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1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1491 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 17, 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

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion

Melissa C. Mannion
Program Manager

11/21/0

Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

SDG 7077
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1491

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B12V25	200 West	SOLID		R109045-01	B01-103	B01-103-10	08/30/01 11:30
B12V26	200 West	SOLID		R109045-02	B01-103	B01-103-10	08/30/01 13:30
Method Blank		SOLID		R109045-04	B01-103		
Lab Control Sample		SOLID		R109045-03	B01-103		
Duplicate (R109045-01)	200 West	SOLID		R109045-05	B01-103		08/30/01 11:30
Spike (R109045-01)	200 West	SOLID		R109045-06	B01-103		08/30/01 11:30

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 11/17/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

SDG 7077
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1491

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
7077	B01-103-10	B12V25	SOLID	94.8	1362 g		09/07/01	8	R109045-01	7077-001
		B12V26	SOLID	74.5	1503 g		09/07/01	8	R109045-02	7077-002
		Method Blank	SOLID						R109045-04	7077-004
		Lab Control Sample	SOLID						R109045-03	7077-003
		Duplicate (R109045-01)	SOLID	94.8	1362 g		09/07/01	8	R109045-05	7077-005
		Spike (R109045-01)	SOLID	94.8	1362 g		09/07/01	8	R109045-06	7077-006

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

SDG 7077
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1491

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	7008-101	5.0	2			1	1	1/1		
NP	SOLID	Neptunium in Soil	7008-101	5.0	2			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7008-101	5.0	2			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	7008-101	5.0	2			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	7008-101	5.0	2			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7008-101	10.0	2			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	7008-101	10.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7008-101	15.0	2			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	7008-101	10.0	2			1	1	1/1		
H	SOLID	Tritium in Soil	7008-101	10.0	2			1	1	1/1	1/1	
NI_L	SOLID	Nickel 63 in Soil	7008-101	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.

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

SDG 7077
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1491

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B12V25			R109045-01	7077-001	AM		10/30/01	11/17/01	MCM	Americium 241 in Soil
200 West		SOLID	08/30/01	7077-001	C		10/28/01	11/17/01	MCM	Carbon 14 in Soil
B01-103-10	B01-103		09/07/01	7077-001	GAM		11/01/01	11/17/01	MCM	Gamma Scan
				7077-001	H		10/27/01	11/17/01	MCM	Tritium in Soil
				7077-001	NI_L		10/23/01	11/17/01	MCM	Nickel 63 in Soil
				7077-001	NP		11/01/01	11/17/01	MCM	Neptunium in Soil
				7077-001	PU		10/30/01	11/17/01	MCM	Plutonium, Isotopic in Solids
				7077-001	SR		10/19/01	11/17/01	MCM	Total Strontium in Soil
				7077-001	TC		11/03/01	11/17/01	MCM	Technetium 99 in Soil
				7077-001	TH		10/23/01	11/17/01	MCM	Thorium, Isotopic in Soil
				7077-001	U		10/30/01	11/17/01	MCM	Uranium, Isotopic in Soil
B12V26			R109045-02	7077-002	AM		10/30/01	11/17/01	MCM	Americium 241 in Soil
200 West		SOLID	08/30/01	7077-002	C		10/28/01	11/17/01	MCM	Carbon 14 in Soil
B01-103-10	B01-103		09/07/01	7077-002	GAM		11/07/01	11/17/01	MCM	Gamma Scan
				7077-002	H		10/27/01	11/17/01	MCM	Tritium in Soil
				7077-002	NI_L		10/23/01	11/17/01	MCM	Nickel 63 in Soil
				7077-002	NP		10/31/01	11/17/01	MCM	Neptunium in Soil
				7077-002	PU		10/30/01	11/17/01	MCM	Plutonium, Isotopic in Solids
				7077-002	SR		10/19/01	11/17/01	MCM	Total Strontium in Soil
				7077-002	TC		11/02/01	11/17/01	MCM	Technetium 99 in Soil
				7077-002	TH		10/23/01	11/17/01	MCM	Thorium, Isotopic in Soil
				7077-002	U		10/31/01	11/17/01	MCM	Uranium, Isotopic in Soil
Method Blank			R109045-04	7077-004	AM		10/30/01	11/17/01	MCM	Americium 241 in Soil
		SOLID		7077-004	C		10/27/01	11/17/01	MCM	Carbon 14 in Soil
	B01-103			7077-004	GAM		11/01/01	11/17/01	MCM	Gamma Scan
				7077-004	H		10/27/01	11/17/01	MCM	Tritium in Soil
				7077-004	NI_L		10/23/01	11/17/01	MCM	Nickel 63 in Soil
				7077-004	NP		10/31/01	11/17/01	MCM	Neptunium in Soil
				7077-004	PU		10/30/01	11/17/01	MCM	Plutonium, Isotopic in Solids
				7077-004	SR		10/19/01	11/17/01	MCM	Total Strontium in Soil
				7077-004	TC		11/03/01	11/17/01	MCM	Technetium 99 in Soil
				7077-004	TH		10/23/01	11/17/01	MCM	Thorium, Isotopic in Soil
				7077-004	U		10/31/01	11/17/01	MCM	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

SDG 7077
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1491

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			R109045-03	7077-003	AM		10/30/01	11/17/01	MCM	Americium 241 in Soil
		SOLID		7077-003	C		10/28/01	11/17/01	MCM	Carbon 14 in Soil
	B01-103			7077-003	GAM		11/02/01	11/17/01	MCM	Gamma Scan
				7077-003	H		10/27/01	11/17/01	MCM	Tritium in Soil
				7077-003	NI_L		10/23/01	11/17/01	MCM	Nickel 63 in Soil
				7077-003	NP		10/31/01	11/17/01	MCM	Neptunium in Soil
				7077-003	PU		10/30/01	11/17/01	MCM	Plutonium, Isotopic in Solids
				7077-003	SR		10/19/01	11/17/01	MCM	Total Strontium in Soil
				7077-003	TC		11/06/01	11/17/01	MCM	Technetium 99 in Soil
				7077-003	TH		10/23/01	11/17/01	MCM	Thorium, Isotopic in Soil
				7077-003	U		10/31/01	11/17/01	MCM	Uranium, Isotopic in Soil
Duplicate (R109045-01)			R109045-05	7077-005	AM		11/02/01	11/17/01	MCM	Americium 241 in Soil
200 West		SOLID	08/30/01	7077-005	C		10/28/01	11/17/01	MCM	Carbon 14 in Soil
	B01-103		09/07/01	7077-005	GAM		11/01/01	11/17/01	MCM	Gamma Scan
				7077-005	H		10/27/01	11/17/01	MCM	Tritium in Soil
				7077-005	NI_L		10/24/01	11/17/01	MCM	Nickel 63 in Soil
				7077-005	NP		10/31/01	11/17/01	MCM	Neptunium in Soil
				7077-005	PU		10/30/01	11/17/01	MCM	Plutonium, Isotopic in Solids
				7077-005	SR		10/19/01	11/17/01	MCM	Total Strontium in Soil
				7077-005	TC		11/05/01	11/17/01	MCM	Technetium 99 in Soil
				7077-005	TH		10/23/01	11/17/01	MCM	Thorium, Isotopic in Soil
				7077-005	U		10/31/01	11/17/01	MCM	Uranium, Isotopic in Soil
Spike (R109045-01)			R109045-06	7077-006	H		10/27/01	11/17/01	MCM	Tritium in Soil
200 West		SOLID	08/30/01							
	B01-103		09/07/01							

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

SDG 7077
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1491

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

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

R109045-04 **Method Blank**

METHOD BLANK

SDG	7077	Client/Case no	Hanford	SDG H1491	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R109045-04	Client sample id	Method Blank		
Dept sample id	7077-004	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	-0.018	0.16	0.28	400	U	H
Carbon 14	14762-75-5	-0.785	3.0	5.0	50	U	C
Nickel 63	13981-37-8	0.589	1.2	1.9	30	U	NI_L
Total Strontium	SR-RAD	-0.103	0.12	0.26	1.0	U	SR
Americium 241	14596-10-2	0.004	0.038	0.050	1.0	U	AM
Technetium 99	14133-76-7	0.129	0.19	0.57	15	U	TC
Thorium 228	14274-82-9	0.476	0.43	0.66		U	TH
Thorium 230	14269-63-7	0.086	0.34	0.41	1.0	U	TH
Thorium 232	TH-232	0.043	0.086	0.33	1.0	U	TH
Uranium 233	U-233/234	-0.033	0.066	0.25	1.0	U	U
Uranium 235	15117-96-1	0.040	0.080	0.31	1.0	U	U
Uranium 238	U-238	0	0.066	0.25	1.0	U	U
Neptunium 237	13994-20-2	-0.038	0.075	0.29	1.0	U	NP
Plutonium 238	13981-16-3	-0.023	0.046	0.17	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.046	0.17	1.0	U	PU
Potassium 40	13966-00-2	U		0.084		U	GAM
Cobalt 60	10198-40-0	U		0.005	0.050	U	GAM
Cesium 137	10045-97-3	U		0.006	0.10	U	GAM
Radium 226	13982-63-3	U		0.012	0.10	U	GAM
Radium 228	15262-20-1	U		0.022	0.20	U	GAM
Europium 152	14683-23-9	U		0.014	0.10	U	GAM
Europium 154	15585-10-1	U		0.019	0.10	U	GAM
Europium 155	14391-16-3	U		0.013	0.10	U	GAM
Thorium 228	14274-82-9	U		0.008		U	GAM
Thorium 232	TH-232	U		0.022		U	GAM
Uranium 235	15117-96-1	U		0.019		U	GAM
Uranium 238	U-238	U		0.76		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
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BLANK, cont.

SDG	7077	Client/Case no	Hanford	SDG H1491
Contact	Melissa C. Mannion	Contract	No. 630	
Lab sample id	R109045-04	Client sample id	Method Blank	
Dept sample id	7077-004	Material/Matrix		SOLID
		SAF No	B01-103	

QC-BLANK 39960

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

SAMPLE DELIVERY GROUP H1491

R109045-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7077
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1491
Case no No. 630

Lab sample id R109045-03
Dept sample id 7077-003

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	24.4	0.57	0.28	400	J	H	24.6	0.98	99	84-116	80-120
Carbon 14	10600	210	31	50		C	11300	450	94	84-116	80-120
Nickel 63	258	4.4	1.9	30		NI_L	264	11	98	84-116	80-120
Total Strontium	23.8	0.86	0.23	1.0		SR	22.9	0.92	104	82-118	80-120
Americium 241	20.5	0.67	0.066	1.0		AM	21.0	0.84	98	89-111	80-120
Technetium 99	138	1.3	0.23	15		TC	131	5.2	105	83-117	80-120
Thorium 230	47.1	3.5	0.45	1.0		TH	44.8	1.8	105	85-115	80-120
Uranium 233	18.7	2.3	1.1	1.0		U	19.3	0.77	97	80-120	80-120
Uranium 235	15.0	2.0	0.33	1.0		U	15.7	0.63	96	79-121	80-120
Uranium 238	20.3	2.4	1.1	1.0		U	21.0	0.84	97	80-120	80-120
Neptunium 237	22.7	2.0	0.13	1.0		NP	23.8	0.95	95	84-116	80-120
Plutonium 238	27.0	2.7	0.26	1.0		PU	27.2	1.1	99	82-118	80-120
Plutonium 239/240	28.8	2.8	0.21	1.0		PU	29.0	1.2	99	83-117	80-120
Cobalt 60	0.265	0.028	0.019	0.050		GAM	0.271	0.011	98	72-128	80-120
Cesium 137	0.304	0.025	0.020	0.10		GAM	0.311	0.012	98	74-126	80-120

200 Area RCRA Drilling Waste Desig.

QC-LCS 39959

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

R109045-05 B12V25

DUPLICATE

SDG	7077			Client/Case no	Hanford SDG H1491
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R109045-05	Lab sample id	R109045-01	Client sample id	B12V25
Dept sample id	7077-005	Dept sample id	7077-001	Location/Matrix	200 West SOLID
		Received	09/07/01	Collected/Weight	08/30/01 11:30 1362 g
% solids	94.8	% solids	94.8	Custody/SAF No	B01-103-10 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	-0.022	0.051	0.089	400	U	H	0.038	0.056	0.092	U	-	
Carbon 14	-0.888	2.6	4.4	50	U	C	0.062	2.8	4.8	U	-	
Nickel 63	-0.511	1.2	2.1	30	U	NI_L	-0.440	1.2	2.1	U	-	
Total Strontium	-0.054	0.12	0.25	1.0	U	SR	-0.024	0.13	0.24	U	-	
Americium 241	0.024	0.097	0.18	1.0	U	AM	0.003	0.027	0.039	U	-	
Technetium 99	0.184	0.15	0.31	15	U	TC	0.160	0.28	0.54	U	-	
Thorium 228	0.846	0.51	0.65			TH	0.974	0.44	0.53		14	112
Thorium 230	-0.042	0.25	0.47	1.0	U	TH	0.219	0.31	0.45	U	-	
Thorium 232	0.758	0.42	0.32	1.0	J	TH	0.844	0.32	0.24	J	11	99
Uranium 233	0.553	0.094	0.061	1.0	J	U	0.520	0.078	0.021	J	6	36
Uranium 235	0.048	0.032	0.038	1.0	J	U	0.007	0.013	0.025	U	149	189
Uranium 238	0.493	0.087	0.041	1.0	J	U	0.464	0.072	0.021	J	6	37
Neptunium 237	0.045	0.18	0.34	1.0	U	NP	0	0.072	0.11	U	-	
Plutonium 238	0	0.052	0.20	1.0	U	PU	0	0.043	0.17	U	-	
Plutonium 239/240	0.026	0.052	0.20	1.0	U	PU	-0.022	0.043	0.17	U	-	
Potassium 40	12.7	0.53	0.24			GAM	12.8	0.30	0.14		1	33
Cobalt 60	U		0.024	0.050	U	GAM	U		0.013	U	-	
Cesium 137	U		0.023	0.10	U	GAM	U		0.013	U	-	
Radium 226	0.509	0.047	0.042	0.10		GAM	0.467	0.026	0.025		9	36
Radium 228	0.731	0.10	0.098	0.20		GAM	0.704	0.064	0.061		4	40
Europium 152	U		0.055	0.10	U	GAM	U		0.030	U	-	
Europium 154	U		0.076	0.10	U	GAM	U		0.047	U	-	
Europium 155	U		0.077	0.10	U	GAM	U		0.053	U	-	
Thorium 228	0.634	0.032	0.032			GAM	0.650	0.018	0.017		2	33
Thorium 232	0.731	0.10	0.098			GAM	0.704	0.064	0.061		4	40
Uranium 235	U		0.086		U	GAM	U		0.046	U	-	
Uranium 238	U		3.1		U	GAM	U		1.7	U	-	
Americium 241	U		0.17		U	GAM	U		0.093	U	-	

200 Area RCRA Drilling Waste Desig.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/17/01

DUPLICATE, cont.

