D		E	F		G	H				
Refrigerator #	1	5	5		1		5	5		5	5				5
#/Type Container: Liquid															2
#/Type Container: Solid	1AG	1AG	1AG		1AG		1AG	1AG		1AG	1AG				1
Volume: Liquid															0
Volume: Solid	120	500	250		120		500	500		60	500				5
Preservatives	-	-	-		-		-	-		-	-				0
ANALYSES REQUESTED	ORGANIC: VOA	BNA	Pest/PCB	Herb	A.C. Extract		TCLP Met	INORG: Metal	CN		IC				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

Lionville Laboratory Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OA2411	OA25X	OPCB		ODRO OGRO		TCLP	Met (1)		ICP9	IC (1)			Met (2)
001	B12MB7			S	8-13-01	1110	✓	✓	✓		✓		✓	✓		✓	✓			
002	8			↓	↓	1138	✓	✓	✓		✓		✓	✓		✓	✓			
003	7 top of 001			L	*	-														✓
004	8 ↓ 002			↓	↓	↓														✓

Special Instructions: SOF B01-103
Run Matrix QC
* See lab chron

DATE/REVISIONS:
Met (1) 1. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
Inorg (1) 2. ICNO2, ICNO3, INH3N, ICNTO, IPH,
↓ 3. ISED
Met (2) 4. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V,
↓ 5. Zn, Hg (leachates) + As
11-26-01 6. Add As to tclp Met (2)

Relinquished by	Received by	Date	Time
FEDEX	Carla Hernandez	8-16-01	9:40

Relinquished by	Received by	Date	Time
COMPOSITE		ORIGINAL	

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. 4.4° °C

OCT 2001
RECEIVED

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1461

RFW LOT # :0108L587

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B12MB7	001	S	01LVH343	08/13/01	08/16/01	N/A	08/20/01
B12MB7	001 MS	S	01LVH343	08/13/01	08/16/01	N/A	08/20/01
B12MB7	001 MSD	S	01LVH343	08/13/01	08/16/01	N/A	08/20/01
B12MB8	002	S	01LVH343	08/13/01	08/16/01	N/A	08/20/01
LAB QC:							
VBLKMU	MB1	S	01LVH343	N/A	N/A	N/A	08/20/01
VBLKMU	MB1 BS	S	01LVH343	N/A	N/A	N/A	08/20/01

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-103
RFW #: 0108L587
SDG/SAF #: H1461/B01-103

W.O. #: 11343-606-001-9999-00
Date Received: 08-16-2001

GC/MS VOLATILE

Two (2) soil samples were collected on 08-13-2001.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 08-20-2001.

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 temperature upon receipt has been recorded on the chain-of-custody.
2. Samples were analyzed within required holding time.
3. A non-target compound was detected in sample B12MB7.
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 Methylene Chloride at a level less than 2x 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

9/10/01
Date

som\group\data\voa\tnu-hanford\0108-587.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 1 2 pages.

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

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.*

VLI
LIONVILLE LABORATORY INC

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.

LYONVILLE LABORATORY INC

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.
Volatiles by GC/MS, HSL List
Report Date: 09/07/01 13:22

RFW Batch Number: **0108L587** Client: **TNUHANFORD B01-103 H1461** Work Order: 11343606001 Page: 1a

	Cust ID:	B12MB7		B12MB7		B12MB7		B12MB8		VBLKMU		VBLKMU BS	
Sample Information	RFW#:	001		001 MS		001 MSD		002		01LVH343-MB1		01LVH343-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.04		1.02		0.980		0.962		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	106	%	106	%	105	%	108	%	104	%	100	%
	Bromofluorobenzene	102	%	102	%	100	%	106	%	103	%	100	%
	1,2-Dichloroethane-d4	107	%	106	%	104	%	112	%	105	%	100	%
		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		11	B	11	B	11	B	11	B	5		4	JB
Acetone		10	U	10	U	10	U	13		10	U	10	U
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	108	%	107	%	5	U	5	U	102	%
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	87	%	83	%	5	U	5	U	86	%
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	105	%	100	%	5	U	5	U	100	%
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	106	%	101	%	5	U	5	U	100	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0108L587** Client: **TNUHANFORD B01-103 H1461** Work Order: 11343606001 Page: 1b

Cust ID:	B12MB7		B12MB7		B12MB7		B12MB8		VBLKMU		VBLKMU BS	
RFW#:	001		001 MS		001 MSD		002		01LVH343-MB1		01LVH343-MB1	
Chlorobenzene	5	U	99	%	95	%	5	U	5	U	98	%
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.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B12MB7

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 0108L587-001

Sample wt/vol: 4.80 (g/mL) G Lab File ID: h082013

Level: (low/med) LOW Date Received: 08/16/01

% Moisture: not dec. 1 Date Analyzed: 08/20/01

Column: (pack/cap) CAP Dilution Factor: 1.04

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	24.531	20	J

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B12MB8

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 0108L587-002

Sample wt/vol: 5.20 (g/mL) G Lab File ID: h082016

Level: (low/med) LOW Date Received: 08/16/01

% Moisture: not dec. 4 Date Analyzed: 08/20/01

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.				

