Eberline Services
W.O. No. R2-01-049-7191

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EDMC

Bechtel Hanford Inc.
SDG H1650

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1650 was composed of one solid (soil) sample designated under SAF No. B01-113 with a Project Designation of: PFP Well Installation Sampling and Analysis – Soil.

The sample was received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on February 22, 2002.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta 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 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.4 *Isotopic Plutonium Analyses*

No problems were encountered during the course of the analyses.

2.5 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.6 Gamma Spectroscopy 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 — 2/22/02

Melissa C. Mannion
Program Manager

Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1650

SDG 7191
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1650

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B13DY6	200 West, Well No. C3803	SOLID		R201049-01	B01-113	B01-113-35	01/03/02 19:10
Method Blank		SOLID		R201049-03	B01-113		
Lab Control Sample		SOLID		R201049-02	B01-113		
Duplicate (R201049-01)	200 West, Well No. C3803	SOLID		R201049-04	B01-113		01/03/02 19:10

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 02/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1650

SDG 7191
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1650

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
7191	B01-113-35	B13DY6	SOLID	96.2	1155 g		01/08/02	5	R201049-01	7191-001
		Method Blank	SOLID						R201049-03	7191-003
		Lab Control Sample	SOLID						R201049-02	7191-002
		Duplicate (R201049-01)	SOLID	96.2	1155 g		01/08/02	5	R201049-04	7191-004

Lab id TMANC
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Form DVD-QS
Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1650

SDG 7191
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1650

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	7018-134	5.0	1			1	1	1/1		
NP	SOLID	Neptunium in Soil	7018-134	5.0	1			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7018-134	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7018-134	10.0	1			1	1	1/1		
Gas Proportional Counting												
93A	SOLID	Gross Alpha in Soil	7018-134	20.0	1			1	1	1/1		
93B	SOLID	Gross Beta in Soil	7018-134	15.0	1			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7018-134	15.0	1			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 02/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1650

SDG 7191
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1650

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B13DY6			R201049-01	7191-001	93A/93		02/12/02	02/22/02	MCM	Gross Alpha in Soil
200 West, Well No. C3803		SOLID	01/03/02	7191-001	93B/93		02/12/02	02/22/02	MCM	Gross Beta in Soil
B01-113-35	B01-113		01/08/02	7191-001	AM		02/14/02	02/22/02	MCM	Americium 241 in Soil
				7191-001	GAM		02/13/02	02/22/02	MCM	Gamma Scan
				7191-001	NP		02/14/02	02/22/02	MCM	Neptunium in Soil
				7191-001	PU		02/19/02	02/22/02	MCM	Plutonium, Isotopic in Solids
				7191-001	SR		02/12/02	02/22/02	MCM	Total Strontium in Soil
Method Blank			R201049-03	7191-003	93A/93		02/12/02	02/22/02	MCM	Gross Alpha in Soil
		SOLID		7191-003	93B/93		02/12/02	02/22/02	MCM	Gross Beta in Soil
	B01-113			7191-003	AM		02/14/02	02/22/02	MCM	Americium 241 in Soil
				7191-003	GAM		02/13/02	02/22/02	MCM	Gamma Scan
				7191-003	NP		02/14/02	02/22/02	MCM	Neptunium in Soil
				7191-003	PU		02/20/02	02/22/02	MCM	Plutonium, Isotopic in Solids
				7191-003	SR		02/12/02	02/22/02	MCM	Total Strontium in Soil
Lab Control Sample			R201049-02	7191-002	93A/93		02/14/02	02/22/02	MCM	Gross Alpha in Soil
		SOLID		7191-002	93B/93		02/14/02	02/22/02	MCM	Gross Beta in Soil
	B01-113			7191-002	AM		02/14/02	02/22/02	MCM	Americium 241 in Soil
				7191-002	GAM		02/13/02	02/22/02	MCM	Gamma Scan
				7191-002	NP		02/14/02	02/22/02	MCM	Neptunium in Soil
				7191-002	PU		02/20/02	02/22/02	MCM	Plutonium, Isotopic in Solids
				7191-002	SR		02/12/02	02/22/02	MCM	Total Strontium in Soil
Duplicate (R201049-01)			R201049-04	7191-004	93A/93		02/12/02	02/22/02	MCM	Gross Alpha in Soil
200 West, Well No. C3803		SOLID	01/03/02	7191-004	93B/93		02/12/02	02/22/02	MCM	Gross Beta in Soil
	B01-113		01/08/02	7191-004	AM		02/14/02	02/22/02	MCM	Americium 241 in Soil
				7191-004	GAM		02/14/02	02/22/02	MCM	Gamma Scan
				7191-004	NP		02/14/02	02/22/02	MCM	Neptunium in Soil
				7191-004	PU		02/20/02	02/22/02	MCM	Plutonium, Isotopic in Solids
				7191-004	SR		02/12/02	02/22/02	MCM	Total Strontium in Soil