SDG	7077			Client/Case no	Hanford SDG H1491
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R109045-05	Lab sample id	R109045-01	Client sample id	B12V25
Dept sample id	7077-005	Dept sample id	7077-001	Location/Matrix	200 West SOLID
		Received	09/07/01	Collected/Weight	08/30/01 11:30 1362 g
% solids	94.8	% solids	94.8	Custody/SAF No	B01-103-10 B01-103

QC-DUP#1 39961

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/17/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

R109045-06 B12V25

MATRIX SPIKE

SDG	7077			Client/Case no	Hanford SDG H1491
Contact	Melissa C. Mannion			Case no	No. 630
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R109045-06	Lab sample id	R109045-01	Client sample id	B12V25
Dept sample id	7077-006	Dept sample id	7077-001	Location/Matrix	200 West SOLID
		Received	09/07/01	Collected/Weight	08/30/01 11:30 1362 g
% solids	94.8	% solids	94.8	Custody/SAF No	B01-103-10 B01-103

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	49.5	0.50	0.10	400	J	H	57.0	2.3	0.038	0.056	87	86-114	60-140

200 Area RCRA Drilling Waste Desig.

QC-MS#1 39962

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	11/17/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

R109045-01 B12V25

DATA SHEET

SDG	7077	Client/Case no	Hanford	SDG H1491
Contact	Melissa C. Mannion	Contract	No. 630	
Lab sample id	R109045-01	Client sample id	B12V25	
Dept sample id	7077-001	Location/Matrix	200 West	SOLID
Received	09/07/01	Collected/Weight	08/30/01 11:30	1362 g
% solids	94.8	Custody/SAF No	B01-103-10	B01-103

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.038	0.056	0.092	400	U	H
Carbon 14	14762-75-5	0.062	2.8	4.8	50	U	C
Nickel 63	13981-37-8	-0.440	1.2	2.1	30	U	NI_L
Total Strontium	SR-RAD	-0.024	0.13	0.24	1.0	U	SR
Americium 241	14596-10-2	0.003	0.027	0.039	1.0	U	AM
Technetium 99	14133-76-7	0.160	0.28	0.54	15	U	TC
Thorium 228	14274-82-9	0.974	0.44	0.53			TH
Thorium 230	14269-63-7	0.219	0.31	0.45	1.0	U	TH
Thorium 232	TH-232	0.844	0.32	0.24	1.0	J	TH
Uranium 233	U-233/234	0.520	0.078	0.021	1.0	J	U
Uranium 235	15117-96-1	0.007	0.013	0.025	1.0	U	U
Uranium 238	U-238	0.464	0.072	0.021	1.0	J	U
Neptunium 237	13994-20-2	0	0.072	0.11	1.0	U	NP
Plutonium 238	13981-16-3	0	0.043	0.17	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.022	0.043	0.17	1.0	U	PU
Potassium 40	13966-00-2	12.8	0.30	0.14			GAM
Cobalt 60	10198-40-0	U		0.013	0.050	U	GAM
Cesium 137	10045-97-3	U		0.013	0.10	U	GAM
Radium 226	13982-63-3	0.467	0.026	0.025	0.10		GAM
Radium 228	15262-20-1	0.704	0.064	0.061	0.20		GAM
Europium 152	14683-23-9	U		0.030	0.10	U	GAM
Europium 154	15585-10-1	U		0.047	0.10	U	GAM
Europium 155	14391-16-3	U		0.053	0.10	U	GAM
Thorium 228	14274-82-9	0.650	0.018	0.017			GAM
Thorium 232	TH-232	0.704	0.064	0.061			GAM
Uranium 235	15117-96-1	U		0.046		U	GAM
Uranium 238	U-238	U		1.7		U	GAM
Americium 241	14596-10-2	U		0.093		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	11/17/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

R109045-02 B12V26

DATA SHEET

SDG	7077	Client/Case no	Hanford	SDG H1491	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R109045-02	Client sample id	B12V26		
Dept sample id	7077-002	Location/Matrix	200 West	SOLID	
Received	09/07/01	Collected/Weight	08/30/01 13:30	1503 g	
% solids	74.5	Custody/SAF No	B01-103-10	B01-103	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.048	0.073	0.12	400	U	H
Carbon 14	14762-75-5	-0.249	2.8	4.8	50	U	C
Nickel 63	13981-37-8	-0.208	1.3	2.2	30	U	NI_L
Total Strontium	SR-RAD	0.046	0.15	0.24	1.0	U	SR
Americium 241	14596-10-2	0.011	0.027	0.036	1.0	U	AM
Technetium 99	14133-76-7	0.023	0.18	0.56	15	U	TC
Thorium 228	14274-82-9	0.530	0.40	0.56		U	TH
Thorium 230	14269-63-7	0.099	0.33	0.47	1.0	U	TH
Thorium 232	TH-232	0.528	0.27	0.25	1.0	J	TH
Uranium 233	U-233/234	0.198	0.15	0.19	1.0	J	U
Uranium 235	15117-96-1	0.060	0.060	0.23	1.0	U	U
Uranium 238	U-238	0.272	0.15	0.19	1.0	J	U
Neptunium 237	13994-20-2	0	0.064	0.096	1.0	U	NP
Plutonium 238	13981-16-3	0.023	0.093	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	10.2	0.65	0.43			GAM
Cobalt 60	10198-40-0	U		0.034	0.050	U	GAM
Cesium 137	10045-97-3	U		0.026	0.10	U	GAM
Radium 226	13982-63-3	0.309	0.058	0.059	0.10		GAM
Radium 228	15262-20-1	0.558	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		0.10	0.10	U	GAM
Europium 155	14391-16-3	U		0.077	0.10	U	GAM
Thorium 228	14274-82-9	0.502	0.033	0.034			GAM
Thorium 232	TH-232	0.558	0.14	0.14			GAM
Uranium 235	15117-96-1	U		0.099		U	GAM
Uranium 238	U-238	U		3.5		U	GAM
Americium 241	14596-10-2	U		0.097		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	11/17/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

Test AM Matrix SOLID
SDG 7077
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1491

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 7008-101						
B12V25	R109045-01			7077-001	U	
B12V26	R109045-02			7077-002	U	
BLK (QC ID=39960)	R109045-04			7077-004	U	
LCS (QC ID=39959)	R109045-03			7077-003	ok	
Duplicate (R109045-01)	R109045-05			7077-005	-	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 7008-101 2σ prep error 5.0 % Reference Lab Notebook 7008 pg. 101																
B12V25	R109045-01			0.039	0.500			93		992			61	10/23/01	10/30	SS-031
B12V26	R109045-02			0.036	0.500			93		992			61	10/23/01	10/30	SS-032
BLK (QC ID=39960)	R109045-04			0.050	0.500			62		995				10/23/01	10/30	SS-042
LCS (QC ID=39959)	R109045-03			0.066	0.500			82		995				10/23/01	10/30	SS-041
Duplicate (R109045-01) (QC ID=39961)	R109045-05			0.18	0.500			93		103			64	10/23/01	11/02	SS-042
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 0.074 ± 0.12
YIELD 85 ± 27

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/17/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

Test NP Matrix SOLID
SDG 7077
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1491

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7008-101						
B12V25	R109045-01			7077-001	U	
B12V26	R109045-02			7077-002	U	
BLK (QC ID=39960)	R109045-04			7077-004	U	
LCS (QC ID=39959)	R109045-03			7077-003	ok	
Duplicate (R109045-01)	R109045-05			7077-005	-	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 7008-101 2σ prep error 5.0 % Reference Lab Notebook 7008 pg. 101																
B12V25	R109045-01			0.11	0.500			60		106			63	10/25/01	11/01	SS-047
B12V26	R109045-02			0.096	0.500			61		118			62	10/25/01	10/31	SS-047
BLK (QC ID=39960)	R109045-04			0.29	0.500			53		118				10/25/01	10/31	SS-049
LCS (QC ID=39959)	R109045-03			0.13	0.500			46		118				10/25/01	10/31	SS-048
Duplicate (R109045-01) (QC ID=39961)	R109045-05			0.34	0.500			42		118			62	10/25/01	10/31	SS-050
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	0.19	±	0.23
	YIELD	52	±	17

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/17/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

Test PU Matrix SOLID
SDG 7077
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1491

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 7008-101								
B12V25	R109045-01			7077-001	U		U	
B12V26	R109045-02			7077-002	U		U	
BLK (QC ID=39960)	R109045-04			7077-004	U		U	
LCS (QC ID=39959)	R109045-03			7077-003	ok		ok	
Duplicate (R109045-01)	R109045-05			7077-005	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	
200 Area RCRA Drilling Waste Desig.								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-101	2σ prep error 5.0 %			Reference Lab Notebook 7008 pg. 101												
B12V25	R109045-01			0.17	0.500			98		117			61	10/26/01	10/30	SS-031
B12V26	R109045-02			0.18	0.500			90		117			61	10/26/01	10/30	SS-032
BLK (QC ID=39960)	R109045-04			0.17	0.500			86		118				10/26/01	10/30	SS-042
LCS (QC ID=39959)	R109045-03			0.26	0.500			71		118				10/26/01	10/30	SS-041
Duplicate (R109045-01) (QC ID=39961)	R109045-05			0.20	0.500			75		117			61	10/26/01	10/30	SS-043
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 0.20 ± 0.076
YIELD 84 ± 22

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/17/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

Test TH Matrix SOLID
SDG 7077
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1491

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 7008-101							
B12V25	R109045-01			7077-001	0.974	U	0.844 J
B12V26	R109045-02			7077-002	U	U	0.528 J
BLK (QC ID=39960)	R109045-04			7077-004	U	U	U
LCS (QC ID=39959)	R109045-03			7077-003		ok	
Duplicate (R109045-01)	R109045-05			7077-005	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 7008-101 2σ prep error 5.0 % Reference Lab Notebook 7008 pg. 101																
B12V25	R109045-01			0.45	0.250			89		221			54	10/21/01	10/23	SS-019
B12V26	R109045-02			0.47	0.250			87		221			54	10/21/01	10/23	SS-021
BLK (QC ID=39960)	R109045-04			0.41	0.250			85		168				10/21/01	10/23	SS-019
LCS (QC ID=39959)	R109045-03			0.45	0.250			87		222				10/21/01	10/23	SS-024
Duplicate (R109045-01) (QC ID=39961)	R109045-05			0.47	0.250			90		168			54	10/21/01	10/23	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 0.45 ± 0.049
YIELD 88 ± 4

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/17/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

Test U Matrix SOLID
SDG 7077
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1491

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 7008-101											
B12V25	R109045-01			7077-001	0.520 J	U	0.464 J	112	24	2	3
B12V26	R109045-02			7077-002	0.198 J	U	0.272 J	73	68	22	25
BLK (QC ID=39960)	R109045-04			7077-004	U	U	U				
LCS (QC ID=39959)	R109045-03			7077-003	ok	ok	ok				
Duplicate (R109045-01)	R109045-05			7077-005	ok J	ok J	ok J	112	27	10	7
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
200 Area RCRA Drilling Waste Desig.								Averages 99		11	

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 7008-101 2σ prep error 5.0 % Reference Lab Notebook 7008 pg. 101																
B12V25	R109045-01			0.025	0.500			83		992			61	10/19/01	10/30	SS-033
B12V26	R109045-02			0.23	0.500			86		106			62	10/19/01	10/31	SS-033
BLK (QC ID=39960)	R109045-04			0.31	0.500			84		105				10/19/01	10/31	SS-024
LCS (QC ID=39959)	R109045-03			1.1	0.500			83		105				10/19/01	10/31	SS-021
Duplicate (R109045-01) (QC ID=39961)	R109045-05			0.061	0.500			84		1122			62	10/19/01	10/31	SS-021
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 0.35 ± 0.88
YIELD 84 ± 2

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/17/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

Test SR Matrix SOLID
SDG 7077
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1491

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 7008-101						
B12V25	R109045-01			7077-001	U	
B12V26	R109045-02			7077-002	U	
BLK (QC ID=39960)	R109045-04			7077-004	U	
LCS (QC ID=39959)	R109045-03			7077-003	ok	
Duplicate (R109045-01)	R109045-05			7077-005	-	U
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 7008-101	2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 101															
B12V25	R109045-01			0.24	1.00			82		200			50	10/19/01	10/19	GRB-218
B12V26	R109045-02			0.24	1.00			87		200			50	10/19/01	10/19	GRB-219
BLK (QC ID=39960)	R109045-04			0.26	1.00			78		100				10/19/01	10/19	GRB-207
LCS (QC ID=39959)	R109045-03			0.23	1.00			82		92				10/19/01	10/19	GRB-224
Duplicate (R109045-01) (QC ID=39961)	R109045-05			0.25	1.00			89		100			50	10/19/01	10/19	GRB-208
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	0.24	±	0.023
	YIELD	84	±	9

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/17/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

Test TC Matrix SOLID
SDG 7077
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1491

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 7008-101						
B12V25	R109045-01			7077-001	U	
B12V26	R109045-02			7077-002	U	
BLK (QC ID=39960)	R109045-04			7077-004	U	
LCS (QC ID=39959)	R109045-03			7077-003	ok	
Duplicate (R109045-01)	R109045-05			7077-005	-	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 7008-101	2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 101															
B12V25	R109045-01			0.54	1.06			89		50			65	10/30/01	11/03	GRB-218
B12V26	R109045-02			0.56	1.04			88		50			64	10/30/01	11/02	GRB-217
BLK (QC ID=39960)	R109045-04			0.57	1.00			89		50				10/30/01	11/03	GRB-220
LCS (QC ID=39959)	R109045-03			0.23	1.00			90		300				10/30/01	11/06	GRB-204
Duplicate (R109045-01) (QC ID=39961)	R109045-05			0.31	1.06			83		200			67	10/30/01	11/05	GRB-208
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 0.44 ± 0.32
YIELD 88 ± 6

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/17/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

Test GAM Matrix SOLID
SDG 7077
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1491

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7008-101								
B12V25	R109045-01			7077-001	U		U	
B12V26	R109045-02			7077-002	U		U	
BLK (QC ID=39960)	R109045-04			7077-004	U		U	
LCS (QC ID=39959)	R109045-03			7077-003	ok		ok	
Duplicate (R109045-01)	R109045-05			7077-005	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.10	
200 Area RCRA Drilling Waste Desig.								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7008-101	2σ prep error 15.0 % Reference Lab Notebook 7008 pg. 101															
B12V25	R109045-01			0.040	848					684			63	10/19/01	11/01	MB,05,00
B12V26	R109045-02			0.082	878					209			69	10/19/01	11/07	02,03,00
BLK (QC ID=39960)	R109045-04			0.012	848					204				10/19/01	11/01	01,04,00
LCS (QC ID=39959)	R109045-03			0.019	848					341				10/19/01	11/02	01,03,00
Duplicate (R109045-01) (QC ID=39961)	R109045-05			0.074	848					208			63	10/19/01	11/01	MB,05,00
Nominal values and limits from method				0.050	848					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 0.045 ± 0.063
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/17/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

Test C Matrix SOLID
SDG 7077
Contact Melissa C. Mannion

METHOD SUMMARY

CARBON 14 IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1491

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 7008-101						
B12V25	R109045-01			7077-001	U	
B12V26	R109045-02			7077-002	U	
BLK (QC ID=39960)	R109045-04			7077-004	U	
LCS (QC ID=39959)	R109045-03			7077-003	ok	
Duplicate (R109045-01)	R109045-05			7077-005	-	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 7008-101	2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 101															
B12V25	R109045-01			4.8	0.215			100		100			59	10/26/01	10/28	LSC-004
B12V26	R109045-02			4.8	0.213			100		100			59	10/26/01	10/28	LSC-004
BLK (QC ID=39960)	R109045-04			5.0	0.200			100		100				10/26/01	10/27	LSC-004
LCS (QC ID=39959)	R109045-03			31	0.200			100		3				10/26/01	10/28	LSC-004
Duplicate (R109045-01) (QC ID=39961)	R109045-05			4.4	0.231			100		100			59	10/26/01	10/28	LSC-004
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 10 ± 23
YIELD 100 ± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/17/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

Test H Matrix SOLID
SDG 7077
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1491

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 7008-101						
B12V25	R109045-01			7077-001	U	
B12V26	R109045-02			7077-002	U	
BLK (QC ID=39960)	R109045-04			7077-004	U	
LCS (QC ID=39959)	R109045-03			7077-003	ok	J
Duplicate (R109045-01)	R109045-05			7077-005	-	U
Spike (R109045-01)	R109045-06			7077-006	ok	J
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 7008-101 2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 101																
B12V25	R109045-01			0.092	20.9			100		100			58	10/25/01	10/27	LSC-004
B12V26	R109045-02			0.12	20.2			79		100			58	10/25/01	10/27	LSC-004
BLK (QC ID=39960)	R109045-04			0.28	20.0			33		100				10/25/01	10/27	LSC-004
LCS (QC ID=39959)	R109045-03			0.28	20.0			33		100				10/25/01	10/27	LSC-004
Duplicate (R109045-01) (QC ID=39961)	R109045-05			0.089	20.0			100		100			58	10/25/01	10/27	LSC-004
Spike (R109045-01) (QC ID=39962)	R109045-06			0.10	20.0			100		80			58	10/25/01	10/27	LSC-004
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 FOR 6 SAMPLES
MDA 0.16 ± 0.19
YIELD 74 ± 66

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/17/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1491

Test NI L Matrix SOLID
SDG 7077
Contact Melissa C. Mannion

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1491

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 7008-101						
B12V25	R109045-01			7077-001	U	
B12V26	R109045-02			7077-002	U	
BLK (QC ID=39960)	R109045-04			7077-004	U	
LCS (QC ID=39959)	R109045-03			7077-003	ok	
Duplicate (R109045-01)	R109045-05			7077-005	-	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 7008-101	2σ prep error 10.0 % Reference Lab Notebook 7008 pg. 101															
B12V25	R109045-01			2.1	0.500			85		100			54	10/22/01	10/23	LSC-007
B12V26	R109045-02			2.2	0.500			83		100			54	10/22/01	10/23	LSC-007
BLK (QC ID=39960)	R109045-04			1.9	0.500			93		100				10/22/01	10/23	LSC-007
LCS (QC ID=39959)	R109045-03			1.9	0.500			95		100				10/22/01	10/23	LSC-007
Duplicate (R109045-01) (QC ID=39961)	R109045-05			2.1	0.500			84		100			55	10/22/01	10/24	LSC-007
Nominal values and limits from method				30	0.500			30-105		50			180			

PROCEDURES	REFERENCE	N163_LSC
	CP-060	Soil Preparation, rev 3
	CP-431	Nickel-63 Purification, rev 4

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	2.0	±	0.27
	YIELD	88	±	11

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/17/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-10	Page 1 of 1

Collector: WATSON	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 WEST DSW 08/04/01 H1491 (7077)	SAF No.: B01-103	Air Quality ☐
Ice Chest No.: AHART 9.6.01 SM1-510	Field Logbook No.: EL-1551 — COA: JRCRA14114	Method of Shipment: Fed EX	
Shipped To: ~~TMDERBERA~~ DSW 08/30/01	Offsite Property No.: ~~N/A~~ DSW 08/30/01 A 010275	Bill of Lading/Air Bill No.: ~~N/A~~ DSW 08/30/01 4235795 4 — 7154 7148 RT 9.6.01	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 8 13 01.
Collector not available to relinquish samples on 9 16 01 for shipment.
RT 9.6.01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	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	60mL	120mL	120mL	250mL	500mL	500mL	500mL	500mL	1000mL			
	Chromium Hex - 7196	See item (1) in Special Instructions.	VOA - 8260A (TCL)	PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.	See item (6) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time									
✓ B12V25	SOIL	08/30/01	1130							X	B12V23	
✓ B12V26	SOIL	08/30/01	1300							X	B12V24	

DSW 08-30-01 — TIE-TO

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
DSWATSON	08/30/01 1440	~~Received By~~ DSW 08/30/01 STORED IN REF. 2C	08/30/01 1440
Removed from Ref 2C 3728	0900 9-6-01	R.T. R Thorer	0900 9-6-01
R.T. R Thorer	0900 9-6-01	FEDEX	9-6
Fed Ex	9-7-01 1000	James Lind	~~9-10-01~~ 22 ~~9-7-01~~ 800
		JLind	~~9-10-01~~ 9-7-01 1000

SPECIAL INSTRUCTIONS

** All requests for Cr VI at the Severn Trent Laboratory, MUST BE routed to Richland
** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 will not be met

(1) ~~Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}~~
(2) ~~IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030~~
(3) ~~ICP Metals - 6010A (TAL) {Aluminum, Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}~~
(4) ~~Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) {Tributyl phosphate}~~
(5) ~~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~~ DSW 08/30/01
(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}

Matrix *
S=Soil, SD=Sediment, SO=Solid, S=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

AM-241, CARBON-14, NEPTUNIUM-237, NICKEL-63, STRONTIUM-9990, TOTAL Sr, TECHNETIUM-99, TRITIUM-H_3, ISTOPIC URANIUM.