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKMU

Lab Name: Lionville Labs, Inc. Contract: 11343606001

Lab Code: Lionvi Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 01LVH343-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h082007

Level: (low/med) LOW Date Received: 08/20/01

% Moisture: not dec. 0 Date Analyzed: 08/20/01

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 1/87 Rev.

Lionville Laboratory Use Only
01081587

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI LIONVILLE LABORATORY INC

Client: TMU- Hanford B01-103
Est. Final Proj. Sampling Date:
Project #: 11343-6006-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 8-16-01 Date Due: 9-15-01

		A	B	C		D		E	F		G	H				
Refrigerator #		1	5	5		1		5	5		5	5			5	
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG		1AG		1AG	1AG		1AG	1AG			1 qt	
Volume	Liquid															
	Solid	120	500	250		120		500	500		600	500			1 qt	
Preservatives		-	-	-		-		-	-		-	-			12 oz	
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb	HG, Cy, Ext.		TCLP Met.	INORG: Metal	CN		IC				

Lionville Laboratory Use Only

MATRIX CODES	Lab ID	Client ID/Description	Matrix OC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OA24H	OA25X	OPCB		ODPO OGPO		ITCLP	Met①		ICRL9	Inorg①			Met②
S - Soil	001	B12MB7			S	8-13-01	1110	✓	✓	✓		✓		✓	✓		✓	✓			
SE - Sediment	002	8			1	1	1138	✓	✓	✓		✓		✓	✓		✓	✓			
SO - Solid	003	7 tcp of 001			L	*															✓
SL - Sludge	004	8 002			1	1	1														✓
W - Water																					
O - Oil																					
A - Air																					
DS - Drum Solids																					
DL - Drum Liquids																					
L - EP/TCLP Leachate																					
WI - Wipe																					
X - Other																					
F - Fish																					

Special Instructions: Saf B01-103
Run Matrix QC
* See lab chron

DATE/REVISIONS:
Met① 1. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
Inorg① 2. TCNO2, TCNO3, TNH3N, TCNTO, TPH,
1 3. ISED
Met② 4. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V,
1 5. Zn, Hg (leachates)
6.

Relinquished by	Received by	Date	Time
FEDEX	Carla Hemf	8-16-01	9:40

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7954 6461

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. 4.4° °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-05	Page 1 of 1

ollector R Fahlberg	Company Contact D Weekes	Telephone No. 372-9130	Project Coordinator TRENT, SJ
Price Code 8N	Data Turnaround 45 Days	Air Quality ☐	
roject Designation 200 Area RCRA Drilling Waste Designation	Sampling Location 200 East		SAF No. B01-103
ce Chest No. ERC 96-036	Field Logbook No. EL 1517-2	COA JRCRA14114 ~~XL1013CHGR~~ RF 8-13-01	Method of Shipment Fed EX
hipped To TMA/RECRA	Offsite Property No. AB10323		Bill of Lading/Air Bill No. 42357954-6461

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 8/13/01. Collector not available to relinquish samples on 8/15/01 for shipment. RT 8-15-01

Preservation	Cool 4C	None	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	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. RC 8-13-01		
Sample No.	Matrix *	Sample Date	Sample Time								
B12MB7	SOIL	8-13-01	1110	X	X	X	X	X	X	X	X		B12MB9
B12MB8	SOIL	8-13-01	1138	X	X	X	X	X	X	X	X		B12MC0

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg / R. Fahlberg	8-13-01 1300	RF 2-B	8-13-01 1300
RF 2B	8-15-01 0900	R Thore	8-15-01 0900
R Thore	8-15-01 0900	FEDEX	
FEDEX	8-16-01 9:40	Carlos Hernandez	8-16-01 9:40

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Aluminum, Calcium, 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, Isotopic Uranium; Tritium-3H~~ 8-15-01 RT

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

BHI-EE-011 (10/99)

OCT 2001
RECEIVED

Lionville Laboratory, Inc.
PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1461

DATE RECEIVED: 08/16/01 LVL LOT # :0108L587

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12MB7	001	S	01LE0968	08/13/01	08/17/01	09/04/01
B12MB7	001 MS	S	01LE0968	08/13/01	08/17/01	09/04/01
B12MB7	001 MSD	S	01LE0968	08/13/01	08/17/01	09/04/01
B12MB8	002	S	01LE0968	08/13/01	08/17/01	09/04/01

LAB QC:

PBLKNN	MB1	S	01LE0968	N/A	08/17/01	09/04/01
PBLKNN	MB1 BS	S	01LE0968	N/A	08/17/01	09/04/01

29-10-01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD B01-103
LVL#: 0108L587
SDG/SAF#: H1461/B01-103

W.O.#: 11343-606-001-9999-00
Date Received: 08-16-01

PCB

The set of samples consisted of two (2) soil samples collected on 08-13-01.

The samples and their associated QC samples were extracted on 08-17-01 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 09-04-01. The extraction procedure was based on method 3550 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. The cooler temperature has been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis have been met.
3. The samples and their associated QC samples received a sulfuric acid and sulfur 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.
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 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

9/11/01
Date

pef\r:\group\data\pest\08L-587.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 7 pages.

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

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.

GLOSSARY OF PESTICIDE/PCB DATA

P	=	This flag is used for an PESTICIDE/PCB 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 GC/MS.