Lab id TMANC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1650

SDG 7191
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1650

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	B01-113	Gross Alpha in Soil	900.0_ALPHABETA_GPC	1			1	1	1	4
93B/93	B01-113	Gross Beta in Soil	900.0_ALPHABETA_GPC	1			1	1	1	4
AM	B01-113	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	1			1	1	1	4
GAM	B01-113	Gamma Scan	GAMMA_GS	1			1	1	1	4
NP	B01-113	Neptunium in Soil	NP237_LLE_PLATE_AEA	1			1	1	1	4
PU	B01-113	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1	4
SR	B01-113	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	1			1	1	1	4
TOTALS				7			7	7	7	28

Lab id TMANC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1650

R201049-03 Method Blank

METHOD BLANK

SDG	7191	Client/Case no	Hanford	SDG H1650	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R201049-03	Client sample id	Method Blank		
Dept sample id	7191-003	Material/Matrix		SOLID	
		SAF No	B01-113		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.271	1.7	3.0	10	U	93A
Gross Beta	12587-47-2	0.897	3.4	5.7	15	U	93B
Total Strontium	SR-RAD	-0.116	0.14	0.32	1.0	U	SR
Neptunium 237	13994-20-2	0.007	0.028	0.053	1.0	U	NP
Plutonium 238	13981-16-3	0	0.059	0.22	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.059	0.22	1.0	U	PU
Americium 241	14596-10-2	-0.029	0.058	0.22	1.0	U	AM
Potassium 40	13966-00-2	U		0.17		U	GAM
Cobalt 60	10198-40-0	U		0.021	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.18		U	GAM
Antimony 125	14234-35-6	U		0.037		U	GAM
Cesium 137	10045-97-3	U		0.018	0.10	U	GAM
Radium 226	13982-63-3	U		0.032	0.10	U	GAM
Radium 228	15262-20-1	U		0.082	0.20	U	GAM
Europium 152	14683-23-9	U		0.043	0.10	U	GAM
Europium 154	15585-10-1	U		0.085	0.10	U	GAM
Europium 155	14391-16-3	U		0.024	0.10	U	GAM
Thorium 228	14274-82-9	U		0.021		U	GAM
Thorium 232	TH-232	U		0.082		U	GAM
Uranium 235	15117-96-1	U		0.048		U	GAM
Uranium 238	U-238	U		3.2		U	GAM
Americium 241	14596-10-2	U		0.019		U	GAM

PFP Well Installation Smpl. & Analy.

QC-BLANK 41077

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1650

R201049-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7191
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1650
Case no No. 630

Lab sample id R201049-02
Dept sample id 7191-002

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B01-113

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
Gross Alpha	229	16	3.4	10		93A	215	8.6	106	66-134	70-130
Gross Beta	242	12	8.6	15		93B	238	9.5	102	75-125	70-130
Total Strontium	24.1	0.92	0.27	1.0		SR	22.8	0.91	106	82-118	80-120
Neptunium 237	21.6	0.92	0.062	1.0		NP	21.8	0.87	99	89-111	80-120
Plutonium 238	24.3	2.5	0.22	1.0		PU	27.0	1.1	90	83-117	80-120
Plutonium 239/240	26.4	2.7	0.22	1.0		PU	29.0	1.2	91	83-117	80-120
Americium 241	21.1	2.6	0.31	1.0		AM	21.0	0.84	100	79-121	80-120
Cobalt 60	0.989	0.085	0.037	0.050		GAM	1.09	0.044	91	76-124	80-120
Cesium 137	1.19	0.076	0.047	0.10		GAM	1.29	0.052	92	77-123	80-120

PFP Well Installation Smpl. & Analy.