BHI-EE-011 (10/99)

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 9-7-01 1000

CoC No. 801-103-10

Container I.D. No. SML-510 Requested TAT (Days) 45 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [✓] Dry [ ]
6. Number of samples in shipping container: 2
7. 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: 9-7-01 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 _____

ORIGINAL
Payes

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

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

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

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 12/18/01
Task Manager (Print/Sign Name) Date

OCT 2001
RECEIVED

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B01-103 H1491

DATE RECEIVED: 09/08/01 LVL LOT # :0109L798

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12V25	001	S	01LE1062	08/30/01	09/11/01	09/14/01
B12V25	001 MS	S	01LE1062	08/30/01	09/11/01	09/17/01
B12V25	001 MSD	S	01LE1062	08/30/01	09/11/01	09/17/01
B12V26	002	S	01LE1062	08/30/01	09/11/01	09/14/01

LAB QC:

SBLKFE	MB1	S	01LE1062	N/A	09/11/01	09/14/01
SBLKFE	MB1 BS	S	01LE1062	N/A	09/11/01	09/14/01

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-103
LVL #: 0109L798
SDG/SAF #: H1491/B01-103

W.O. #: 11343-606-001-9999-00
Date Received: 09-08-2001

SEMIVOLATILE

Two (2) soil samples were collected on 08-30-2001.

The samples and their associated QC samples were extracted on 09-11-2001 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 09-14,17-2001.

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. Samples were extracted and analyzed within required holding times.
3. Non-target compounds were detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. One (1) of twenty-two (22) matrix spike recoveries was within EPA QC limits.
6. All blank spike recoveries were within 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

9/25/01
Date

som\gorup\data\bna\tnu-hanford-0109-798.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 BNA DATA

DATA QUALIFIERS

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

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

PA - Peak Assignment: quantitation report was changed to reflect correct peak assignment.

RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.

SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.

CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.

PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

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Lionville Laboratory, Inc.
Semivolatiles by GC/MS, Special List

RFW Batch Number: 0109L798 Client: THUHANFORD B01-103 N1491 Work Order: 11343606001 Report Date: 12/12/01 07:33 Page: 1a

	Cust ID:	B12V25		B12V25		B12V25		B12V26		SBLKFE		SBLKFE BS	
Sample Information	RFW#:	001		001 MS		001 MSD		002		01LK1062-MB1		01LK1062-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	83	%	90	%	75	%	55	%	98	%	80	%
	2-Fluorobiphenyl	78	%	90	%	78	%	56	%	94	%	79	%
	p-Terphenyl-d14	86	%	103	%	88	%	67	%	109	%	89	%
	Phenol-d5	73	%	77	%	63	%	48	%	86	%	70	%
	2-Fluorophenol	69	%	73	%	60	%	43	%	81	%	66	%
	2,4,6-Tribromophenol	71	%	89	%	79	%	52	%	87	%	75	%
Phenol		350	U	70	%	59	%	470	U	330	U	64	%
bis(2-Chloroethyl)ether		350	U	350	U	350	U	470	U	330	U	330	U
2-Chlorophenol		350	U	75	%	64	%	470	U	330	U	69	%
1,3-Dichlorobenzene		350	U	350	U	350	U	470	U	330	U	330	U
1,4-Dichlorobenzene		350	U	79	%	67	%	470	U	330	U	71	%
1,2-Dichlorobenzene		350	U	350	U	350	U	470	U	330	U	330	U
2-Methylphenol		350	U	350	U	350	U	470	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		350	U	350	U	350	U	470	U	330	U	330	U
3- and/or 4-Methylphenol		350	U	350	U	350	U	470	U	330	U	330	U
N-Nitroso-Di-n-propylamine		350	U	93	%	78	%	470	U	330	U	89	%
Hexachloroethane		350	U	350	U	350	U	470	U	330	U	330	U
Nitrobenzene		350	U	350	U	350	U	470	U	330	U	330	U
Isophorone		350	U	350	U	350	U	470	U	330	U	330	U
2-Nitrophenol		350	U	350	U	350	U	470	U	330	U	330	U
2,4-Dimethylphenol		350	U	350	U	350	U	470	U	330	U	330	U
bis(2-Chloroethoxy)methane		350	U	350	U	350	U	470	U	330	U	330	U
2,4-Dichlorophenol		350	U	350	U	350	U	470	U	330	U	330	U
1,2,4-Trichlorobenzene		350	U	82	%	75	%	470	U	330	U	72	%
Naphthalene		350	U	350	U	350	U	470	U	330	U	330	U
4-Chloroaniline		350	U	350	U	350	U	470	U	330	U	330	U
Hexachlorobutadiene		350	U	350	U	350	U	470	U	330	U	330	U
4-Chloro-3-methylphenol		350	U	81	%	71	%	470	U	330	U	72	%
2-Methylnaphthalene		350	U	350	U	350	U	470	U	330	U	330	U
Hexachlorocyclopentadiene		350	U	350	U	350	U	470	U	330	U	330	U
2,4,6-Trichlorophenol		350	U	350	U	350	U	470	U	330	U	330	U
2,4,5-Trichlorophenol		870	U	870	U	870	U	1200	U	830	U	830	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0109L798 Client: TMUHANFORD B01-103 H1491 Work Order: 11343606001 Page: 1b

Cust ID:	B12V25		B12V25		B12V25		B12V26		SBLKFE		SBLKFE BS	
RFW#:	001		001 MS		001 MSD		002		01LE1062-MB1		01LE1062-MB1	
2-Chloronaphthalene	350	U	350	U	350	U	470	U	330	U	330	U
2-Nitroaniline	870	U	870	U	870	U	1200	U	830	U	830	U
Dimethylphthalate	350	U	350	U	350	U	470	U	330	U	330	U
Acenaphthylene	350	U	350	U	350	U	470	U	330	U	330	U
2,6-Dinitrotoluene	350	U	350	U	350	U	470	U	330	U	330	U
3-Nitroaniline	870	U	870	U	870	U	1200	U	830	U	830	U
Acenaphthene	350	U	85	%	77	%	470	U	330	U	78	%
2,4-Dinitrophenol	870	U	870	U	870	U	1200	U	830	U	830	U
4-Nitrophenol	870	U	69	%	59	%	1200	U	830	U	71	%
Dibenzofuran	350	U	350	U	350	U	470	U	330	U	330	U
2,4-Dinitrotoluene	350	U	93 *	%	83	%	470	U	330	U	84	%
Diethylphthalate	350	U	350	U	350	U	470	U	330	U	330	U
4-Chlorophenyl-phenylether	350	U	350	U	350	U	470	U	330	U	330	U
Fluorene	350	U	350	U	350	U	470	U	330	U	330	U
4-Nitroaniline	870	U	870	U	870	U	1200	U	830	U	830	U
4,6-Dinitro-2-methylphenol	870	U	870	U	870	U	1200	U	830	U	830	U
N-Nitrosodiphenylamine (1)	350	U	350	U	350	U	470	U	330	U	330	U
4-Bromophenyl-phenylether	350	U	350	U	350	U	470	U	330	U	330	U
Hexachlorobenzene	350	U	350	U	350	U	470	U	330	U	330	U
Pentachlorophenol	870	U	75	%	68	%	1200	U	830	U	75	%
Phenanthrene	350	U	350	U	350	U	470	U	330	U	330	U
Anthracene	350	U	350	U	350	U	470	U	330	U	330	U
Carbazole	350	U	350	U	350	U	470	U	330	U	330	U
Di-n-Butylphthalate	350	U	350	U	350	U	470	U	330	U	330	U
Fluoranthene	350	U	350	U	350	U	470	U	330	U	330	U
Pyrene	350	U	101	%	87	%	470	U	330	U	83	%
Butylbenzylphthalate	350	U	350	U	350	U	470	U	330	U	330	U
3,3'-Dichlorobenzidine	350	U	350	U	350	U	470	U	330	U	330	U
Benzo(a)anthracene	350	U	350	U	350	U	470	U	330	U	330	U
Chrysene	350	U	350	U	350	U	470	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	350	U	350	U	350	U	35	J	330	U	330	U
Di-n-Octyl phthalate	350	U	350	U	350	U	470	U	330	U	330	U
Benzo(b)fluoranthene	350	U	350	U	350	U	470	U	330	U	330	U
Benzo(k)fluoranthene	350	U	350	U	350	U	470	U	330	U	330	U
Benzo(a)pyrene	350	U	350	U	350	U	470	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	350	U	350	U	350	U	470	U	330	U	330	U
Dibenzo(a,h)anthracene	350	U	350	U	350	U	470	U	330	U	330	U
Benzo(g,h,i)perylene	350	U	350	U	350	U	470	U	330	U	330	U
Tributylphosphate	350	U	350	U	350	U	470	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.

B12V25

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

Client: TNU-HANFORD B01-103

Matrix: (soil/water) SOIL

Lab Sample ID: 0109L798-001

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

Lab File ID: D091316

Level: (low/med) LOW

Date Received: 09/08/01

% Moisture: 4 decanted: (Y/N)

Date Extracted: 09/11/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 09/14/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 6

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.853	300	JB
2.	UNKNOWN	7.817	100	J
3.	ETHYLHEXANOIC ACID	9.199	80	J
4.	ORGANIC ACID	19.489	70	JB
5.	UNKNOWN	21.175	90	J
6.	UNKNOWN	21.905	100	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B12V26

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

Client: TNU-HANFORD B01-103

Matrix: (soil/water) SOIL

Lab Sample ID: 0109L798-002

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

Lab File ID: D091317

Level: (low/med) LOW

Date Received: 09/08/01

% Moisture: 29 decanted: (Y/N)__

Date Extracted: 09/11/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 09/14/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	21.169	200	J
2.	UNKNOWN	21.908	600	J
3.	UNKNOWN	22.716	100	J
4.	UNKNOWN	24.081	300	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKFE

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

Client: TNU-HANFORD B01-103

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE1062-MB1

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

Lab File ID: D091314

Level: (low/med) LOW

Date Received: 09/11/01

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

Date Extracted: 09/11/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 09/14/01

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.853	300	J
2.	ORGANIC ACID	19.489	90	J

10

Lionville Laboratory Use Only

01091798

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TRU-Hanford B01-103

Est. Final Proj. Sampling Date:

Project #: 11343-1001-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 9-8-01 Date Due: 10-8-01

	A	B	C	D	E	F	G	H
Refrigerator #	1	6	6	6	6	6	6	6
#/Type Container: Liquid								
#/Type Container: Solid	1AG	1AG	1AG	1AG	1AG	1AG	1AG	1AG
Volume: Liquid								
Volume: Solid	125	500	500	1L	1L	1L	125	60
Preservatives								
ANALYSES REQUESTED: ORGANIC VOA								
ORGANIC BNA								
ORGANIC Pest/PCB								
ORGANIC Herb								
INORG TCLP Metal								
INORG CN								
TAL Metals								
TCL Pesticides								
TAL Cyanide								
TAL Mercury								
TAL Inorganics								

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	0124H	0125X	0PCB			Met(2)		TCLP		Met(1)	Inorg(1)	ODRO GRO	ICPMS
001	B12V25			S	8-31-01	1130	X	X	X					X		X	X	X	X
002	B12V26			L	8-31-01	1300	X	X	X					X		X	X	X	X
003	1 5 top of 001			L	*	-						X							
004	1 6 1 002			L	1	1						X							

Special Instructions: SAP B01-103

* See Idochron

Run Matrix QC

DATE/REVISIONS:

Inorg(1) 1. ICP02, ICP03, INH3N, ICP10, TPH,
1 2. ISED

Met(1) 3. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi,
1 4. Mo, Sn

Met(2) 5. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V, Zn,
1 6. Hg

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. 3.0 °C

Relinquished by	Received by	Date	Time
FED EX	Carla Hunt	9-8-01	10:00

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7954 7148

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-10	Page 1 of 1

Collector WATSON	Company Contact D Weekes	Telephone No. 372-9130	Project Coordinator TRENT, SJ
Project Designation 200 Area RCRA Drilling Waste Designation	Sampling Location 200 East WEST DSW 09/04/01		SAF No. B01-103
Ice Chest No. 7 TMA 9.6.01 ERC96040	Field Logbook No. EL-1551	COA JRCRA14114	Method of Shipment Fed EX
Shipped To ~~TMA~~/RECRA DSW 08/30/01	Offsite Property No. ~~N/A~~ DSW 08/30/01 A010365	Bill of Lading/Air Bill No. ~~N/A~~ DSW 08/30/01 42357954-7148	

Price Code 8N

Air Quality ☐

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 8/30/01. Collector not available to relenquish samples on 9/6/01 for shipment. RT 9.6.01

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	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	60mL	120mL	120mL	250mL	500mL	500mL	500mL	500mL	1000mL		
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	VOA - 8260A (TCL)	PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.	See item (6) in Special Instructions. DSW 08/30/01		
Sample No.	Matrix *	Sample Date	Sample Time								
B12V25	SOIL	08/30/01	1130	X	X	X	X	X	X	X	X	TICTO
B12V26	SOIL	08/30/01	1300	X	X	X	X	X	X	X	X	B12V23 B12V24

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
D S WATSON	08/30/01 1440	~~Received By~~ DSW 08/30/01 ~~1540~~ REF. 2C	08/30/01 1440
Remove 4 Ref 2C 3728	9-6-01 0900	RThore	9-6-01 0900
RThore	9-6-01 0900	FEDEX	
FEDEX	9-8-01 10:00	Carlos Remafo	9-8-01 10:00

SPECIAL INSTRUCTIONS

** All requests for Cr VI at the Severn Trent Laboratory, MUST BE routed to Richland

** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 will not be met

(1) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}

(2) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030

(3) ICP Metals - 6010A (TAL) {Aluminum, Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}

(4) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {Tributyl phosphate}

(5) 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

(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-~~ DSW 08/30/01

Matrix *

S=Soil
SD=Sediment
SO=Solid
S=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)

DEC 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1491

DATE RECEIVED: 09/08/01 LVL LOT # :0109L798

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12V25						
TCLP	001	S	01LTO111	08/30/01	09/17/01	09/18/01
ALUMINUM, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
ALUMINUM, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
ALUMINUM, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
BISMUTH, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
BISMUTH, TOTAL REP	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
BISMUTH, TOTAL SPIKE	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
CALCIUM, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
CALCIUM, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
CALCIUM, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
COPPER, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
COPPER, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
COPPER, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
IRON, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
IRON, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
IRON, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
POTASSIUM, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
POTASSIUM, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
POTASSIUM, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
MAGNESIUM, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
MAGNESIUM, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
MAGNESIUM, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
MANGANESE, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
MANGANESE, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
MANGANESE, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
MOLYBDENUM, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
MOLYBDENUM, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
MOLYBDENUM, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
SODIUM, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
SODIUM, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
SODIUM, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
TIN, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
TIN, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
TIN, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
B12V26						
TCLP	002	S	01LTO111	08/30/01	09/17/01	09/18/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1491

DATE RECEIVED: 09/08/01 LVL LOT # :0109L798

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ALUMINUM, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
BISMUTH, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
CALCIUM, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
COPPER, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
IRON, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
POTASSIUM, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
MAGNESIUM, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
MANGANESE, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
MOLYBDENUM, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
SODIUM, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
TIN, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
B12V25						
SILVER, TCLP LEACHAT	003	W	01L0590	09/18/01	09/19/01	09/24/01
SILVER, TCLP LEACHAT	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
SILVER, TCLP LEACHAT	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
ARSENIC, TCLP LEACHA	003	W	01L0590	09/18/01	09/19/01	09/24/01
ARSENIC, TCLP LEACHA	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
ARSENIC, TCLP LEACHA	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
BARIUM, TCLP LEACHAT	003	W	01L0590	09/18/01	09/19/01	09/24/01
BARIUM, TCLP LEACHAT	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
BARIUM, TCLP LEACHAT	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
BERYLLIUM, TCLP LEAC	003	W	01L0590	09/18/01	09/19/01	09/24/01
BERYLLIUM, TCLP LEAC	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
BERYLLIUM, TCLP LEAC	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
CADMIUM, TCLP LEACHA	003	W	01L0590	09/18/01	09/19/01	09/24/01
CADMIUM, TCLP LEACHA	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
CADMIUM, TCLP LEACHA	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
CHROMIUM, TCLP LEACH	003	W	01L0590	09/18/01	09/19/01	09/24/01
CHROMIUM, TCLP LEACH	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
CHROMIUM, TCLP LEACH	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
MERCURY, TCLP LEACHA	003	W	01C0293	09/18/01	09/21/01	09/25/01
NICKEL, TCLP LEACHAT	003	W	01L0590	09/18/01	09/19/01	09/24/01
NICKEL, TCLP LEACHAT	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
NICKEL, TCLP LEACHAT	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
LEAD, TCLP LEACHATE	003	W	01L0590	09/18/01	09/19/01	09/24/01
LEAD, TCLP LEACHATE	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1491