R:/SHARE/HPLC/PESTICIDE/PCBGLOS

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 09/09/01 14:03

RFW Batch Number: 0108L587 Client: TNUHANFORD B01-103 H1461 Work Order: 11343606001 Page: 1

	Cust ID:	B12MB7		B12MB7		B12MB7		B12MB8		PBLKNN		PBLKNN BS	
Sample Information	RFW#:	001		001 MS		001 MSD		002		01LE0968-MB1		01LE0968-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	
Surrogate:	Tetrachloro-m-xylene	98	%	102	%	88	%	60	%	68	%	92	%
	Decachlorobiphenyl	95	%	105	%	93	%	82	%	89	%	100	%
			fl		fl		fl		fl		fl		fl
Aroclor-1016		34	U	33	U	34	U	34	U	33	U	33	U
Aroclor-1221		67	U	66	U	67	U	69	U	67	U	67	U
Aroclor-1232		34	U	33	U	34	U	34	U	33	U	33	U
Aroclor-1242		34	U	33	U	34	U	34	U	33	U	33	U
Aroclor-1248		34	U	33	U	34	U	34	U	33	U	33	U
Aroclor-1254		34	U	89	%	74	%	34	U	33	U	77	%
Aroclor-1260		34	U	33	U	34	U	34	U	33	U	33	U

09-12-01

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
01081587

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TOU-Hanford B01-103
Est. Final Proj. Sampling Date:
Project #: 11343-6000-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 8-16-01 Date Due: 9-15-01

		A	B	C		D		E	F		G	H				
Refrigerator #		1	5	5		1		5	5		5	5			5	
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG		1AG		1AG	1AG		1AG	1AG			2	
Volume	Liquid														1	
	Solid	120	500	250		120		500	500		60	500			5	
Preservatives		-	-	-		-		-	-		-	-			C	
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	V.C. Hydr.		TCLP Met.	Metal	CN		HC			Ice	
		Lionville Laboratory Use Only														
		OC24H	OC25X	OPCB		ODRO OGRO		ITCLP	Mrt①		ICRL9	Inorg①			Mrt②	

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	OC24H	OC25X	OPCB		ODRO OGRO		ITCLP	Mrt①		ICRL9	Inorg①			Mrt②	
001	B12MB7			S	8-13-01	1110	✓	✓	✓		✓		✓	✓		✓	✓				
002	8			1	1	1138	✓	✓	✓		✓		✓	✓		✓	✓				
003	7 tcp of 001			L	*	1														✓	
004	8 1 002			1	1	1														✓	

Special Instructions: Saf B01-103
Run Matrix QC
* See labchron

DATE/REVISIONS:
Mrt① 1. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
Inorg① 2. ICNO2, ICNO3, INH3N, ICNTU, IPH,
1 3. ISED
Mrt② 4. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V-,
1 5. Zn, Hg (leachates)
6.

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. 4.4° °C

Relinquished by	Received by	Date	Time
FEDEX	Carla Hernandez	8-16-01	9:40

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWDITTEN	

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7954 6461

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-05	Page 1 of 1

ollector R Fahlberg	Company Contact D Weekes	Telephone No. 372-9130	Project Coordinator TRENT, SJ
Price Code 8N	Data Turnaround 45 Days	Air Quality ☐	
roject Designation 200 Area RCRA Drilling Waste Designation	Sampling Location 200 East	SAF No. B01-103	
ce Chest No. ERC 96-036	Field Logbook No. EL 1517-2	COA JRCRA14114 ~~XL1013GHGR~~ RF 8-13-01	Method of Shipment Fed EX
hipped To TMA/RECRA	Offsite Property No. A010323	Bill of Lading/Air Bill No. 4235 7954 - 6461	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 8/13/01.
Collector not available to relinquish samples on 8/15/01 for shipment.
RT 8-15-01

Preservation	Cool 4C	None	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	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. RT 8-15-01		
Sample No.	Matrix*	Sample Date	Sample Time								
B12MB7	SOIL	8-13-01	1110	X	X	X	X	X	X	X	X		B12MB9
B12MB8	SOIL	8-13-01	1138	X	X	X	X	X	X	X	X		B12MC0

CHAIN OF POSSESSION — *Sign/Print Names*

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg / R. Fahlberg	8-13-01 1300	RAF 2B	8-13-01 1300
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RAF 2B	8-15-01 0900	R Thore	8-15-01 0900
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R Thore	8-15-01 0900	FEDEX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FEDEX	8-16-01 9:40	Carlos Barrios	8-16-01 9:40
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

(1) ICP Metals - 6010A (TAL) {Aluminum, Calcium, 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, Isotopic Uranium; Tritium - H3~~
8-15 RT

Matrix*
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wp=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)

OCT 2001
RECEIVED

Lionville Laboratory, Inc.
GRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1461

DATE RECEIVED: 08/16/01 LVL LOT # :0108L587

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12MB7	001	S	01LVJ820	08/13/01	N/A	08/20/01
B12MB7	001 MS	S	01LVJ820	08/13/01	N/A	08/20/01
B12MB7	001 MSD	S	01LVJ820	08/13/01	N/A	08/20/01
B12MB8	002	S	01LVJ820	08/13/01	N/A	08/20/01

LAB QC:

TBLKZC	MB1	S	01LVJ820	N/A	N/A	08/20/01
TBLKZC	MB1 BS	S	01LVJ820	N/A	N/A	08/20/01

LIONVILLE LABORATORY INC.