QC-LCS 41076

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form OVD-LCS
Version 3.06
Report date 02/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1650

R201049-04 B13DY6

DUPLICATE

SDG	7191			Client/Case no	Hanford SDG H1650
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R201049-04	Lab sample id	R201049-01	Client sample id	B13DY6
Dept sample id	7191-004	Dept sample id	7191-001	Location/Matrix	200 West, Well No. C3803 SOLID
		Received	01/08/02	Collected/Weight	01/03/02 19:10 1155 g
% solids	96.2	% solids	96.2	Custody/SAF No	B01-113-35 B01-113

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
Gross Alpha	3.39	4.0	5.5	10	U	93A	5.03	4.4	5.7	U	-	
Gross Beta	13.0	5.0	7.3	15	J	93B	13.1	5.7	8.5	J	1	93
Total Strontium	-0.054	0.15	0.31	1.0	U	SR	-0.021	0.14	0.30	U	-	
Neptunium 237	-0.017	0.022	0.061	1.0	U	NP	0.006	0.022	0.054	U	-	
Plutonium 238	0.029	0.059	0.22	1.0	U	PU	0.018	0.037	0.060	U	-	
Plutonium 239/240	0.029	0.059	0.22	1.0	U	PU	0.010	0.016	0.032	U	-	
Americium 241	0.067	0.13	0.26	1.0	U	AM	0.064	0.13	0.24	U	-	
Potassium 40	11.0	1.0	0.68			GAM	11.8	0.84	0.43		7	36
Cobalt 60	U		0.049	0.050	U	GAM	U		0.044	U	-	
Ruthenium 106	U		0.39		U	GAM	U		0.34	U	-	
Antimony 125	U		0.095		U	GAM	U		0.072	U	-	
Cesium 137	U		0.042	0.10	U	GAM	U		0.037	U	-	
Radium 226	0.392	0.092	0.092	0.10		GAM	0.360	0.080	0.080		9	58
Radium 228	0.705	0.23	0.22	0.20		GAM	0.615	0.19	0.18		14	75
Europium 152	U		0.11	0.10	U	GAM	U		0.074	U	-	
Europium 154	U		0.16	0.10	U	GAM	U		0.14	U	-	
Europium 155	U		0.11	0.10	U	GAM	U		0.063	U	-	
Thorium 228	0.730	0.077	0.077			GAM	0.739	0.060	0.054		1	38
Thorium 232	0.705	0.23	0.22			GAM	0.615	0.19	0.18		14	75
Uranium 235	U		0.15		U	GAM	U		0.11	U	-	
Uranium 238	U		5.9		U	GAM	U		5.0	U	-	
Americium 241	U		0.15		U	GAM	U		0.045	U	-	

PFP Well Installation Smpl. & Analy.

QC-DUP#1 41078

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	02/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1650

R201049-01 B13DY6

DATA SHEET

SDG	7191	Client/Case no	Hanford SDG H1650
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R201049-01	Client sample id	B13DY6
Dept sample id	7191-001	Location/Matrix	200 West, Well No. C3803 SOLID
Received	01/08/02	Collected/Weight	01/03/02 19:10 1155 g
% solids	96.2	Custody/SAF No	B01-113-35 B01-113

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	5.03	4.4	5.7	10	U	93A
Gross Beta	12587-47-2	13.1	5.7	8.5	15	J	93B
Total Strontium	SR-RAD	-0.021	0.14	0.30	1.0	U	SR
Neptunium 237	13994-20-2	0.006	0.022	0.054	1.0	U	NP
Plutonium 238	13981-16-3	0.018	0.037	0.060	1.0	U	PU
Plutonium 239/240	PU-239/240	0.010	0.016	0.032	1.0	U	PU
Americium 241	14596-10-2	0.064	0.13	0.24	1.0	U	AM
Potassium 40	13966-00-2	11.8	0.84	0.43			GAM
Cobalt 60	10198-40-0	U		0.044	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.34		U	GAM
Antimony 125	14234-35-6	U		0.072		U	GAM
Cesium 137	10045-97-3	U		0.037	0.10	U	GAM
Radium 226	13982-63-3	0.360	0.080	0.080	0.10		GAM
Radium 228	15262-20-1	0.615	0.19	0.18	0.20		GAM
Europium 152	14683-23-9	U		0.074	0.10	U	GAM
Europium 154	15585-10-1	U		0.14	0.10	U	GAM
Europium 155	14391-16-3	U		0.063	0.10	U	GAM
Thorium 228	14274-82-9	0.739	0.060	0.054			GAM
Thorium 232	TH-232	0.615	0.19	0.18			GAM
Uranium 235	15117-96-1	U		0.11		U	GAM
Uranium 238	U-238	U		5.0		U	GAM
Americium 241	14596-10-2	U		0.045		U	GAM

PFP Well Installation Smpl. & Analy.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1650

Test AM Matrix SOLID
SDG 7191
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1650

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 7018-134						
B13DY6	R201049-01			7191-001	U	
BLK (QC ID=41077)	R201049-03			7191-003	U	
LCS (QC ID=41076)	R201049-02			7191-002	ok	
Duplicate (R201049-01)	R201049-04			7191-004	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
PFP Well Installation Smpl. & Analy.						