DATE RECEIVED: 09/08/01 LVL LOT # :0109L798

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TCLP LEACHATE	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
ANTIMONY, TCLP LEACH	003	W	01L0590	09/18/01	09/19/01	09/24/01
ANTIMONY, TCLP LEACH	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
ANTIMONY, TCLP LEACH	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
SELENIUM, TCLP LEACH	003	W	01L0590	09/18/01	09/19/01	09/24/01
SELENIUM, TCLP LEACH	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
SELENIUM, TCLP LEACH	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
VANADIUM, TCLP LEACH	003	W	01L0590	09/18/01	09/19/01	09/24/01
VANADIUM, TCLP LEACH	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
VANADIUM, TCLP LEACH	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
ZINC, TCLP LEACHATE	003	W	01L0590	09/18/01	09/19/01	09/24/01
ZINC, TCLP LEACHATE	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
ZINC, TCLP LEACHATE	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
B12V26						
SILVER, TCLP LEACHAT	004	W	01L0590	09/18/01	09/19/01	09/24/01
ARSENIC, TCLP LEACHA	004	W	01L0590	09/18/01	09/19/01	09/24/01
BARIUM, TCLP LEACHAT	004	W	01L0590	09/18/01	09/19/01	09/24/01
BERYLLIUM, TCLP LEAC	004	W	01L0590	09/18/01	09/19/01	09/24/01
CADMIUM, TCLP LEACHA	004	W	01L0590	09/18/01	09/19/01	09/24/01
CHROMIUM, TCLP LEACH	004	W	01L0590	09/18/01	09/19/01	09/24/01
MERCURY, TCLP LEACHA	004	W	01C0293	09/18/01	09/21/01	09/25/01
MERCURY, TCLP LEACHA	004 REP	W	01C0293	09/18/01	09/21/01	09/25/01
MERCURY, TCLP LEACHA	004 MS	W	01C0293	09/18/01	09/21/01	09/25/01
NICKEL, TCLP LEACHAT	004	W	01L0590	09/18/01	09/19/01	09/24/01
LEAD, TCLP LEACHATE	004	W	01L0590	09/18/01	09/19/01	09/24/01
ANTIMONY, TCLP LEACH	004	W	01L0590	09/18/01	09/19/01	09/24/01
SELENIUM, TCLP LEACH	004	W	01L0590	09/18/01	09/19/01	09/24/01
VANADIUM, TCLP LEACH	004	W	01L0590	09/18/01	09/19/01	09/24/01
ZINC, TCLP LEACHATE	004	W	01L0590	09/18/01	09/19/01	09/24/01

LAB QC:

ALUMINUM LABORTORY	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
ALUMINUM, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
BISMUTH, LCS	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
BISMUTH, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1491

DATE RECEIVED: 09/08/01 LVL LOT # :0109L798

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CALCIUM LABORATORY	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
CALCIUM, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
COPPER LABORATORY	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
COPPER, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
IRON LABORATORY	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
IRON, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
POTASSIUM LABORATORY	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
POTASSIUM, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
MAGNESIUM LABORATORY	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
MAGNESIUM, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
MANGANESE LABORATORY	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
MANGANESE, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
MOLYBDENUM LABORATOR	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
MOLYBDENUM, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
SODIUM LABORATORY	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
SODIUM, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
TIN LABORATORY	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
TIN, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
SILVER LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
SILVER, TCLP LEACHAT	MB1	W	01L0590	N/A	09/19/01	09/24/01
SILVER, TCLP LEACHAT	MB2	W	01L0590	N/A	09/19/01	09/24/01
SILVER, TCLP LEACHAT	MB3	W	01L0590	N/A	09/19/01	09/24/01
ARSENIC LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
ARSENIC, TCLP LEACHA	MB1	W	01L0590	N/A	09/19/01	09/24/01
ARSENIC, TCLP LEACHA	MB2	W	01L0590	N/A	09/19/01	09/24/01
ARSENIC, TCLP LEACHA	MB3	W	01L0590	N/A	09/19/01	09/24/01
BARIUM LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
BARIUM, TCLP LEACHAT	MB1	W	01L0590	N/A	09/19/01	09/24/01
BARIUM, TCLP LEACHAT	MB2	W	01L0590	N/A	09/19/01	09/24/01
BARIUM, TCLP LEACHAT	MB3	W	01L0590	N/A	09/19/01	09/24/01
BERYLLIUM LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
BERYLLIUM, TCLP LEAC	MB1	W	01L0590	N/A	09/19/01	09/24/01
BERYLLIUM, TCLP LEAC	MB2	W	01L0590	N/A	09/19/01	09/24/01
BERYLLIUM, TCLP LEAC	MB3	W	01L0590	N/A	09/19/01	09/24/01
CADMIUM LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
CADMIUM, TCLP LEACHA	MB1	W	01L0590	N/A	09/19/01	09/24/01
CADMIUM, TCLP LEACHA	MB2	W	01L0590	N/A	09/19/01	09/24/01
CADMIUM, TCLP LEACHA	MB3	W	01L0590	N/A	09/19/01	09/24/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1491

DATE RECEIVED: 09/08/01 LVL LOT # :0109L798

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
CHROMIUM, TCLP LEACH	MB1	W	01L0590	N/A	09/19/01	09/24/01
CHROMIUM, TCLP LEACH	MB2	W	01L0590	N/A	09/19/01	09/24/01
CHROMIUM, TCLP LEACH	MB3	W	01L0590	N/A	09/19/01	09/24/01
MERCURY LABORATORY	LC1 BS	W	01C0293	N/A	09/21/01	09/25/01
MERCURY, TOTAL	MB1	W	01C0293	N/A	09/21/01	09/25/01
MERCURY, TCLP LEACHA	MB2	W	01C0293	N/A	09/21/01	09/25/01
NICKEL LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
NICKEL, TCLP LEACHAT	MB1	W	01L0590	N/A	09/19/01	09/24/01
NICKEL, TCLP LEACHAT	MB2	W	01L0590	N/A	09/19/01	09/24/01
NICKEL, TCLP LEACHAT	MB3	W	01L0590	N/A	09/19/01	09/24/01
LEAD LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
LEAD, TCLP LEACHATE	MB1	W	01L0590	N/A	09/19/01	09/24/01
LEAD, TCLP LEACHATE	MB2	W	01L0590	N/A	09/19/01	09/24/01
LEAD, TCLP LEACHATE	MB3	W	01L0590	N/A	09/19/01	09/24/01
ANTIMONY LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
ANTIMONY, TCLP LEACH	MB1	W	01L0590	N/A	09/19/01	09/24/01
ANTIMONY, TCLP LEACH	MB2	W	01L0590	N/A	09/19/01	09/24/01
ANTIMONY, TCLP LEACH	MB3	W	01L0590	N/A	09/19/01	09/24/01
SELENIUM LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
SELENIUM, TCLP LEACH	MB1	W	01L0590	N/A	09/19/01	09/24/01
SELENIUM, TCLP LEACH	MB2	W	01L0590	N/A	09/19/01	09/24/01
SELENIUM, TCLP LEACH	MB3	W	01L0590	N/A	09/19/01	09/24/01
VANADIUM LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
VANADIUM, TCLP LEACH	MB1	W	01L0590	N/A	09/19/01	09/24/01
VANADIUM, TCLP LEACH	MB2	W	01L0590	N/A	09/19/01	09/24/01
VANADIUM, TCLP LEACH	MB3	W	01L0590	N/A	09/19/01	09/24/01
ZINC LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
ZINC, TCLP LEACHATE	MB1	W	01L0590	N/A	09/19/01	09/24/01
ZINC, TCLP LEACHATE	MB2	W	01L0590	N/A	09/19/01	09/24/01
ZINC, TCLP LEACHATE	MB3	W	01L0590	N/A	09/19/01	09/24/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-103
LVL#: 0109L798
SDG/SAF#: H1491/B01-103

W.O.#: 11343-606-001-9999-00
Date Received: 09-08-01

****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.

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 with the exception of the final CCV for Tin. All samples were surrounded by CCVs in control.

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

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.

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

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 20 pages.

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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
B12V25	Aluminum	20,000	106.8
	Iron	20,000	99.0

12. The 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 B12V25 for ICP analytes and B12V26 for Mercury were selected for the matrix spike (MS) for this analytical batch. The matrix spike for Silver was below 50% recovery (46.9%). The recovery in the TCLP Leachate was below 80-120% of the action level so standard addition was not required per Federal Register, Vol.57, No.227, Nov. 24, 1992, page 55117.

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/m09-798r

LVLI
LIONVILLE LABORATORIES INC

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 01PM049

Initiator: C Johnson Batch: 01091798 Parameter: Metals
Date: 11/16/01 Samples: All Matrix: Soil
Client: The Hartford Method: SW846/MCAWW/CLP/ Prep Batch:
H1491

1. Reason for SDR

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

b. General Discrepancy

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

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

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

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

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

Add Arsenic TCLP to batch

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

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

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

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative [illegible] 11/28/01
✓ 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~~ Melnic
__	__ 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#: 0109L798

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 [2]	__7471A [2]	__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 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12V25	Aluminum, Total	9610	MG/KG	1.6	1.0
		Bismuth, Total	0.31 u	MG/KG	0.31	1.0
		Calcium, Total	12300	MG/KG	0.77	1.0
		Copper, Total	15.8	MG/KG	0.05	1.0
		Iron, Total	23900	MG/KG	1.5	1.0
		Potassium, Total	1320	MG/KG	1.1	1.0
		Magnesium, Total	5290	MG/KG	0.79	1.0
		Manganese, Total	313	MG/KG	0.01	1.0
		Molybdenum, Total	0.69	MG/KG	0.1	1.0
		Sodium, Total	1100	MG/KG	0.16	1.0
		Tin, Total	1.7	MG/KG	0.38	1.0
-002	B12V26	Aluminum, Total	8260	MG/KG	2.1	1.0
		Bismuth, Total	0.40 u	MG/KG	0.40	1.0
		Calcium, Total	4100	MG/KG	1.0	1.0
		Copper, Total	15.4	MG/KG	0.06	1.0
		Iron, Total	20200	MG/KG	2.0	1.0
		Potassium, Total	1240	MG/KG	1.4	1.0
		Magnesium, Total	3640	MG/KG	1.0	1.0
		Manganese, Total	321	MG/KG	0.01	1.0
		Molybdenum, Total	1.9	MG/KG	0.13	1.0
		Sodium, Total	757	MG/KG	0.21	1.0
		Tin, Total	2.1	MG/KG	0.51	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B12V25	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Arsenic, TCLP Leachate	52.1	u	UG/L	52.1	1.0
		Barium, TCLP Leachate	553		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.40	u	UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Mercury, TCLP Leachate	1.0	u	UG/L	1.0	10.0
		Nickel, TCLP Leachate	11.3	u	UG/L	11.3	1.0
		Lead, TCLP Leachate	563		UG/L	22.7	1.0
		Antimony, TCLP Leachate	132		UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	35.4		UG/L	2.8	1.0
-004	B12V26	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Arsenic, TCLP Leachate	52.1	u	UG/L	52.1	1.0
		Barium, TCLP Leachate	536		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.40	u	UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	17.0		UG/L	4.8	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	35.6		UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	21.4		UG/L	2.8	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/28/01

CLIENT: TNUHANFORD B01-103 H1491 *LVL LOT #: 0109L798*

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0608-MB1	Aluminum, Total	4.9		MG/KG	1.6	1.0
		Bismuth, Total	0.31	u	MG/KG	0.31	1.0
		Calcium, Total	2.5		MG/KG	0.78	1.0
		Copper, Total	0.22		MG/KG	0.05	1.0
		Iron, Total	1.6	u	MG/KG	1.6	1.0
		Potassium, Total	5.8		MG/KG	1.1	1.0
		Magnesium, Total	1.2		MG/KG	0.80	1.0
		Manganese, Total	0.05		MG/KG	0.01	1.0
		Molybdenum, Total	0.10	u	MG/KG	0.10	1.0
		Sodium, Total	7.7		MG/KG	0.16	1.0
		Tin, Total	1.1		MG/KG	0.39	1.0
BLANK1	01L0590-MB1	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Arsenic, TCLP Leachate	52.1	u	UG/L	52.1	1.0
		Barium, TCLP Leachate	5.5	u	UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.40	u	UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Nickel, TCLP Leachate	11.3	u	UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	3.1		UG/L	2.8	1.0
BLANK2	01L0590-MB2	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Arsenic, TCLP Leachate	52.1	u	UG/L	52.1	1.0
		Barium, TCLP Leachate	5.5	u	UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.40	u	UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Nickel, TCLP Leachate	11.3	u	UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	4.3		UG/L	2.8	1.0
BLANK3	01L0590-MB3	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Arsenic, TCLP Leachate	52.1	u	UG/L	52.1	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/28/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK3	01L0590-MB3	Barium, TCLP Leachate	5.5	u	UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.40	u	UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Nickel, TCLP Leachate	11.3	u	UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	4.6		UG/L	2.8	1.0
BLANK1	01C0293-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	01C0293-MB2	Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12V25	Aluminum, Total	11400	9610	197	894.6*	1.0
		Bismuth, Total	492	0.31u	492	100	1.0
		Calcium, Total	15200	12300	2460	114.5*	1.0
		Copper, Total	42.7	15.8	24.6	109.4	1.0
		Iron, Total	24200	23900	98.5	296.5*	1.0
		Potassium, Total	4290	1320	2460	120.5	1.0
		Magnesium, Total	8030	5290	2460	111.6	1.0
		Manganese, Total	359	313	49.3	92.9*	1.0
		Molybdenum, Total	98.1	0.69	98.5	98.9	1.0
		Sodium, Total	3830	1100	2460	111.0	1.0
		Tin, Total	99.3	1.7	98.5	99.1	1.0
-003	B12V25	Silver, TCLP Leachate	2340	9.6 u	5000	46.9	1.0
		Arsenic, TCLP Leachate	4690	52.1 u	5000	93.7	1.0
		Barium, TCLP Leachate	90900	553	100000	90.4	1.0
		Beryllium, TCLP Leacha	816	0.40u	1000	81.6	1.0
		Cadmium, TCLP Leachate	857	6.3 u	1000	85.7	1.0
		Chromium, TCLP Leachat	4200	4.8 u	5000	84.0	1.0
		Nickel, TCLP Leachate	884	11.3 u	1000	88.4	1.0
		Lead, TCLP Leachate	5090	563	5000	90.5	1.0
		Antimony, TCLP Leachat	1020	132	1000	88.5	1.0
		Selenium, TCLP Leachat	978	62.1 u	1000	97.8	1.0
		Vanadium, TCLP Leachat	843	8.9 u	1000	84.3	1.0
		Zinc, TCLP Leachate	907	35.4	1000	87.2	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-004	B12V26	Mercury, TCLP Leachate	172	0.10u	200	86.2	50.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12V25	Aluminum, Total	9610	9420	2.1	1.0
		Bismuth, Total	0.31u	0.31u	NC	1.0
		Calcium, Total	12300	11700	5.0	1.0
		Copper, Total	15.8	14.8	6.5	1.0
		Iron, Total	23900	23500	1.7	1.0
		Potassium, Total	1320	1320	0.28	1.0
		Magnesium, Total	5290	5240	0.90	1.0
		Manganese, Total	313	307	2.0	1.0
		Molybdenum, Total	0.69	0.84	19.8	1.0
		Sodium, Total	1100	981	11.3	1.0
		Tin, Total	1.7	2.6	41.9	1.0
-003REP	B12V25	Silver, TCLP Leachate	9.6 u	9.6 u	NC	1.0
		Arsenic, TCLP Leachate	52.1 u	52.1 u	NC	1.0
		Barium, TCLP Leachate	553	556	0.54	1.0
		Beryllium TCLP Leachate	0.40u	0.40u	NC	1.0
		Cadmium, TCLP Leachate	6.3 u	6.3 u	NC	1.0
		Chromium, TCLP Leachate	4.8 u	4.8 u	NC	1.0
		Nickel, Leachate	11.3 u	15.2	NC 200	1.0
		Lead, TCLP Leachate	563	577	2.4	1.0
		Antimony, Leachate	132	125	5.3	1.0
		Selenium, TCLP Leachate	62.1 u	62.1 u	NC	1.0
		Vanadium, TCLP Leachate	8.9 u	8.9 u	NC	1.0
		Zinc, Leachate	35.4	35.9	1.4	1.0