Analytical Report

Client : TNU-HANFORD B01-103
LVL# : 0108L587
SDG/SAF#: H1461/B01-103

W.O #: 11343-606-001-9999-00
Date Received: 08-16-01

GASOLINE RANGE ORGANICS

The set of samples consisted of two (2) soil samples collected on 08-13-01

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on Method 8015B for Gasoline Range Organic (GRO) target compounds on 08-20-01.

1. The cooler temperature has been recorded on the chain-of-custody.

2. All required holding times for analysis have been met.

3. All surrogate recoveries were within acceptance criteria.

4. The blank spike recovery was within acceptance criteria.

5. All matrix spike recoveries were 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

9/17/01
Date

r:\share\gcpest\narr temp\tnu587gro.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 8 pages.

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: 09/12/01 11:21

RFW Batch Number: **0108L587** Client: **TNUHANFORD B01-103 H1461** Work Order: 11343606001 Page: 1

	Cust ID:	B12MB7	B12MB7	B12MB7	B12MB8	TBLKZC	TBLKZC BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	01LVJ820-MB1	01LVJ820-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
Fluorobenzene		87 %	93 %	97 %	102 %	106 %	111 %
Gasoline Range Organics (GRO)		40 U	93 %	94 %	40 U	40 U	114 %

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

01081587

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI Lionville Laboratory Inc.

Client: TRU-Hanford B01-103

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 8-16-01 Date Due: 9-15-01

		A	B	C		D		E	F		G	H				
Refrigerator #		1	5	5		1		5	5		5	5			5	
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG		1AG		1AG	1AG		1AG	1AG			1	
Volume	Liquid														100	
	Solid	120	500	250		120		500	500		60	500			60	
Preservatives		-	-	-		-		-	-		-	-			-	
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	HC Ext.		TCLP Mct.	Metal	CN		HC			TCLP Mct.	

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	8021H	8260X	OPCB		ODPO OCPC		ITCLP	Mct①		ICP①	Inorg①			Mct①
001	B12MB7			S	8-13-01	1110	✓	✓	✓		✓		✓	✓		✓	✓			✓
002	8			1	1	1138	✓	✓	✓		✓		✓	✓		✓	✓			✓
003	7 tcp of 001			L	1	1														✓
004	8 1 002			1	1	1														✓

Special Instructions: Saf B01-103

Run Matrix QC

* See labchron

DATE/REVISIONS:

Mct① 1. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn

Inorg① 2. TCNO2, TCNO3, TNH3N, TCNTO, TPH,

1 3. ISED

Mct② 4. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V,

1 5. Zn, Hg (Leachates)

6.

Relinquished by	Received by	Date	Time
FEDEX	Carla Hernandez	8-16-01	9:40

Relinquished by	Received by	Date	Time
COMPOSITE		ORIGINAL	

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. 4.4° °C

Lionville Laboratory Use Only
01081587

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI Lionville Laboratory Inc.

Client: TMU-Hanford B01-103
Est. Final Proj. Sampling Date:
Project #: 11343-C0010.001-9999.00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 8-16-01 Date Due: 9-15-01

		A	B	C		D		E	F		G	H				
Refrigerator #		1	5	5		1		5	5		5	5			5	
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG		1AG		1AG	1AG		1AG	1AG			1	
Volume	Liquid														100	
	Solid	120	500	250		120		500	500		60	500			500	
Preservatives		-	-			-		-	-		-	-			-	
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	Alc/Ketone		TCLP Met	Metal	CN		IC			TPH	
		Lionville Laboratory Use Only														
		8260H	8270X	8082PCB		8015Mo 8015Mo		ITCLP	Met(1)		ICP	Inorg(1)			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	VOA	BNA	Pest/PCB	Herb	Alc/Ketone		TCLP Met	Metal	CN	ICP	IC			Metal
001	B12MB7			S	8-13-01	1110	✓	✓	✓		✓		✓	✓		✓	✓			
002	1 8			1	1	1138	✓	✓	✓		✓		✓	✓		✓	✓			
003	7 dup of 001			L	*	—														✓
004	1 8 1 002			1	1	1														✓

Special Instructions: Saf B01-103
Run Matrix QC
* See lab chron

DATE/REVISIONS:
Met(1) 1. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
Inorg(1) 2. ICNO2, ICNO3, INH3N, ICNTO, IPH
1 3. ISED
Met(2) 4. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V
1 5. Zn, Hg (leachates)
6.