11/28/01

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 11/28/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-004REP	B12V26	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 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0608-LC1	Aluminum, LCS	555	500	MG/KG	111.0
		Bismuth, LCS	522	500	MG/KG	104.3
		Calcium, LCS	2530	2500	MG/KG	101.3
		Copper, LCS	136	125	MG/KG	108.4
		Iron, LCS	539	500	MG/KG	107.8
		Potassium, LCS	2790	2500	MG/KG	111.5
		Magnesium, LCS	2640	2500	MG/KG	105.5
		Manganese, LCS	79.7	75.0	MG/KG	106.3
		Molybdenum, LCS	537	500	MG/KG	107.4
		Sodium, LCS	2610	2500	MG/KG	104.3
		Tin, LCS	535	500	MG/KG	107.0
LCS1	01L0590-LC1	Silver, LCS	470	500	UG/L	94.0
		Arsenic, LCS	10100	10000	UG/L	100.7
		Barium, LCS	4800	5000	UG/L	96.0
		Beryllium, LCS	240	250	UG/L	96.1
		Cadmium, LCS	238	250	UG/L	95.3
		Chromium, LCS	487	500	UG/L	97.4
		Nickel, LCS	1990	2000	UG/L	99.5
		Lead, LCS	2440	2500	UG/L	97.7
		Antimony, LCS	2900	3000	UG/L	96.5
		Selenium, LCS	10000	10000	UG/L	100.2
		Vanadium, LCS	2410	2500	UG/L	96.4
		Zinc, LCS	978	1000	UG/L	97.8
LCS1	01C0293-LC1	Mercury, LCS	4.8	5.0	UG/L	96.3

(8) Metals DIG

Lionville Laboratory Use Only

0109L798

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TWU-Hanford B01-103

Est. Final Proj. Sampling Date:

Project #: 11343-0020-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 9-8-01 Date Due: 10-8-01

		A	B	C				D		E	F	G	H		
Refrigerator #		1	6	6				6		6	6	6	6		
#/Type Container	Liquid														
	Solid	1AG	1AG	1AG				1AG		1AG	1AG	1AG	1AG		
Volume	Liquid														
	Solid	125	500	500				1L		1L	1L	125	60		
Preservatives															
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb			INORG: TCLP Metal	CN	TAL METALS	IC	Anions Acetate Formate Kerosene	HGX Chromium		
Lionville Laboratory Use Only		OLZ4H	OLZSX	OLPCB			Met②	ITCLP		Met①	Inorg①	ODRO OGRO	ICP10		
Lab ID	Client ID/Description														
001	B12V25			S	8-30-01	1130	X	X	X			X		X	X	X	X		
002	B12V26			L	8-30-01	1300	X	X	X			X		X	X	X	X		
003	1 S top of 001			L	*	I					X								
004	1 6 1 002			1	1	1					X								

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: SOF B01-103

* See 1dochron

Run Matrix QC

DATE / REVISION:
11-26-01 Add As to Tclp Met ②

DATE/REVISIONS:

Inorg① 1. ICN02, ICN03, INH3N, ICNTO, IPH,
1 2. ISFD
Met① 3. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi,
1 4. Mo, Sn
Met② 5. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V, Zn,
1 6. Hg + As

Relinquished by	Received by	Date	Time
FED EX	Carlos Arroyo	9-8-01	10:00

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

Lionville Laboratory Use Only

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

Tamper Resistant Seal was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 3.0 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7954 7148

OCT 2001
RECEIVED

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B01-103 H1491

RFW LOT # :0109L798

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B12V25	001	S	01LVX364	08/30/01	09/08/01	N/A	09/12/01
B12V25	001 MS	S	01LVX365	08/30/01	09/08/01	N/A	09/12/01
B12V25	001 MSD	S	01LVX365	08/30/01	09/08/01	N/A	09/12/01
B12V26	002	S	01LVX364	08/30/01	09/08/01	N/A	09/12/01
LAB QC:							
VBLKPP	MB1	S	01LVX364	N/A	N/A	N/A	09/12/01
VBLKPP	MB1 BS	S	01LVX364	N/A	N/A	N/A	09/12/01
VBLKPQ	MB1	S	01LVX365	N/A	N/A	N/A	09/12/01
VBLKPQ	MB1 BS	S	01LVX365	N/A	N/A	N/A	09/12/01

09-21-01

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-103
RFW #: 0109L798
SDG/SAF #: H1491/B01-103

W.O. #: 11343-606-001-9999-00
Date Received: 09-08-2001

GC/MS VOLATILE

Two (2) soil samples were collected on 08-30-2001.

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 09-12-2001.

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. The samples were analyzed within required holding time.
3. Non-target compounds were not detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blanks contained the common laboratory contaminant Methylene Chloride at levels 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

9/25/01
Date

som\group\data\voa\tnu-hanford\0109-798.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 1 pages.

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

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

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
HONVILLE LABORATORY INC.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

PA - Peak Assignment: quan report was changed to reflect correct peak assignment.

RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.

SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.

CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.

PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

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

RFW Batch Number: 0109L798 Client: TNU-HANFORD B01-103 Work Order: 11343606001 Page: 1a

Report Date: 09/24/01 15:36

	Cust ID:	B12V25		B12V25		B12V25		B12V26		VBLKPP		VBLKPP BS	
Sample Information	RFW#:	001		001 MS		001 MSD		002		01LVX364-MB1		01LVX364-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.980		1.11		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	97	%	100	%	104	%	100	%	101	%	99	%
	Bromofluorobenzene	98	%	98	%	101	%	101	%	100	%	100	%
	1,2-Dichloroethane-d4	107	%	100	%	102	%	101	%	103	%	101	%
			fl		fl		fl		fl		fl		fl
Chloromethane		10	U	12	U	10	U	13	U	10	U	10	U
Bromomethane		10	U	12	U	10	U	13	U	10	U	10	U
Vinyl Chloride		10	U	12	U	10	U	13	U	10	U	10	U
Chloroethane		10	U	12	U	10	U	13	U	10	U	10	U
Methylene Chloride		17	B	17	B	16	B	17	B	4	J	6	B
Acetone		10	U	12	U	10	U	47		10	U	10	U
Carbon Disulfide		5	U	6	U	5	U	6	U	5	U	5	U
1,1-Dichloroethene		5	U	92	%	91	%	6	U	5	U	89	%
1,1-Dichloroethane		5	U	6	U	5	U	6	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	6	U	5	U	6	U	5	U	5	U
Chloroform		5	U	6	U	5	U	6	U	5	U	5	U
1,2-Dichloroethane		5	U	6	U	5	U	6	U	5	U	5	U
2-Butanone		10	U	12	U	10	U	13	U	10	U	10	U
1,1,1-Trichloroethane		5	U	6	U	5	U	6	U	5	U	5	U
Carbon Tetrachloride		5	U	6	U	5	U	6	U	5	U	5	U
Bromodichloromethane		5	U	6	U	5	U	6	U	5	U	5	U
1,2-Dichloropropane		5	U	6	U	5	U	6	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	6	U	5	U	6	U	5	U	5	U
Trichloroethene		5	U	99	%	99	%	6	U	5	U	99	%
Dibromochloromethane		5	U	6	U	5	U	6	U	5	U	5	U
1,1,2-Trichloroethane		5	U	6	U	5	U	6	U	5	U	5	U
Benzene		5	U	98	%	96	%	6	U	5	U	96	%
Trans-1,3-Dichloropropene		5	U	6	U	5	U	6	U	5	U	5	U
Bromoform		5	U	6	U	5	U	6	U	5	U	5	U
4-Methyl-2-pentanone		10	U	12	U	10	U	13	U	10	U	10	U
2-Hexanone		10	U	12	U	10	U	13	U	10	U	10	U
Tetrachloroethene		5	U	6	U	5	U	6	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	6	U	5	U	6	U	5	U	5	U
Toluene		5	U	97	%	100	%	6	U	5	U	95	%

*= Outside of EPA CLP QC limits.

gw 9-24-01

RFW Batch Number: **0109L798** Client: **TNU-HANFORD B01-103** Work Order: 11343606001 Page: 1b

Cust ID:	B12V25	B12V25	B12V25	B12V26	VBLKPP	VBLKPP BS
RFW#:	001	001 MS	001 MSD	002	01LVX364-MB1	01LVX364-MB1
Chlorobenzene	5 U	97 %	101 %	6 U	5 U	99 %
Ethylbenzene	5 U	6 U	5 U	6 U	5 U	5 U
Styrene	5 U	6 U	5 U	6 U	5 U	5 U
Xylene (total)	5 U	6 U	5 U	6 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List
Report Date: 09/24/01 15:36

RFW Batch Number: 0109L798 Client: TNU-HANFORD B01-103 Work Order: 11343606001 Page: 2a

	Cust ID:	VBLKPQ		VBLKPQ BS	
Sample Information	RFW#:	01LVX365-MB1		01LVX365-MB1	
	Matrix:	SOIL		SOIL	
	D.F.:	1.00		1.00	
	Units:	ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	101	%	101	%
	Bromofluorobenzene	104	%	101	%
	1,2-Dichloroethane-d4	105	%	96	%
Chloromethane		10	U	10	U
Bromomethane		10	U	10	U
Vinyl Chloride		10	U	10	U
Chloroethane		10	U	10	U
Methylene Chloride		11		12	B
Acetone		10	U	10	U
Carbon Disulfide		5	U	5	U
1,1-Dichloroethene		5	U	95	%
1,1-Dichloroethane		5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U
Chloroform		5	U	5	U
1,2-Dichloroethane		5	U	5	U
2-Butanone		10	U	10	U
1,1,1-Trichloroethane		5	U	5	U
Carbon Tetrachloride		5	U	5	U
Bromodichloromethane		5	U	5	U
1,2-Dichloropropane		5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U
Trichloroethene		5	U	98	%
Dibromochloromethane		5	U	5	U
1,1,2-Trichloroethane		5	U	5	U
Benzene		5	U	96	%
Trans-1,3-Dichloropropene		5	U	5	U
Bromoform		5	U	5	U
4-Methyl-2-pentanone		10	U	10	U
2-Hexanone		10	U	10	U
Tetrachloroethene		5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U
Toluene		5	U	98	%

*= Outside of EPA CLP QC limits.

pw 09-24-01

Cust ID:	VBLKPQ	VBLKPQ BS
RFW#:	01LVX365-MB1	01LVX365-MB1

Chlorobenzene	5	U	99	%
Ethylbenzene	5	U	5	U
Styrene	5	U	5	U
Xylene (total)	5	U	5	U

*= Outside of EPA CLP QC limits.

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

Lionville Laboratory Use Only: 01091798

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMU - Hanford B01-103
Est. Final Proj. Sampling Date:
Project #: 11343-6010-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 9-8-01 Date Due: 10-8-01

	A	B	C	D	E	F	G	H
Refrigerator #	1	6	6	6	6	6	6	6
#/Type Container, Liquid								
#/Type Container, Solid	1AG	1AG	1AG	1AG	1AG	1AG	1AG	1AG
Volume, Liquid								
Volume, Solid	125	500	500	1L	1L	1L	125	60
Preservatives								
ANALYSES REQUESTED	VOA	BNA	Pest/PCB	Herb	TCLP Metal	CN	TAL Metals	Fe

Lionville Laboratory Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8240H	8250K	8PCB	Met(2)	ITCLP	Met(1)	Inorg(1)	8DRO	8GRO	ICRLO
001	B12V25			S	8-31-01	1130	X	X	X		X	X	X	X	X	X
002	B12V26			L	8-31-01	1300	X	X	X		X	X	X	X	X	X
003	1 S tclp of 001			L	*					X						
004	1 6 L 002									X						

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
* See Idochron
Run Matrix QC

DATE/REVISIONS:
Inorg(1) 1. ICN02, ICN03, INH3N, ICN10, IPH,
2. ISED
Met(1) 3. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi,
4. Mo, Sn
Met(2) 5. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V, Zn,
6. Hg

Relinquished by	Received by	Date	Time
FED EX	Carla Henry	9-8-01	10:00

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL		

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. 3.0 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES: 4225 7054 7140

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-10	Page 1 of 1

Collector: WATSON	Company Contact: D Weekes	Telephone No.: 372-9130	Project Coordinator: TRENT, SJ
Project Designation: 200 Area RCRA Drilling Waste Designation	Sampling Location: 200 East WEST 09/4/01		SAF No.: B01-103
Ice Chest No.: ~~NA~~ 9-6-01 ERC96-040	Field Logbook No.: EL-1551	COA: JRCRA14114	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA DSW 08/30/01	Offsite Property No.: ~~NA~~ DSW 08/30/01 A010365		Bill of Lading/Air Bill No.: ~~NA~~ DSW 08/30/01 42357954-7148

Price Code: 8N

Air Quality ☐

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 8/30/01. Collector not available to relenquish samples on 9/6/01 for shipment. RT 9.6.01

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	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	60mL	120mL	120mL	250mL	500mL	500mL	500mL	500mL	1000mL

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Chromium Hex - 7196	See item (1) in Special Instructions.	VOA - 8260A (TCL)	PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.	See item (6) in Special Instructions.	
B12V25	SOIL	08/30/01	1130	X	X	X	X	X	X	X	X		TICTO
B12V26	SOIL	08/30/01	1300	X	X	X	X	X	X	X	X		B12V23 B12V24

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
D S WATSON	08/30/01 1440	DSW 08/30/01 5:00 REF. 2C	08/30/01 1440
Removed from Ref 2C 3728	9-6-01 0900	R Thore	9-6-01 0900
R Thore	9-6-01 0900	FEDEX	
FEDEX	9-8-01 10:00	Colby Remsfo	9-8-01 10:00

SPECIAL INSTRUCTIONS

** All requests for Cr VI at the Severn Trent Laboratory, MUST BE routed to Richland

** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 will not be met

(1) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}

(2) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030

(3) ICP Metals - 6010A (TAL) {Aluminum, Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}

(4) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}

(5) 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

(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-~~ DSW 08/30/01

Matrix *

S=Soil
SD=Sediment
SO=Solid
S=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 H1491

DATE RECEIVED: 09/08/01 LVL LOT # :0109L798

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12V25	001	S	01LE1082	08/30/01	09/16/01	09/24/01
B12V25	001 MS	S	01LE1082	08/30/01	09/16/01	09/24/01
B12V25	001 MSD	S	01LE1082	08/30/01	09/16/01	09/24/01
B12V26	002	S	01LE1082	08/30/01	09/16/01	09/24/01
LAB QC:						
PBLKQD	MB1	S	01LE1082	N/A	09/16/01	09/24/01
PBLKQD	MB1 BS	S	01LE1082	N/A	09/16/01	09/24/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD B01-103
LVL#: 0109L798
SDG/SAF#: H1491/B01-103

W.O.#: 11343-606-001-9999-00
Date Received: 09-08-01

PCB

The set of samples consisted of two (2) soil samples collected on 08-30-01.

The samples and their associated QC samples were extracted on 09-16-01 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 09-24-01. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

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

1. All cooler temperatures have been recorded on the chain-of-custody.
2. These samples were extracted three days outside of technical holding time.
3. The samples and their associated QC samples received a sulfuric acid and a 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

9/22/01
Date

pef\r:\group\data\pest\09L-798.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 8 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: 09/26/01 09:52

RFW Batch Number: **0109L798** Client: **TNUHANFORD B01-103 H1491** Work Order: 11343606001 Page: 1

5

	Cust ID:	B12V25	B12V25	B12V25	B12V26	PBLKQD	PBLKQD BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	01LE1082-MB1	01LE1082-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	72 %	105 %	92 %	95 %	98 %	102 %
	Decachlorobiphenyl	113 %	118 %	109 %	114 %	114 %	112 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		33 U	35 U	34 U	45 U	33 U	33 U
Aroclor-1221		67 U	69 U	69 U	91 U	67 U	67 U
Aroclor-1232		33 U	35 U	34 U	45 U	33 U	33 U
Aroclor-1242		33 U	35 U	34 U	45 U	33 U	33 U
Aroclor-1248		33 U	35 U	34 U	45 U	33 U	33 U
Aroclor-1254		33 U	94 %	86 %	45 U	33 U	87 %
Aroclor-1260		33 U	35 U	34 U	45 U	33 U	33 U

9/25/01

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

01091798

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMV-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: 9-8-01 Date Due: 10-8-01

		A	B	C					D		E	F	G	H		
Refrigerator #		1	6	6					6		6	6	6	6		
#Type Container	Liquid															
	Solid	1AG	1AG	1AG					1AG		1AG	1AG	1AG	1AG		
Volume	Liquid															
	Solid	125	500	500					1L		1L	1L	125	60		
Preservatives																
ANALYSES REQUESTED	ORGANIC: VOA															
	ORGANIC: BNA															
	ORGANIC: Pest/PCB															
	ORGANIC: Herb															
	INORG: TCLP Metal															
	INORG: CN															
	TAL Metals															
	FC															
	Anions/Nitrate/Nitrite															
	Hex Chromium															

Lionville Laboratory Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OLA24H	OLA25X	OPCB			Met②		ITCLP		Met①	Inorg①	ODRO OGRO	ICPLO		
001	B12V25			S	8-30-01	1130	X	X	X					X		X	X	X	X		
002	B12V26			L	8-30-01	1300	X	X	X					X		X	X	X	X		
003	1 S top of 001			L	*							X									
004	1 6 1 002											X									

Special Instructions: SAF B01-103

* See Idochron

Run Matrix QC

DATE/REVISIONS:

Inorg① 1. ICNO2, ICNO3, INH3N, ICNTO, IPH,
2. ISED

Met① 3. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi,
4. Mo, Sn

Met② 5. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V, Zn,
6. Hg

Relinquished by	Received by	Date	Time
FED EX	Celia [illegible]	9-8-01	10:00

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL CONDITION		

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. 3.0 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7954 7148

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-10	Page 1 of 1

Collector: WATSON	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 WEST 09/4/01	SAF No.: B01-103	Air Quality ☐
Ice Chest No.: ZIWA 9-6-01 ERC96040	Field Logbook No.: EL-1551 — COA: JRCRA14114	Method of Shipment: Fed EX	
Shipped To: ~~TMA/RECRA~~ DSW 08/30/01	Offsite Property No.: ~~N/A~~ DSW 08/30/01 A010365	Bill of Lading/Air Bill No.: ~~N/A~~ DSW 08/30/01 42357954-7148	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 8/30/01. Collector not available to relenquish samples on 9/6/01 for shipment. RT 9.6.01

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	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	60mL	120mL	120mL	250mL	500mL	500mL	500mL	500mL	1000mL		
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	VOA - 8260A (TCL)	PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.	See item (6) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time								
B12V25	SOIL	08/30/01	1130	X	X	X	X	X	X	X	X
B12V26	SOIL	08/30/01	1300	X	X	X	X	X	X	X	X

TICTO
B12V23
B12V24

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
DSWATSON/[signature]	08/30/01 1440	~~Received By~~ DSW 08/30/01 ~~Date/Time~~ REF.2C	08/30/01 1440
Ref 2C/Remote Drop 3728	9-6-01 0900	R. Thore	9-6-01 0900
R. Thore	9-6-01 0900	FEDEX	
FEDEX	9-8-01 10:00	[signature]	9-8-01 10:00

SPECIAL INSTRUCTIONS

** All requests for Cr VI at the Severn Trent Laboratory, MUST BE routed to Richland

** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 will not be met

(1) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(2) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(3) ICP Metals - 6010A (TAL) {Aluminum, Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(4) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(5) 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
~~(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-~~ DSW 08/30/01

Matrix *
S=Soil
SD=Sediment
SO=Solid
S=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)

Figure 1. Sample Check-in List

Date/Time Received: 9-8-01 10:00

SDG#: 0109C798

Work Order Number: _____ SAF# B01-103

Shipping Container ID: 4235 7954 7148 Chain of Custody # B01-103-10

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 3.0
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: _____
7. Sample holding times exceeded? Yes [✓] No [ ]

8. Samples have:
   - ✓ tape (9-8-01) ____ 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: [signature] Date: 9-8-01

Telephoned to: _____ On _____ By _____

OCT 2001
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1491

DATE RECEIVED: 09/08/01 LVL LOT # :0109L798

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12V25						
TCLP	001	S	01LTO111	08/30/01	09/17/01	09/18/01
ALUMINUM, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
ALUMINUM, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
ALUMINUM, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
BISMUTH, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
BISMUTH, TOTAL REP	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
BISMUTH, TOTAL SPIKE	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
CALCIUM, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
CALCIUM, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
CALCIUM, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
COPPER, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
COPPER, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
COPPER, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
IRON, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
IRON, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
IRON, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
POTASSIUM, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
POTASSIUM, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
POTASSIUM, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
MAGNESIUM, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
MAGNESIUM, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
MAGNESIUM, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
MANGANESE, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
MANGANESE, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
MANGANESE, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
MOLYBDENUM, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
MOLYBDENUM, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
MOLYBDENUM, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
SODIUM, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
SODIUM, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
SODIUM, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
TIN, TOTAL	001	S	01L0608	08/30/01	09/25/01	09/25/01
TIN, TOTAL	001 REP	S	01L0608	08/30/01	09/25/01	09/25/01
TIN, TOTAL	001 MS	S	01L0608	08/30/01	09/25/01	09/25/01
B12V26						
TCLP	002	S	01LTO111	08/30/01	09/17/01	09/18/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1491

DATE RECEIVED: 09/08/01 LVL LOT # :0109L798

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ALUMINUM, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
BISMUTH, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
CALCIUM, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
COPPER, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
IRON, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
POTASSIUM, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
MAGNESIUM, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
MANGANESE, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
MOLYBDENUM, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
SODIUM, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
TIN, TOTAL	002	S	01L0608	08/30/01	09/25/01	09/25/01
B12V25						
SILVER, TCLP LEACHAT	003	W	01L0590	09/18/01	09/19/01	09/24/01
SILVER, TCLP LEACHAT	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
SILVER, TCLP LEACHAT	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
BARIUM, TCLP LEACHAT	003	W	01L0590	09/18/01	09/19/01	09/24/01
BARIUM, TCLP LEACHAT	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
BARIUM, TCLP LEACHAT	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
BERYLLIUM, TCLP LEAC	003	W	01L0590	09/18/01	09/19/01	09/24/01
BERYLLIUM, TCLP LEAC	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
BERYLLIUM, TCLP LEAC	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
CADMIUM, TCLP LEACHA	003	W	01L0590	09/18/01	09/19/01	09/24/01
CADMIUM, TCLP LEACHA	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
CADMIUM, TCLP LEACHA	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
CHROMIUM, TCLP LEACH	003	W	01L0590	09/18/01	09/19/01	09/24/01
CHROMIUM, TCLP LEACH	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
CHROMIUM, TCLP LEACH	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
MERCURY, TCLP LEACHA	003	W	01C0293	09/18/01	09/21/01	09/25/01
NICKEL, TCLP LEACHAT	003	W	01L0590	09/18/01	09/19/01	09/24/01
NICKEL, TCLP LEACHAT	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
NICKEL, TCLP LEACHAT	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
LEAD, TCLP LEACHATE	003	W	01L0590	09/18/01	09/19/01	09/24/01
LEAD, TCLP LEACHATE	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
LEAD, TCLP LEACHATE	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
ANTIMONY, TCLP LEACH	003	W	01L0590	09/18/01	09/19/01	09/24/01
ANTIMONY, TCLP LEACH	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1491

DATE RECEIVED: 09/08/01 LVL LOT # :0109L798

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ANTIMONY, TCLP LEACH	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
SELENIUM, TCLP LEACH	003	W	01L0590	09/18/01	09/19/01	09/24/01
SELENIUM, TCLP LEACH	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
SELENIUM, TCLP LEACH	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
VANADIUM, TCLP LEACH	003	W	01L0590	09/18/01	09/19/01	09/24/01
VANADIUM, TCLP LEACH	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
VANADIUM, TCLP LEACH	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
ZINC, TCLP LEACHATE	003	W	01L0590	09/18/01	09/19/01	09/24/01
ZINC, TCLP LEACHATE	003 REP	W	01L0590	09/18/01	09/19/01	09/24/01
ZINC, TCLP LEACHATE	003 MS	W	01L0590	09/18/01	09/19/01	09/24/01
B12V26						
SILVER, TCLP LEACHAT	004	W	01L0590	09/18/01	09/19/01	09/24/01
BARIUM, TCLP LEACHAT	004	W	01L0590	09/18/01	09/19/01	09/24/01
BERYLLIUM, TCLP LEAC	004	W	01L0590	09/18/01	09/19/01	09/24/01
CADMIUM, TCLP LEACHA	004	W	01L0590	09/18/01	09/19/01	09/24/01
CHROMIUM, TCLP LEACH	004	W	01L0590	09/18/01	09/19/01	09/24/01
MERCURY, TCLP LEACHA	004	W	01C0293	09/18/01	09/21/01	09/25/01
MERCURY, TCLP LEACHA	004 REP	W	01C0293	09/18/01	09/21/01	09/25/01
MERCURY, TCLP LEACHA	004 MS	W	01C0293	09/18/01	09/21/01	09/25/01
NICKEL, TCLP LEACHAT	004	W	01L0590	09/18/01	09/19/01	09/24/01
LEAD, TCLP LEACHATE	004	W	01L0590	09/18/01	09/19/01	09/24/01
ANTIMONY, TCLP LEACH	004	W	01L0590	09/18/01	09/19/01	09/24/01
SELENIUM, TCLP LEACH	004	W	01L0590	09/18/01	09/19/01	09/24/01
VANADIUM, TCLP LEACH	004	W	01L0590	09/18/01	09/19/01	09/24/01
ZINC, TCLP LEACHATE	004	W	01L0590	09/18/01	09/19/01	09/24/01

LAB QC:

ALUMINUM LABORTORY	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
ALUMINUM, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
BISMUTH, LCS	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
BISMUTH, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
CALCIUM LABORATORY	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
CALCIUM, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
COPPER LABORATORY	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
COPPER, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1491

DATE RECEIVED: 09/08/01 LVL LOT # :0109L798

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
IRON LABORATORY	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
IRON, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
POTASSIUM LABORATORY	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
POTASSIUM, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
MAGNESIUM LABORATORY	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
MAGNESIUM, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
MANGANESE LABORATORY	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
MANGANESE, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
MOLYBDENUM LABORATOR	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
MOLYBDENUM, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
SODIUM LABORATORY	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
SODIUM, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
TIN LABORATORY	LC1 BS	S	01L0608	N/A	09/25/01	09/25/01
TIN, TOTAL	MB1	S	01L0608	N/A	09/25/01	09/25/01
SILVER LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
SILVER, TCLP LEACHAT	MB1	W	01L0590	N/A	09/19/01	09/24/01
SILVER, TCLP LEACHAT	MB2	W	01L0590	N/A	09/19/01	09/24/01
SILVER, TCLP LEACHAT	MB3	W	01L0590	N/A	09/19/01	09/24/01
BARIUM LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
BARIUM, TCLP LEACHAT	MB1	W	01L0590	N/A	09/19/01	09/24/01
BARIUM, TCLP LEACHAT	MB2	W	01L0590	N/A	09/19/01	09/24/01
BARIUM, TCLP LEACHAT	MB3	W	01L0590	N/A	09/19/01	09/24/01
BERYLLIUM LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
BERYLLIUM, TCLP LEAC	MB1	W	01L0590	N/A	09/19/01	09/24/01
BERYLLIUM, TCLP LEAC	MB2	W	01L0590	N/A	09/19/01	09/24/01
BERYLLIUM, TCLP LEAC	MB3	W	01L0590	N/A	09/19/01	09/24/01
CADMIUM LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
CADMIUM, TCLP LEACHA	MB1	W	01L0590	N/A	09/19/01	09/24/01
CADMIUM, TCLP LEACHA	MB2	W	01L0590	N/A	09/19/01	09/24/01
CADMIUM, TCLP LEACHA	MB3	W	01L0590	N/A	09/19/01	09/24/01
CHROMIUM LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
CHROMIUM, TCLP LEACH	MB1	W	01L0590	N/A	09/19/01	09/24/01
CHROMIUM, TCLP LEACH	MB2	W	01L0590	N/A	09/19/01	09/24/01
CHROMIUM, TCLP LEACH	MB3	W	01L0590	N/A	09/19/01	09/24/01
MERCURY LABORATORY	LC1 BS	W	01C0293	N/A	09/21/01	09/25/01
MERCURY, TOTAL	MB1	W	01C0293	N/A	09/21/01	09/25/01
MERCURY, TCLP LEACHA	MB2	W	01C0293	N/A	09/21/01	09/25/01
NICKEL LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-103 H1491

DATE RECEIVED: 09/08/01 LVL LOT # :0109L798

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NICKEL, TCLP LEACHAT	MB1	W	01L0590	N/A	09/19/01	09/24/01
NICKEL, TCLP LEACHAT	MB2	W	01L0590	N/A	09/19/01	09/24/01
NICKEL, TCLP LEACHAT	MB3	W	01L0590	N/A	09/19/01	09/24/01
LEAD LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
LEAD, TCLP LEACHATE	MB1	W	01L0590	N/A	09/19/01	09/24/01
LEAD, TCLP LEACHATE	MB2	W	01L0590	N/A	09/19/01	09/24/01
LEAD, TCLP LEACHATE	MB3	W	01L0590	N/A	09/19/01	09/24/01
ANTIMONY LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
ANTIMONY, TCLP LEACH	MB1	W	01L0590	N/A	09/19/01	09/24/01
ANTIMONY, TCLP LEACH	MB2	W	01L0590	N/A	09/19/01	09/24/01
ANTIMONY, TCLP LEACH	MB3	W	01L0590	N/A	09/19/01	09/24/01
SELENIUM LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
SELENIUM, TCLP LEACH	MB1	W	01L0590	N/A	09/19/01	09/24/01
SELENIUM, TCLP LEACH	MB2	W	01L0590	N/A	09/19/01	09/24/01
SELENIUM, TCLP LEACH	MB3	W	01L0590	N/A	09/19/01	09/24/01
VANADIUM LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
VANADIUM, TCLP LEACH	MB1	W	01L0590	N/A	09/19/01	09/24/01
VANADIUM, TCLP LEACH	MB2	W	01L0590	N/A	09/19/01	09/24/01
VANADIUM, TCLP LEACH	MB3	W	01L0590	N/A	09/19/01	09/24/01
ZINC LABORATORY	LC1 BS	W	01L0590	N/A	09/19/01	09/24/01
ZINC, TCLP LEACHATE	MB1	W	01L0590	N/A	09/19/01	09/24/01
ZINC, TCLP LEACHATE	MB2	W	01L0590	N/A	09/19/01	09/24/01
ZINC, TCLP LEACHATE	MB3	W	01L0590	N/A	09/19/01	09/24/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-103
LVL#: 0109L798
SDG/SAF#: H1491/B01-103

W.O.#: 11343-606-001-9999-00
Date Received: 09-08-01

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.

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 with the exception of the final CCV for Tin. All samples were surrounded by CCVs in control.

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

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. 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:

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 24 pages.

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B12V25	Aluminum	20,000	106.8
	Iron	20,000	99.0

12. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. The TCLP extract from sample B12V25 was selected for the matrix spike (MS) for this analytical batch. The matrix spike for Silver was below 50% recovery (46.9%). The recovery in the TCLP Leachate was below 80-120% of the action level so standard addition was not required per Federal Register, Vol.57, No.227, Nov. 24, 1992, page 55117.

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

09-27-01
Date

gmb/m09-798

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#: 01091798

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.

* = 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 09/27/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12V25	Aluminum, Total	9610	MG/KG	1.6	1.0
		Bismuth, Total	0.31 u	MG/KG	0.31	1.0
		Calcium, Total	12300	MG/KG	0.77	1.0
		Copper, Total	15.8	MG/KG	0.05	1.0
		Iron, Total	23900	MG/KG	1.5	1.0
		Potassium, Total	1320	MG/KG	1.1	1.0
		Magnesium, Total	5290	MG/KG	0.79	1.0
		Manganese, Total	313	MG/KG	0.01	1.0
		Molybdenum, Total	0.69	MG/KG	0.1	1.0
		Sodium, Total	1100	MG/KG	0.16	1.0
		Tin, Total	1.7	MG/KG	0.38	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/27/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B12V26	Aluminum, Total	8260	MG/KG	2.1	1.0
		Bismuth, Total	0.40 u	MG/KG	0.40	1.0
		Calcium, Total	4100	MG/KG	1.0	1.0
		Copper, Total	15.4	MG/KG	0.06	1.0
		Iron, Total	20200	MG/KG	2.0	1.0
		Potassium, Total	1240	MG/KG	1.4	1.0
		Magnesium, Total	3640	MG/KG	1.0	1.0
		Manganese, Total	321	MG/KG	0.01	1.0
		Molybdenum, Total	1.9	MG/KG	0.13	1.0
		Sodium, Total	757	MG/KG	0.21	1.0
		Tin, Total	2.1	MG/KG	0.51	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/27/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B12V25	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Barium, TCLP Leachate	553		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.40	u	UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Mercury, TCLP Leachate	1.0	u	UG/L	1.0	10.0
		Nickel, TCLP Leachate	11.3	u	UG/L	11.3	1.0
		Lead, TCLP Leachate	563		UG/L	22.7	1.0
		Antimony, TCLP Leachate	132		UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	35.4		UG/L	2.8	1.0