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. 4.4° °C

Relinquished by	Received by	Date	Time
FEDEX	Carla Hernandez	8-16-01	9:40

Relinquished by	Received by	Date	Time
COMPOSITE		ORIGINAL	

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-05	Page 1 of 1

Collector: R Fahlberg	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.: ERC 96-036	Field Logbook No.: EL 1517-2	COA JRCRA14114 ~~XL1013CHGR~~ RF 8-13-01	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A#10323	Bill of Lading/Air Bill No.: 4235 7954 - 6461	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref. #2B at the 3728 Shipping Facility on 8/13/01. Collector not available to relinquish samples on 8/15/01 for shipment. RT 8-15-01

Preservation	Cool 4C	None	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	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. RT 8-15-01		
Sample No.	Matrix *	Sample Date	Sample Time								
B12MB7	SOIL	8-13-01	1110	X	X	X	X	X	X	X	X		B12MB9
B12MB8	SOIL	8-13-01	1138	X	X	X	X	X	X	X	X		B12MC0

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	R. Fahlberg	8-13-01 1300	RF 2B	8-13-01 1300
Relinquished By/Removed From	RF 2B	8-15-01 0900	R Thore	8-15-01 0900
Relinquished By/Removed From	R Thore	8-15-01 0900	FEDEX	
Relinquished By/Removed From	FEDEX	8-16-01 9:40	Carlos Hernandez	8-16-01 9:40
Relinquished By/Removed From			Received By/Stored In	
Relinquished By/Removed From			Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Aluminum, Calcium, 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-99; Isotopic Uranium; Tritium-3H~~

8-15-01 RT

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

BHI-EE-011 (10/99)

OCT 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1461

DATE RECEIVED: 08/16/01 LVL LOT # :0108L587

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12MB7						
% SOLIDS	001	S	01L%S107	08/13/01	08/17/01	08/20/01
% SOLIDS	001 REP	S	01L%S107	08/13/01	08/17/01	08/20/01
NITRITE BY IC	001	S	01LICE60	08/13/01	09/12/01	09/12/01
NITRITE BY IC	001 REP	S	01LICE60	08/13/01	09/12/01	09/12/01
NITRITE BY IC	001 MS	S	01LICE60	08/13/01	09/12/01	09/12/01
NITRATE BY IC	001	S	01LICE60	08/13/01	09/12/01	09/12/01
NITRATE BY IC	001 REP	S	01LICE60	08/13/01	09/12/01	09/12/01
NITRATE BY IC	001 MS	S	01LICE60	08/13/01	09/12/01	09/12/01
TOTAL CYANIDE	001	S	01LC077	08/13/01	08/17/01	08/17/01
TOTAL CYANIDE	001 REP	S	01LC077	08/13/01	08/17/01	08/17/01
TOTAL CYANIDE	001 MS	S	01LC077	08/13/01	08/17/01	08/17/01
CHROMIUM VI	001	S	01LVI074	08/13/01	09/10/01	09/10/01
AMMONIA	001	S	01LAM042	08/13/01	09/06/01	09/06/01
AMMONIA	001 REP	S	01LAM042	08/13/01	09/06/01	09/06/01
AMMONIA	001 MS	S	01LAM042	08/13/01	09/06/01	09/06/01
PH	001	S	01LPH056	08/13/01	08/17/01	08/17/01
PH	001 REP	S	01LPH056	08/13/01	08/17/01	08/17/01
SULFIDE	001	S	01LSD041	08/13/01	08/21/01	08/21/01
TCLP	001	S	01LTO104	08/13/01	08/28/01	08/29/01
B12MB8						
% SOLIDS	002	S	01L%S107	08/13/01	08/17/01	08/20/01
NITRITE BY IC	002	S	01LICE60	08/13/01	09/12/01	09/12/01
NITRATE BY IC	002	S	01LICE60	08/13/01	09/12/01	09/12/01
TOTAL CYANIDE	002	S	01LC077	08/13/01	08/17/01	08/17/01
CHROMIUM VI	002	S	01LVI074	08/13/01	09/10/01	09/10/01
CHROMIUM VI	002 REP	S	01LVI074	08/13/01	09/10/01	09/10/01
CHROMIUM VI	002 MS	S	01LVI074	08/13/01	09/10/01	09/10/01
CHROMIUM VI	002 MSD	S	01LVI074	08/13/01	09/10/01	09/10/01
AMMONIA	002	S	01LAM042	08/13/01	09/06/01	09/06/01
PH	002	S	01LPH056	08/13/01	08/17/01	08/17/01
SULFIDE	002	S	01LSD041	08/13/01	08/21/01	08/21/01
SULFIDE	002 REP	S	01LSD041	08/13/01	08/21/01	08/21/01
SULFIDE	002 MS	S	01LSD041	08/13/01	08/21/01	08/21/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1461

DATE RECEIVED: 08/16/01 LVL LOT # :0108L587

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TCLP	002	S	01LTO104	08/13/01	08/28/01	08/29/01

LAB QC:

NITRITE BY IC	MB1	S	01LICE60	N/A	09/12/01	09/12/01
NITRITE BY IC	MB1 BS	S	01LICE60	N/A	09/12/01	09/12/01
NITRATE BY IC	MB1	S	01LICE60	N/A	09/12/01	09/12/01
NITRATE BY IC	MB1 BS	S	01LICE60	N/A	09/12/01	09/12/01
TOTAL CYANIDE	LCS L	S	01LC077	N/A	08/17/01	08/17/01
TOTAL CYANIDE	LCS L	S	01LC077	N/A	08/17/01	08/17/01
TOTAL CYANIDE	MB1	S	01LC077	N/A	08/17/01	08/17/01
CHROMIUM VI	MB1	S	01LVI074	N/A	09/10/01	09/10/01
CHROMIUM VI	MB1 BS	S	01LVI074	N/A	09/10/01	09/10/01
CHROMIUM VI	MB1 BSD	S	01LVI074	N/A	09/10/01	09/10/01
AMMONIA	MB1	S	01LAM042	N/A	09/06/01	09/06/01
AMMONIA	MB1 BS	S	01LAM042	N/A	09/06/01	09/06/01
AMMONIA	MB1 BSD	S	01LAM042	N/A	09/06/01	09/06/01
SULFIDE	MB1	S	01LSD041	N/A	08/21/01	08/21/01
SULFIDE	MB1 BS	S	01LSD041	N/A	08/21/01	08/21/01
SULFIDE	MB1 BSD	S	01LSD041	N/A	08/21/01	08/21/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-103 H1461
LVL#: 0108L587

W.O.#: 11343-606-001-9999-00
Date Received: 08-16-01

INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 soil samples.

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

3. Sample holding times as required by the method and/or contract were met with the exception of Sulfide.

4. The cooler temperature was recorded on the chain of custody.

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS were within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries were within the 75-125% control limits with the exception of Insoluble Chromium VI that was below the control limits that may be attributed to sample inhomogeneity.

8. The replicate analyses were within the 20% RPD control limit.

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

09-20-01
Date

njp\i08-587

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 14 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR 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

Other: Ammonia **Method** EPA 350.3

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).

b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/20/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12MB7	% Solids	99.5		%	0.01	1.0
		Nitrite by IC	1.26	u	MG/KG	1.26	1.0
		Nitrate by IC	1.43		MG/KG	1.26	1.0
		Cyanide, Total	0.35	u	MG/KG	0.35	1.0
		Chromium VI	0.40	u	MG/KG	0.40	1.0
		Ammonia, as N	2.3	u	MG/KG	2.3	1.0
		pH	9.0		SOIL PH	0.01	1.0
		Sulfide	38.3	u	MG/KG	38.3	1.0
-002	B12MB8	% Solids	95.6		%	0.01	1.0
		Nitrite by IC	1.31	u	MG/KG	1.31	1.0
		Nitrate by IC	1.31	u	MG/KG	1.31	1.0
		Cyanide, Total	0.48	u	MG/KG	0.48	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Ammonia, as N	2.4	u	MG/KG	2.4	1.0
		pH	9.2		SOIL PH	0.01	1.0
		Sulfide	36.6	u	MG/KG	36.6	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/20/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LICE60-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	01LC077-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK10	01LVI074-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0
BLANK10	01LAM042-MB1	Ammonia, as N	2.5 u	MG/KG	2.5	1.0
BLANK10	01LSD041-MB1	Sulfide	40.0 u	MG/KG	40.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/20/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12MB7	Nitrite by IC	52.3	1.26u	50.3	104.0	2.0
		Nitrate by IC	52.5	1.43	50.3	101.5	2.0
		Cyanide, Total	4.17	0.35u	4.46	93.6	1.0
		Ammonia, as N	93.2	2.3 u	97.3	95.7	1.0
-002	B12MB8	Soluble Chromium VI	4.1	0.42u	4.2	95.7	1.0
		Insoluble Chromium VI	1070	0.42u	1480	72.4	100
		Sulfide	342	18.3	378	85.8	1.0
BLANK10	01LICE60-MB1	Nitrite by IC	22.6	1.25u	25.0	90.4	1.0
		Nitrate by IC	24.1	1.25u	25.0	96.5	1.0
BLANK10	01LVI074-MB1	Soluble Chromium VI	3.9	0.40u	4.0	98.3	1.0
		Insoluble Chromium VI	1210	0.40u	1160	104.2	100
BLANK10	01LAM042-MB1	Ammonia, as N	104	2.5 u	100	103.8	1.0
		Ammonia, as N MSD	114	2.5 u	100	113.8	1.0
BLANK10	01LSD041-MB1	Sulfide	365	40.0 u	385	94.8	1.0
		Sulfide MSD	381	40.0 u	385	99.0	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 09/20/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	01LAM042-MB1	Ammonia, as N	103.8	113.8	9.2
BLANK10	01LSD041-MB1	Sulfide	94.8	99.0	4.3

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/20/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12MB7	% Solids	99.5	99.6	0.10	1.0
		Nitrite by IC	1.26u	1.26u	NC	1.0
		Nitrate by IC	1.43	1.43	0.35	1.0
		Cyanide, Total	0.35u	0.42u	NC	1.0
		Ammonia, as N	2.3 u	2.5 u	NC	1.0
		pH	9.0	9.1	0.9	1.0
-002REP	B12MB8	Chromium VI	0.42u	0.42u	NC	1.0
		Sulfide	36.6 u	38.1 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/20/01

CLIENT: TNUHANFORD B01-103 H1461 LVL LOT #: 0108L587

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	01LC077-LCS1	Cyanide, Total LCS	1.93	2.0	MG/KG	96.6
LCSS2	01LC077-LCS2	Cyanide, Total LCS	10.1	10.0	MG/KG	100.8

Lionville Laboratory Use Only
01081587

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI Lionville Laboratory Inc.