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 09/27/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	B12V26	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Barium, TCLP Leachate	536		UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.40	u	UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	17.0		UG/L	4.8	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Nickel, TCLP Leachate	35.6		UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	21.4		UG/L	2.8	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/27/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0608-MB1	Aluminum, Total	4.9		MG/KG	1.6	1.0
		Bismuth, Total	0.31	u	MG/KG	0.31	1.0
		Calcium, Total	2.5		MG/KG	0.78	1.0
		Copper, Total	0.22		MG/KG	0.05	1.0
		Iron, Total	1.6	u	MG/KG	1.6	1.0
		Potassium, Total	5.8		MG/KG	1.1	1.0
		Magnesium, Total	1.2		MG/KG	0.80	1.0
		Manganese, Total	0.05		MG/KG	0.01	1.0
		Molybdenum, Total	0.10	u	MG/KG	0.10	1.0
		Sodium, Total	7.7		MG/KG	0.16	1.0
		Tin, Total	1.1		MG/KG	0.39	1.0
BLANK1	01L0590-MB1	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Barium, TCLP Leachate	5.5	u	UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.40	u	UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Nickel, TCLP Leachate	11.3	u	UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	3.1		UG/L	2.8	1.0
BLANK2	01L0590-MB2	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Barium, TCLP Leachate	5.5	u	UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.40	u	UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0
		Chromium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Nickel, TCLP Leachate	11.3	u	UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	4.3		UG/L	2.8	1.0
BLANK3	01L0590-MB3	Silver, TCLP Leachate	9.6	u	UG/L	9.6	1.0
		Barium, TCLP Leachate	5.5	u	UG/L	5.5	1.0
		Beryllium,TCLP Leachate	0.40	u	UG/L	0.40	1.0
		Cadmium, TCLP Leachate	6.3	u	UG/L	6.3	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/27/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK3	01L0590-MB3	Chromium, TCLP Leachate	4.8	u	UG/L	4.8	1.0
		Nickel, TCLP Leachate	11.3	u	UG/L	11.3	1.0
		Lead, TCLP Leachate	22.7	u	UG/L	22.7	1.0
		Antimony, TCLP Leachate	45.4	u	UG/L	45.4	1.0
		Selenium, TCLP Leachate	62.1	u	UG/L	62.1	1.0
		Vanadium, TCLP Leachate	8.9	u	UG/L	8.9	1.0
		Zinc, TCLP Leachate	4.6		UG/L	2.8	1.0
BLANK1	01C0293-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	01C0293-MB2	Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/27/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12V25	Aluminum, Total	11400	9610	197	894.6*	1.0
		Bismuth, Total	492	0.31u	492	100	1.0
		Calcium, Total	15200	12300	2460	114.5*	1.0
		Copper, Total	42.7	15.8	24.6	109.4	1.0
		Iron, Total	24200	23900	98.5	296.5*	1.0
		Potassium, Total	4290	1320	2460	120.5	1.0
		Magnesium, Total	8030	5290	2460	111.6	1.0
		Manganese, Total	359	313	49.3	92.9*	1.0
		Molybdenum, Total	98.1	0.69	98.5	98.9	1.0
		Sodium, Total	3830	1100	2460	111.0	1.0
		Tin, Total	99.3	1.7	98.5	99.1	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/27/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-003	B12V25	Silver, TCLP Leachate	2340	9.6 u	5000	46.9	1.0
		Barium, TCLP Leachate	90900	553	100000	90.4	1.0
		Beryllium, TCLP Leacha	816	0.40u	1000	81.6	1.0
		Cadmium, TCLP Leachate	857	6.3 u	1000	85.7	1.0
		Chromium, TCLP Leachat	4200	4.8 u	5000	84.0	1.0
		Nickel, TCLP Leachate	884	11.3 u	1000	88.4	1.0
		Lead, TCLP Leachate	5090	563	5000	90.5	1.0
		Antimony, TCLP Leachat	1020	132	1000	88.5	1.0
		Selenium, TCLP Leachat	978	62.1 u	1000	97.8	1.0
		Vanadium, TCLP Leachat	843	8.9 u	1000	84.3	1.0
		Zinc, TCLP Leachate	907	35.4	1000	87.2	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/27/01

CLIENT: TNUHANFORD B01-103 H1491

LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-004	B12V26	Mercury, TCLP Leachate	172	0.10u	200	86.2	50.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/27/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12V25	Aluminum, Total	9610	9420	2.1	1.0
		Bismuth, Total	0.31u	0.31u	NC	1.0
		Calcium, Total	12300	11700	5.0	1.0
		Copper, Total	15.8	14.8	6.5	1.0
		Iron, Total	23900	23500	1.7	1.0
		Potassium, Total	1320	1320	0.28	1.0
		Magnesium, Total	5290	5240	0.90	1.0
		Manganese, Total	313	307	2.0	1.0
		Molybdenum, Total	0.69	0.84	19.8	1.0
		Sodium, Total	1100	981	11.3	1.0
		Tin, Total	1.7	2.6	41.9	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/27/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-003REP	B12V25	Silver, TCLP Leachate	9.6 u	9.6 u	NC	1.0
		Barium, TCLP Leachate	553	556	0.54	1.0
		Beryllium TCLP Leachate	0.40u	0.40u	NC	1.0
		Cadmium, TCLP Leachate	6.3 u	6.3 u	NC	1.0
		Chromium, TCLP Leachate	4.8 u	4.8 u	NC	1.0
		Nickel, Leachate	11.3 u	15.2	NC	1.0
		Lead, TCLP Leachate	563	577	2.4	1.0
		Antimony, Leachate	132	125	5.3	1.0
		Selenium, TCLP Leachate	62.1 u	62.1 u	NC	1.0
		Vanadium, TCLP Leachate	8.9 u	8.9 u	NC	1.0
		Zinc, Leachate	35.4	35.9	1.4	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/27/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-004REP	B12V26	Mercury, TCLP Leachate	0.10u	0.10u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/27/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0608-LC1	Aluminum, LCS	555	500	MG/KG	111.0
		Bismuth, LCS	522	500	MG/KG	104.3
		Calcium, LCS	2530	2500	MG/KG	101.3
		Copper, LCS	136	125	MG/KG	108.4
		Iron, LCS	539	500	MG/KG	107.8
		Potassium, LCS	2790	2500	MG/KG	111.5
		Magnesium, LCS	2640	2500	MG/KG	105.5
		Manganese, LCS	79.7	75.0	MG/KG	106.3
		Molybdenum, LCS	537	500	MG/KG	107.4
		Sodium, LCS	2610	2500	MG/KG	104.3
		Tin, LCS	535	500	MG/KG	107.0
LCS1	01L0590-LC1	Silver, LCS	470	500	UG/L	94.0
		Barium, LCS	4800	5000	UG/L	96.0
		Beryllium, LCS	240	250	UG/L	96.1
		Cadmium, LCS	238	250	UG/L	95.3
		Chromium, LCS	487	500	UG/L	97.4
		Nickel, LCS	1990	2000	UG/L	99.5
		Lead, LCS	2440	2500	UG/L	97.7
		Antimony, LCS	2900	3000	UG/L	96.5
		Selenium, LCS	10000	10000	UG/L	100.2
		Vanadium, LCS	2410	2500	UG/L	96.4
		Zinc, LCS	978	1000	UG/L	97.8
LCS1	01C0293-LC1	Mercury, LCS	4.8	5.0	UG/L	96.3

Lionville Laboratory Use Only: 0109L798

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI Lionville Laboratory, Inc.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMU-Hanford B01-103
Est. Final Proj. Sampling Date:
Project #: 11343-0006-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 9-8-01 Date Due: 10-8-01

		A	B	C					D		E	F	G	H		
Refrigerator #		1	6	6					6		6	6	6	6		
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG					1AG		1AG	1AG	1AG	1AG		
Volume	Liquid															
	Solid	125	500	500					1L		1L	1L	125	60		
Preservatives																
ANALYSES REQUESTED	ORGANIC: VOA															
	ORGANIC: BNA															
	ORGANIC: Pest/PCB															
	ORGANIC: Herb															
	INORG: TCLP Metal															
	INORG: CN															
	TAL Metals															
	TC Anions															
	Acrylic Acrylates															
	HEX Chromium															

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	8240H	8260SX	OPCB			Met(2)		ITCLP		Met(1)	Inorg(1)	ODRO GRO	ICRO		
001	B12V25			S	8-31-01	1130	X	X	X					X		X	X	X	X		
002	B12V26			L	8-31-01	1300	X	X	X					X		X	X	X	X		
003	5 tclp of 001			L	*	-						X									
004	6 - 002			L								X									

Lionville Laboratory Use Only

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

DATE/REVISIONS:
Inorg(1) 1. ICN02, ICN03, INH3N, ICNTO, IPH,
2. ISED
Met(1) 3. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi,
4. Mo, Sn
Met(2) 5. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V, Zn,
6. Hg

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. 3.0 °C

Relinquished by	Received by	Date	Time
FED EX	Carlos Hernandez	9-8-01	10:00

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL		

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES: 4226 7064 7140

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-10	Page 1 of 1

Collector WATSON	Company Contact D Weekes	Telephone No. 372-9130	Project Coordinator TRENT, SJ
Project Designation 200 Area RCRA Drilling Waste Designation	Sampling Location 200 East WEST 09/4/01		SAF No. B01-103
Ice Chest No. 7 9.6.01 ERC96040	Field Logbook No. EL-1551	COA JRCRA14114	Method of Shipment Fed EX
Shipped To ~~TMA/RECRA~~ DJW 08/30/01	Offsite Property No. ~~N/A~~ DJW 08/30/01 A010365		Bill of Lading/Air Bill No. ~~N/A~~ DJW 08/30/01 42357954-7148

Price Code 8N

Data Turnaround 45 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 8/30/01. Collector not available to relenquish samples on 9/6/01 for shipment.
RT 9.6.01

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	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	60mL	120mL	120mL	250mL	500mL	500mL	500mL	500mL	1000mL	
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	VOA - 8260A (TCL)	PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.	See item (6) in Special Instructions. DJW 8/30/01	

Sample No.	Matrix *	Sample Date	Sample Time									TICTO
B12V25	SOIL	08/30/01	1130	X	X	X	X	X	X	X	X	B12V23
B12V26	SOIL	08/30/01	1300	X	X	X	X	X	X	X	X	B12V24

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
DJ WATSON	08/30/01 1440	DJW 08/30/01 5th DJ REF. 2C	08/30/01 1440
Relinquished By: Removed from Ref 2C 3728	Date/Time 0900 9-6-01	Received By: R Thore	Date/Time 0900 9-6-01
Relinquished By: R Thore	Date/Time 0900 9-6-01	Received By: FEDEX	Date/Time
Relinquished By: FEDEX	Date/Time 9-8-01 10:00	Received By: Calvin Alamafo	Date/Time 9-8-01 10:00
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

** All requests for Cr VI at the Severn Trent Laboratory, MUST BE routed to Richland
** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 will not be met

(1) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(2) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(3) ICP Metals - 6010A (TAL) {Aluminum, Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(4) Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) {Tributyl phosphate}
(5) 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
(6) ~~Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-153, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-~~ DJW 08/30/01

Matrix *
S=Soil
SD=Sediment
SO=Solid
S=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)

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Lionville Laboratory, Inc.

DRO ANALYTICAL DATA PACKAGE FOR

TNUHANFORD B01-~~013~~ 103 H1491

10-4-01

DATE RECEIVED: 09/08/01 LVL LOT # :0109L

OCT 2001 RECEIVED

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12V25	001	S	01LE1113	08/30/01	09/20/01	09/25/01
B12V25	001 MS	S	01LE1113	08/30/01	09/20/01	09/25/01
B12V25	001 MSD	S	01LE1113	08/30/01	09/20/01	09/25/01
B12V26	002	S	01LE1113	08/30/01	09/20/01	09/25/01

LAB QC:

BLK	MB1	S	01LE1113	N/A	09/20/01	09/25/01
BLK	MB1 BS	S	01LE1113	N/A	09/20/01	09/25/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: THU-HANFORD B01-103
LVL#: 0109L798
SDG/SAF#: H1491/B01-103

W.O #: 11343-606-001-9999-00
Date Received: 09-08-01

DIESEL RANGE ORGANICS

The set of samples consisted of two (2) soil samples collected on 08-30-01.

The samples and their associated QC samples were extracted on 09-20-01 and analyzed according to Lionville Laboratory OPs based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 09-25-01. 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 out of hold and analyzed within required holding times.

3. All surrogate recoveries were outside acceptance criteria.

4. The blank spike was within acceptance criteria.

5. All matrix spikes were within acceptance criteria.

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

7. All continuing calibration checks analyzed prior to 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

9/28/01
Date

R:\SHARE\GCPEST\narr temp\mu798dro.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.

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

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: 09/26/01 08:45

RFW Batch Number: 0109L798 Client: TNUHANFORD B01-015 H1491 Work Order: 11343606001 Page: 1

	Cust ID:	B12V25	B12V25	B12V25	B12V26	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	01LE1113-MB1	01LE1113-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 %	79 %	83 %	71 %	87 %	73 %
Diesel Range Organics		12.5 U	81 %	81 %	16.8 U	12.0 U	78 %
Kerosene		12.5 U	12.5 U	12.5 U	16.8 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

Lionville Laboratory Use Only

0109L798

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B01-103

Est. Final Proj. Sampling Date:

Project #: 11343-6010-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 9-8-01 Date Due: 10-8-01

		A	B	C					D		E	F	G	H		
Refrigerator #		1	6	6					6		6	6	6	6		
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG					1AG		1AG	1AG	1AG	1AG		
Volume	Liquid															
	Solid	125	500	500					1L		1L	1L	125	60		
Preservatives																
ANALYSES REQUESTED →	ORGANIC: VOA															
	ORGANIC: BNA															
	ORGANIC: Pest/PCB															
	ORGANIC: Herb															
	INORG: TCLP Metal															
	INORG: CN															
	TAL metals															
	TC															
	Anions															
	Alkalinity															
	Hardness															
	Hex Chromium															

Lionville Laboratory Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8260HA	8260SX	8PCB			Mx②		TCLP		Met①	Inorg①	8DRO 8GRO	ICPMS
001	B12V25			S	8-30-01	1130	X	X	X					X		X	X	X	X
002	B12V26			L	8-30-01	1300	X	X	X					X		X	X	X	X
003	1 S trip of 001			L	*							X							
004	1 6 1 002			L	1	1						X							

Special Instructions: SAF B01-103

* See labchron

Run Matrix QC

DATE/REVISIONS:

Inorg① 1. ICN02, ICN03, INH3N, ICN10, IPH,

2. ISFD

Met① 3. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi,

4. Mo, Sn

Met② 5. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V, Zn,

6. Hg

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. 3.0 °C

Relinquished by	Received by	Date	Time
FED EX	Carlos [illegible]	9-8-01	10:00

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL DEMOLITION	

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7954 7148

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-10	Page 1 of 2

Collector: WATSON	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 WEST 09/04/01	SAF No.: B01-103	Air Quality ☐
Ice Chest No.: ~~TMA~~ 9-6-01 ERC96-040	Field Logbook No.: EL-1551 — COA: JRCRA14114	Method of Shipment: Fed EX	
Shipped To: ~~TMA/RECRA~~ DSW 08/30/01	Offsite Property No.: ~~N/A~~ DSW 08/30/01 A010365	Bill of Lading/Air Bill No.: ~~N/A~~ DSW 08/30/01 42357954-7148	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 8/30/01. Collector not available to relenquish samples on 9/6/01 for shipment. RT 9.6.01

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	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	60mL	120mL	120mL	250mL	500mL	500mL	500mL	500mL	1000mL	
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	VOA - 8260A (TCL)	PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.	See item (6) in Special Instructions. DSW 8/30/01	

Sample No.	Matrix *	Sample Date	Sample Time										
B12V25	SOIL	08/30/01	1130	X	X	X	X	X	X	X	X		TICTO
B12V26	SOIL	08/30/01	1300	X	X	X	X	X	X	X	X		B12V23 B12V24

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
DS WATSON	08/30/01 1440	~~Received By~~ DSW 08/30/01 5:00 REF. 2C	08/30/01 1440
Remo Jedrio Ref 2C 3728	9-6-01 0900	R Thore	9-6-01 0900
R Thore	9-6-01 0900	FEDEX	
FEDEX	9-8-01 10:00	Carlos Alamo	9-8-01 10:00

SPECIAL INSTRUCTIONS

** All requests for Cr VI at the Severn Trent Laboratory, MUST BE routed to Richland

** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 will not be met

(1) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}

(2) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030

(3) ICP Metals - 6010A (TAL) {Aluminum, Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}

(4) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}

(5) 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

(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-~~ DSW 08/30/01

Matrix *

S=Soil
SD=Sediment
SO=Solid
S=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)

Figure 1. Sample Check-in List

Date/Time Received: 9-8-01 10:00

SDG#: 0109C798

Work Order Number: _____ SAF# B01-103

Shipping Container ID: 4235 7954 7148 Chain of Custody # B01-103-10

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 3.0
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: _____
7. Sample holding times exceeded? Yes [✓] No [ ]

8. Samples have:
   - ✓ tape (9-8-01) ____ 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: [signature] Date: 9-8-01 08

Telephoned to: _____ On _____ By _____

OCT 2001
RECEIVED

Lionville Laboratory, Inc.
GRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-~~013~~ 103 H1491

DATE RECEIVED: 09/08/01 LVL LOT # :0109L798

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12V25	001	S	01LVK912	08/30/01	N/A	09/12/01
B12V26	002	S	01LVK912	08/30/01	N/A	09/12/01
B12V26	002 MS	S	01LVK912	08/30/01	N/A	09/12/01
B12V26	002 MSD	S	01LVK912	08/30/01	N/A	09/12/01

LAB QC:

TBLKZY	MB1	S	01LVK912	N/A	N/A	09/12/01
TBLKZY	MB1 BS	S	01LVK912	N/A	N/A	09/12/01

LIONVILLE LABORATORY INC.

Analytical Report

Client : TNU-HANFORD B01-103
LVL# : 0109L798
SDG/SAF#: H1491/B01-103

W.O #: 11343-606-001-9999-00
Date Received: 09-08-01

GASOLINE RANGE ORGANICS

The set of samples consisted of two (2) soil samples collected on 08-30-01

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 09-12-01.

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 spikes 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

9/28/01
Date

r:\share\gcpest\narr temp\tnu798gro.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.

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

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: 09/25/01 14:~~21~~ 20

RFW Batch Number: 0109L798 Client: TNUHANFORD B01-~~013~~ from 103 H1491 Work Order: 11343606001 Page: 1

	Cust ID:	B12V25	B12V26	B12V26	B12V26	TBLKZY	TBLKZY BS
Sample Information	RFW#:	001	002	002 MS	002 MSD	01LVK912-MB1	01LVK912-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		69 %	89 %	96 %	82 %	77 %	73 %
Gasoline Range Organics (GRO)		44 U	60 U	100 %	87 %	40 U	81 %

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

Lionville Laboratory Use Only

0109L798

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI Lionville Laboratories

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMV-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: 9-8-01 Date Due: 10-8-01

		A	B	C					D		E	F	G	H		
Refrigerator #		1	6	6					6		6	6	6	6		
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG					1AG		1AG	1AG	1AG	1AG		
Volume	Liquid															
	Solid	125	500	500					1L		1L	1L	125	60		
Preservatives																
ANALYSES REQUESTED	ORGANIC: VOA								INORG: TCLP Metal		TAL Metals	IC Anions	Acids Bases Extractables	HGX Chromium		
	BNA															
	Pest/PCB															
	Herb															

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	8021HH	8021SK	8PCB			Met②		ITCLP		Met①	Inorg①	8DRO 8GRO	ICRG		
001	B12V25			S	8-30-01	1130	X	X	X					X		X	X	X	X		
002	B12V26			L	8-30-01	1300	X	X	X					X		X	X	X	X		
003	1 5 trip of 001			L	*							X									
004	1 6 1 002			1	1	1						X									

Special Instructions: SAF B01-103

* See lab chron

Run Matrix QC

DATE/REVISIONS:

Inorg① 1. ICNO2, ICNO3, INH3N, ICNTO, IPH,
1 2. ISED
Met① 3. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi,
1 4. Mo, Sn
Met② 5. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V, Zn,
1 6. Hg

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. 3.0 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7954 7148

Relinquished by	Received by	Date	Time
FED EX	Carlos [illegible]	9-8-01	10:00

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-10	Page 1 of 1

Collector: WATSON	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 WEST DSW 08/30/01	SAF No.: B01-103	
Ice Chest No.: ~~7~~ 9-6-01 ERC96-040	Field Logbook No.: EL-1551	COA: JRCRA14114	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA DSW 08/30/01	Offsite Property No.: ~~N/A~~ DSW 08/30/01 A010365	Bill of Lading/Air Bill No.: ~~N/A~~ DSW 08/30/01 42357954-7148	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 8/30/01. Collector not available to relenquish samples on 9/6/01 for shipment. RT 9.6.01

SAMPLE ANALYSIS

			Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	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	60mL	120mL	120mL	250mL	500mL	500mL	500mL	500mL	1000mL	
				Chromium Hex - 7196	See item (1) in Special Instructions.	VOA - 8260A (TCL)	PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.	See item (6) in Special Instructions.	
Sample No.	Matrix *	Sample Date	Sample Time										
B12V25	SOIL	08/30/01	1130	X	X	X	X	X	X	X	X		TICTO
B12V26	SOIL	08/30/01	1300	X	X	X	X	X	X	X	X		B12V23 B12V24

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
DJ WATSON	08/30/01 1440	~~Received By~~ DSW 08/30/01 5th ~~Date/Time~~ REF. 2C	08/30/01 1440
Remo Sofrio Ref 2C 3728	0900 9-6-01	R Thore	0900 9-6-01
R Thore	0900 9-6-01	FEDEX	
FEDEX	9-8-01 10:00	Carlos Demafo	9-8-01 10:00

SPECIAL INSTRUCTIONS

** All requests for Cr VI at the Severn Trent Laboratory, MUST BE routed to Richland

** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 will not be met

(1) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}
(2) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030
(3) ICP Metals - 6010A (TAL) {Aluminum, Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}
(4) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(5) 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
~~(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-~~ DSW 08/30/01

Matrix *
S=Soil
SD=Sediment
SO=Solid
S=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)

Figure 1. Sample Check-in List

Date/Time Received: 9-8-01 10:00

SDG#: 0109C798

Work Order Number: _____ SAF# B01-103

Shipping Container ID: 4235 7954 7148 Chain of Custody # B01-103-10

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 3.0
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: _____
7. Sample holding times exceeded? Yes [✓] No [ ]

8. Samples have:
   - ✓ tape (9-8-01) ____ 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: [signature] Date: 9-8-01

Telephoned to: _____ On _____ By _____

08

OCT 2001
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Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-~~013~~ 103 H1491

DATE RECEIVED: 09/08/01 LVL LOT # :0109L798

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12V25						
% SOLIDS	001	S	01L%S118	08/30/01	09/11/01	09/12/01
% SOLIDS	001 REP	S	01L%S118	08/30/01	09/11/01	09/12/01
NITRITE BY IC	001	S	01LICB62	08/30/01	09/21/01	09/21/01
NITRITE BY IC	001 REP	S	01LICB62	08/30/01	09/21/01	09/21/01
NITRITE BY IC	001 MS	S	01LICB62	08/30/01	09/21/01	09/21/01
NITRATE BY IC	001	S	01LICB62	08/30/01	09/21/01	09/21/01
NITRATE BY IC	001 REP	S	01LICB62	08/30/01	09/21/01	09/21/01
NITRATE BY IC	001 MS	S	01LICB62	08/30/01	09/21/01	09/21/01
TOTAL CYANIDE	001	S	01LC085	08/30/01	09/11/01	09/11/01
CHROMIUM VI	001	S	01LVI075	08/30/01	09/18/01	09/18/01
CHROMIUM VI	001 REP	S	01LVI075	08/30/01	09/18/01	09/18/01
CHROMIUM VI	001 MS	S	01LVI075	08/30/01	09/18/01	09/18/01
CHROMIUM VI	001 MSD	S	01LVI075	08/30/01	09/18/01	09/18/01
AMMONIA	001	S	01LAM044	08/30/01	09/20/01	09/20/01
AMMONIA	001 REP	S	01LAM044	08/30/01	09/20/01	09/20/01
AMMONIA	001 MS	S	01LAM044	08/30/01	09/20/01	09/20/01
PH	001	S	01LPH062	08/30/01	09/14/01	09/14/01
PH	001 REP	S	01LPH062	08/30/01	09/14/01	09/14/01
SULFIDE	001	S	01LSDA47	08/30/01	09/17/01	09/17/01
TCLP	001	S	01LTO111	08/30/01	09/17/01	09/18/01
B12V26						
% SOLIDS	002	S	01L%S118	08/30/01	09/11/01	09/12/01
NITRITE BY IC	002	S	01LICB62	08/30/01	09/21/01	09/21/01
NITRATE BY IC	002	S	01LICB62	08/30/01	09/21/01	09/21/01
TOTAL CYANIDE	002	S	01LC085	08/30/01	09/11/01	09/11/01
TOTAL CYANIDE	002 REP	S	01LC085	08/30/01	09/11/01	09/11/01
TOTAL CYANIDE	002 MS	S	01LC085	08/30/01	09/11/01	09/11/01
CHROMIUM VI	002	S	01LVI075	08/30/01	09/18/01	09/18/01
AMMONIA	002	S	01LAM044	08/30/01	09/20/01	09/20/01
PH	002	S	01LPH062	08/30/01	09/14/01	09/14/01
SULFIDE	002	S	01LSDA47	08/30/01	09/17/01	09/17/01
SULFIDE	002 REP	S	01LSDA47	08/30/01	09/17/01	09/17/01
SULFIDE	002 MS	S	01LSDA47	08/30/01	09/17/01	09/17/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-~~013~~ H1491

DATE RECEIVED: 09/08/01 LVL LOT # :0109L798

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TCLP	002	S	01LTO111	08/30/01	09/17/01	09/18/01

LAB QC:

NITRITE BY IC	MB1	S	01LICB62	N/A	09/21/01	09/21/01
NITRITE BY IC	MB1 BS	S	01LICB62	N/A	09/21/01	09/21/01
NITRATE BY IC	MB1	S	01LICB62	N/A	09/21/01	09/21/01
NITRATE BY IC	MB1 BS	S	01LICB62	N/A	09/21/01	09/21/01
TOTAL CYANIDE	LCS L	S	01LC085	N/A	09/11/01	09/11/01
TOTAL CYANIDE	LCS L	S	01LC085	N/A	09/11/01	09/11/01
TOTAL CYANIDE	MB1	S	01LC085	N/A	09/11/01	09/11/01
CHROMIUM VI	MB1	S	01LVI075	N/A	09/18/01	09/18/01
CHROMIUM VI	MB1 BS	S	01LVI075	N/A	09/18/01	09/18/01
CHROMIUM VI	MB1 BSD	S	01LVI075	N/A	09/18/01	09/18/01
AMMONIA	MB1	S	01LAM044	N/A	09/20/01	09/20/01
AMMONIA	MB1 BS	S	01LAM044	N/A	09/20/01	09/20/01
AMMONIA	MB1 BSD	S	01LAM044	N/A	09/20/01	09/20/01
SULFIDE	MB1	S	01LSDA47	N/A	09/17/01	09/17/01
SULFIDE	MB1 BS	S	01LSDA47	N/A	09/17/01	09/17/01

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-~~013~~ 103 from 10-04-01 H1491
LVL#: 0109L798

W.O.#: 11343-606-001-9999-00
Date Received: 09-08-01

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 that were received past hold.

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 with the exception of LCS 01LVI072 for Insoluble Chromium VI that was above the 80-120% control limits. The duplicate LCS for Ammonia was within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries were within the 75-125% control limits.

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

9. 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

09-26-01
Date

njp\i09-798

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
TCLP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		✓ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		✓ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		__ 9095A	

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

Other: Ammonia **Method** EPA 350.3 ~~(mod)~~ mp 9-25-01

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
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 09/26/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12V25	% Solids	95.8	%	0.01	1.0
		Nitrite by IC	1.30 u	MG/KG	1.30	1.0
		Nitrate by IC	2.13	MG/KG	1.30	1.0
		Cyanide, Total	0.47 u	MG/KG	0.47	1.0
		Chromium VI	0.84	MG/KG	0.42	1.0
		Ammonia, as N	2.5 u	MG/KG	2.5	1.0
		pH	9.1	SOIL PH	0.01	1.0
		Sulfide	0.02 u	MG/KG	0.02	1.0
-002	B12V26	% Solids	71.3	%	0.01	1.0
		Nitrite by IC	1.75 u	MG/KG	1.75	1.0
		Nitrate by IC	1.75 u	MG/KG	1.75	1.0
		Cyanide, Total	0.62 u	MG/KG	0.62	1.0
		Chromium VI	0.59	MG/KG	0.56	1.0
		Ammonia, as N	3.3 u	MG/KG	3.3	1.0
		pH	8.8	SOIL PH	0.01	1.0
		Sulfide	0.03 u	MG/KG	0.03	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/26/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LICB62-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	01LC085-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK10	01LVI075-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0
BLANK10	01LAM044-MB1	Ammonia, as N	2.5 u	MG/KG	2.5	1.0
BLANK10	01LSDA47-MB1	Sulfide	1.0 u	MG/KG	1.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 09/26/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12V25	Nitrite by IC	25.3	1.30u	26.1	96.8	1.0
		Nitrate by IC	26.3	2.13	26.1	92.7	1.0
		Soluble Chromium VI	4.1	0.84	4.2	78.0	1.0
		Insoluble Chromium VI	1550	0.84	1280	121.4	100
		Ammonia, as N	97.2	2.5 u	96.7	100.5	1.0
-002	B12V26	Cyanide, Total	5.55	0.62u	6.10	91.0	1.0
		Sulfide	0.26	0.02	0.31	76.8	1.0
BLANK10	01LICB62-MB1	Nitrite by IC	24.2	1.25u	25.0	96.7	1.0
		Nitrate by IC	24.8	1.25u	25.0	99.3	1.0
BLANK10	01LVI075-MB1	Soluble Chromium VI	4.1	0.40u	4.0	102.0	1.0
		Insoluble Chromium VI	1440	0.40u	1160	124.3	100
BLANK10	01LAM044-MB1	Ammonia, as N	102	2.5 u	100	102.5	1.0
		Ammonia, as N MSD	87.8	2.5 u	100	87.8	1.0
BLANK10	01LSDA47-MB1	Sulfide	10.5	1.0 u	11.7	89.7	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 09/26/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	01LAN044-MB1	Ammonia, as N	102.5	87.8	15.5

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 09/26/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B12V25	% Solids	95.8	96.0	0.28	1.0
		Nitrite by IC	1.30u	1.30u	NC	1.0
		Nitrate by IC	2.13	2.04	4.5	1.0
		Chromium VI	0.84	0.91	8.4	1.0
		Ammonia, as N	2.5 u	2.5 u	NC	1.0
		pH	9.1	9.1	0.3	1.0
-002REP	B12V26	Cyanide, Total	0.62u	0.60u	NC	1.0
		Sulfide	0.03u	0.03	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/26/01

CLIENT: TNUHANFORD B01-103 H1491 LVL LOT #: 0109L798

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	01LC085-LCS1	Cyanide, Total LCS	1.84	2.0	MG/KG	91.8
LCSS2	01LC085-LCS2	Cyanide, Total LCS	10.1	10.0	MG/KG	101.0

Lionville Laboratory Use Only

01091798

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

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: 9-8-01 Date Due: 10-8-01

		A	B	C					D		E	F	G	H		
Refrigerator #		1	6	6					6		6	6	6	6		
#/Type Container	Liquid															
	Solid	1AG	1AG	1AG					1AG		1AG	1AG	1AG	1AG		
Volume	Liquid															
	Solid	125	500	500					1L		1L	1L	125	60		
Preservatives																
ANALYSES REQUESTED	ORGANIC: VOA															
	ORGANIC: BNA															
	ORGANIC: Pest/PCB															
	ORGANIC: Herb															
	INORG: TCLP Metal															
	INORG: CN															
	TAL Metals															
	TC															
	Anions Nitrite Nitrate Fluoride															
	Hex Chromium															

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	8240H	8260SX	8PCB			Met②		TCLP		Met①	Inorg①	8DRO 8GRO	ICP
001	B12V25			S	8-31-01	1130	X	X	X					X		X	X	X	X
002	B12V26			L	8-31-01	1300	X	X	X					X		X	X	X	X
003	1 5 trip of 001			L	*							X							
004	1 6 1 002			1	1	1						X							

Special instructions: SAF B01-103

* See lab chron

Run Matrix QC

DATE/REVISIONS:

Inorg① 1. ICN02, ICN03, INH3N, ICN10, IPH,
2. ISED

Met① 3. Al, Ca, Cu, Fe, Mg, Mn, K, Na, Bi,
4. Mo, Sn

Met② 5. Ba, Cd, Cr, Pb, Se, Ag, Sb, Be, Ni, V, Zn,
6. Hg

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. 3.0 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7954 7148

Relinquished by	Received by	Date	Time
FED EX	Carlos [illegible]	9-8-01	10:00

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL CONDITION		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-103-10	Page 1 of 1
Collector: WATSON	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 WEST 09/04/01	SAF No.: B01-103	Air Quality ☐
Ice Chest No.: ~~RTA~~ 9-6-01 ERC96-040	Field Logbook No.: EL-1551; COA: JRCRA14114	Method of Shipment: Fed EX	
Shipped To: ~~TMA/RECRA~~ DSW 08/30/01	Offsite Property No.: ~~N/A~~ DSW 08/30/01 A010365	Bill of Lading/Air Bill No.: ~~N/A~~ DSW 08/30/01 42357954-7148	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 8/30/01. Collector not available to relenquish samples on 9/6/01 for shipment. RT 9-6-01

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	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	60mL	120mL	120mL	250mL	500mL	500mL	500mL	500mL	1000mL	
SAMPLE ANALYSIS	Chromium Hex - 7196	See item (1) in Special Instructions.	VOA - 8260A (TCL)	PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	See item (5) in Special Instructions.	See item (6) in Special Instructions.	

Sample No.	Matrix *	Sample Date	Sample Time									
B12V25	SOIL	08/30/01	1130	X	X	X	X	X	X	X	X	
B12V26	SOIL	08/30/01	1300	X	X	X	X	X	X	X	X	

TIETO B12V23 B12V24

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
DSWATSON	08/30/01 1440	~~Received By~~ DSW 08/30/01 5:00 REF.2C	08/30/01 1440
Ref 2C Removed from 3728	9-6-01 0900	R. Thore	9-6-01 0900
R. Thore	9-6-01 0900	FEDEX	
FEDEX	9-8-01 10:00	Carlos Remafo	9-8-01 10:00

SPECIAL INSTRUCTIONS

** All requests for Cr VI at the Seven Trent Laboratory, MUST BE routed to Richland

** The ERC acknowledges that the analytical holding time for Nitrate by EPA Method 300.0 will not be met

(1) Alcohols, Glycols, & Ketones - 8015M (Add-on) {Kerosene, Normal paraffin hydrocarbons (petroleum)}

(2) IC Anions - 300.0 {Nitrate, Nitrite}; Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045; Sulfides - 9030

(3) ICP Metals - 6010A (TAL) {Aluminum, Calcium, Copper, Iron, Magnesium, Manganese, Potassium, Sodium}; ICP Metals - 6010A (Add-on) {Bismuth, Molybdenum, Tin}

(4) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}

(5) 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

~~(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-~~ DSW 08/30/01

Matrix *: S=Soil; SD=Sediment; SO=Solid; S=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)

Figure 1. Sample Check-in List

Date/Time Received: 9-8-01 10:00

SDG#: 0109C798

Work Order Number: _____ SAF# B01-103

Shipping Container ID: 4235 7954 7148 Chain of Custody # B01-103-10

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 3.0
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: _____
7. Sample holding times exceeded? Yes [✓] No [ ]

8. Samples have:
9-8-01 ✓ 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: [signature] Date: 9-8-01

Telephoned to: _____ On _____ By _____