12

Client: TMU-Hanford B01-103
Est. Final Proj. Sampling Date:
Project #: 11343-C0010-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 8-16-01 Date Due: 9-15-01

		A	B	C		D		E	F		G	H				
Refrigerator #		1	5	5		1		5	5		5	5			5	
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG		1AG		1AG	1AG		1AG	1AG				
Volume	Liquid															
	Solid	120	500	250		120		500	500		60	500			60	
Preservatives		-	-	-		-		-	-		-	-			-	
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	PIC Gly Ket		TCLP Met	Metal	CN		IC			IC	
		Lionville Laboratory Use Only														
		0a24H	0a25X	OPCB		ODPO OGPO		ITCLP	Met(1)		ICP(1)	Inorg(1)			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	0a24H	0a25X	OPCB		ODPO OGPO		ITCLP	Met(1)		ICP(1)	Inorg(1)			Met(2)
001	B12MB7			S	8-13-01	1110	✓	✓	✓		✓		✓	✓		✓	✓			
002	8			1	1	1138	✓	✓	✓		✓		✓	✓		✓	✓			
003	7 top of 001			L	*															✓
004	8 1 002			1	1	1														✓

Special Instructions: Soil B01-103
Run Matrix QC
* See labchron

DATE/REVISIONS:
Met(1) 1. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
Inorg(1) 2. ICNO2, ICNO3, INH3N, ICNTO, IPH
1 3. ISED
Met(2) 4. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V,
1 5. Zn, Hg (leachates)
6.

Lionville Laboratory Use Only

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

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

COC Record Present Upon Sample Rec't ✓ or N
Cooler Temp. 4.4° °C

Relinquished by	Received by	Date	Time
FEDEX	Carla Hernandez	8-16-01	9:40

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL DOCUMENT		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7954 6461

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-05	Page 1 of 1

Collector: R Fahlberg	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.: ERC 96-036	Field Logbook No.: EL 1517-2 — COA JRCRA14114 ~~XL1013GHOR~~ RF 8-13-01	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA	Offsite Property No.: A#10323	Bill of Lading/Air Bill No.: 4235 7954 - 6461	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# ZB at the 3728 Shipping Facility on 8/13/01. Collector not available to relinquish samples on 8/15/01 for shipment. RT 8-15-01

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
Preservation													
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	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. RT 8-15-01	
B12MB7	SOIL	8-13-01	1110	X	X	X	X	X	X	X	X		B12MB9
B12MB8	SOIL	8-13-01	1138	X	X	X	X	X	X	X	X		B12MC0

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg / R. Fahlberg	8-13-01 1300	RaF 2-B	8-13-01 1300
RaF 2B	8-15-01 0900	R Thore	8-15-01 0900
R Thore	8-15-01 0900	FEDEX	
FEDEX	8-16-01 9:40	Carter Harris	8-16-01 9:40

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Aluminum, Calcium, 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, Isotopic Uranium, Tritium-H3~~ 8-15 RT

Matrix *
S=Soil
SD=Sediment
SO=Solid
SL=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wp=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)

Figure 1. Sample Check-in List

Date/Time Received: 8-16-01 0940

SDG#: 01081587

Work Order Number: — SAF# B01-103

Shipping Container ID: EBC96-0360 Chain of Custody # B01-103-05

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 4.4°
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 16
7. Sample holding times exceeded? Yes [ ] No [✓]

8. Samples have:
   ____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: Carlos Hernandez Date: 8-16-01

Telephoned to: _____ On _____ By _____

OCT 2001
RECEIVED

Lionville Laboratory, Inc.
DRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1461

DATE RECEIVED: 08/16/01 LVL LOT # :0108L587

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12MB7	001	S	01LE0983	08/13/01	08/22/01	09/13/01
B12MB7	001 MS	S	01LE0983	08/13/01	08/22/01	09/13/01
B12MB7	001 MSD	S	01LE0983	08/13/01	08/22/01	09/13/01
B12MB8	002	S	01LE0983	08/13/01	08/22/01	09/13/01

LAB QC:

BLK	MB1	S	01LE0983	N/A	08/22/01	09/13/01
BLK	MB1 BS	S	01LE0983	N/A	08/22/01	09/13/01

9/14/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: THU-HANFORD B01-103
LVL#: 0108L587
SDG/SAF#: H1461/B01-103

W.O #: 11343-606-001-9999-00
Date Received: 08-16-01

DIESEL RANGE ORGANICS

The set of samples consisted of two (2) soil samples collected on 08-13-01.

The samples and their associated QC samples were extracted on 08-22-01 and analyzed according to Lionville Laboratory OPs based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 09-13-01. The analysis met the intent of method WTPH-D.

1. The cooler temperature has been recorded on the chain-of-custody.

2. The samples were extracted and analyzed within required holding times.

3. All surrogate recoveries were within acceptance criteria.

4. The blank spike recovery was within acceptance criteria.

5. All matrix spike recoveries were within acceptance criteria.

6. All initial calibrations associated with this data set 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

9/17/01
Date

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The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 8 pages.

GLOSSARY OF DIESEL 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 DIESEL 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.

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 09/14/01 07:46

RFW Batch Number: 0108L587 Client: TNUHANFORD B01-103 H1461 Work Order: 11343606001 Page: 1

	Cust ID:	B12MB7	B12MB7	B12MB7	B12MB8	BLK	BLKOBS
Sample Information	RFW#:	001	001 MS	001 MSD	002	01LE0983-MB1	01LE0983-MB1
	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	86 %	94 %	92 %	95 %	90 %	86 %
Diesel Range Organics		12.1 U	85 %	84 %	12.6 U	12.0 U	84 %
Motor Oil		12.1 U	12.1 U	12.1 U	12.6 U	12.0 U	12.0 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

Flg 9/14/01

Lionville Laboratory Use Only
01081587

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI Lionville Laboratory Inc.

Client: TRU-Hanford B01-103
Est. Final Proj. Sampling Date:
Project #: 11343-C0000-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 8-16-01 Date Due: 9-15-01

		A	B	C		D		E	F		G	H				
Refrigerator #		1	5	5		1		5	5		5	5			5	
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG		1AG		1AG	1AG		1AG	1AG			1	
Volume	Liquid														0	
	Solid	120	500	250		120		500	500		600	500			5	
Preservatives		-	-	-		-		-	-		-	-			-	
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	TIC		TCLP Met	Metal	CN		HC			TCLP	
		Lionville Laboratory Use Only														
		8260/4H	8270SX	8PCB		8DPO 8CPO		ITCLP	Met(1)		ICP40	Inorg(1)			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 OC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected													
001	B12MB7			S	8-13-01	1110	✓	✓	✓		✓		✓	✓		✓	✓		✓
002	8			⊥	⊥	1138	✓	✓	✓		✓		✓	✓		✓	✓		
003	7 tclp of 001			L	*	~													✓
004	⊥ 8 ⊥ 002			⊥	⊥	⊥													✓

Special Instructions: Saf B01-103
Run Matrix QC
* See lab chron

DATE/REVISIONS:
Met(1) 1. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
Inorg(1) 2. TCNO2, TCNO3, TNH3N, TCNTO, TPH
⊥ 3. TSED
Met(2) 4. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V,
⊥ 5. Zn, Hg (leachates)
6.

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'd (Y) or N
Cooler Temp. 4.4° °C

Relinquished by	Received by	Date	Time
FEDEX	Carla Hernandez	8-16-01	9:40

Relinquished by	Received by	Date	Time
COMPOSITE		ORIGINAL	

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

Lionville Laboratory Use Only
0108LS87

Custody Transfer Record/Lab Work Request

Page 1 of 1

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI Lionville Laboratory, Inc.

Client: TRU-Hanford Bol-103
Est. Final Proj. Sampling Date:
Project #: 11343-6006-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 8-16-01 Date Due: 9-15-01

		A	B	C		D		E	F		G	H			I	
Refrigerator #		1	5	5		1		5	5		5	5			5	
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG		1AG		1AG	1AG		1AG	1AG			1	
Volume	Liquid														10	
	Solid	120	500	250		120		500	500		600	500			5	
Preservatives		-	-	-		-		-	-		-	-			-	
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	Inc. Extract		TCLP Mct.	Metal	CN		HC			Inc. Extract	
Lionville Laboratory Use Only		OA24H	OA25X	OPCB		ODTRO OCRO		ITCLP	Mct①		ICRLO	Inorg①			Mct②	

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	001	B12MB7			S	8-13-01	1110
	002	8					1138
	003	7 tcp of 001			L		
	004	8 002					

Special Instructions: Soq Bol-103
Run Matrix QC
* See lab chron

DATE/REVISIONS:
Mct① 1. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi, Mo, Sn
Inorg① 2. ICNO2, ICNO3, INH3N, ICNTO, IPH,
3. ISED
Mct② 4. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V,
5. Zn, Hg (leachates)
6.

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. 4.4° °C

Relinquished by	Received by	Date	Time
FEDEX	Carla Hunt	8-16-01	9:40

Relinquished by	Received by	Date	Time
COMPOSITE		ORIGINAL	

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-05	Page 1 of 1

Collector: R Fahlberg	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.: ERC 96-036	Field Logbook No.: EL 1517-2 — COA JRCRA14114 ~~XL1013CHGR~~ RF 8-13-01	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA	Offsite Property No.: A010323	Bill of Lading/Air Bill No.: 4235 7954 - 6461	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 8/13/01. Collector not available to relinquish samples on 8/15/01 for shipment. RT 8-15-01

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	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. RT 8-15-01	
Preservation				Cool 4C	None	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	250mL	1000mL	
B12MB7	SOIL	8-13-01	1110	X	X	X	X	X	X	X	X		B12MB9
B12MB8	SOIL	8-13-01	1138	X	X	X	X	X	X	X	X		B12MC0

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Fahlberg / R. Fahlberg	8-13-01 1300	RF 2B	8-13-01 1300
RF 2B	8-15-01 0900	R Thore	8-15-01 0900
R Thore	8-15-01 0900	FEDEX	
FEDEX	8-16-01 9:40	Carlos Hernandez	8-16-01 9:40

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Aluminum, Calcium, 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-99; Isotopic Uranium; Tritium-H3~~ 8-15-01 RT

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

BHI-EE-011 (10/99)