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 7018-134	2σ prep error 5.0 %				Reference Lab Notebook 7018 pg. 134											
B13DY6	R201049-01			0.24	0.500			73		102			42	02/14/02	02/14	SS-042
BLK (QC ID=41077)	R201049-03			0.22	0.500			81		102				02/14/02	02/14	SS-045
LCS (QC ID=41076)	R201049-02			0.31	0.500			58		102				02/14/02	02/14	SS-043
Duplicate (R201049-01) (QC ID=41078)	R201049-04			0.26	0.500			69		102			42	02/14/02	02/14	SS-047
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 4 SAMPLES				
	MDA	0.26	±	0.077
	YIELD	70	±	19

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1650

Test NP Matrix SOLID
SDG 7191
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1650

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7018-134						
B13DY6	R201049-01			7191-001	U	
BLK (QC ID=41077)	R201049-03			7191-003	U	
LCS (QC ID=41076)	R201049-02			7191-002	ok	
Duplicate (R201049-01)	R201049-04			7191-004	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
PFP Well Installation Smpl. & Analy.						

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 7018-134	2σ prep error 5.0 %			Reference Lab Notebook 7018 pg. 134												
B13DY6	R201049-01			0.054	0.500			61		699			42	02/14/02	02/14	SS-032
BLK (QC ID=41077)	R201049-03			0.053	0.500			49		700				02/14/02	02/14	SS-042
LCS (QC ID=41076)	R201049-02			0.062	0.500			53		699				02/14/02	02/14	SS-041
Duplicate (R201049-01) (QC ID=41078)	R201049-04			0.061	0.500			61		700			42	02/14/02	02/14	SS-043
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 4 SAMPLES				
	MDA	0.058	±	0.009
	YIELD	56	±	12

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1650

Test PU Matrix SOLID
SDG 7191
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1650

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 7018-134								
B13DY6	R201049-01			7191-001	U		U	
BLK (QC ID=41077)	R201049-03			7191-003	U		U	
LCS (QC ID=41076)	R201049-02			7191-002	ok		ok	
Duplicate (R201049-01)	R201049-04			7191-004	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	
PFP Well Installation Smpl. & Analy.								

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 7018-134	2σ prep error 5.0 %			Reference Lab Notebook 7018 pg. 134												
B13DY6	R201049-01			0.060	0.500			78		1144			47	02/19/02	02/19	SS-041
BLK (QC ID=41077)	R201049-03			0.22	0.500			78		101				02/19/02	02/20	SS-048
LCS (QC ID=41076)	R201049-02			0.22	0.500			79		100				02/19/02	02/20	SS-047
Duplicate (R201049-01) (QC ID=41078)	R201049-04			0.22	0.500			85		101			48	02/19/02	02/20	SS-049
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 4 SAMPLES				
	MDA	0.18	±	0.16
	YIELD	80	±	7

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1650

Test SR Matrix SOLID
SDG 7191
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1650

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 7018-134					
B13DY6	R201049-01			7191-001	U
BLK (QC ID=41077)	R201049-03			7191-003	U
LCS (QC ID=41076)	R201049-02			7191-002	ok
Duplicate (R201049-01)	R201049-04			7191-004	- U
Nominal values and limits from method				RDLs (pCi/g)	1.0

PFP Well Installation Smpl. & Analy.

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 7018-134	2σ prep error 10.0 % Reference Lab Notebook 7018 pg. 134															
B13DY6	R201049-01			0.30	1.00			92		100			40	02/12/02	02/12	GRB-219
BLK (QC ID=41077)	R201049-03			0.32	1.00			81		100				02/12/02	02/12	GRB-222
LCS (QC ID=41076)	R201049-02			0.27	1.00			87		100				02/12/02	02/12	GRB-221
Duplicate (R201049-01) (QC ID=41078)	R201049-04			0.31	1.00			89		100			40	02/12/02	02/12	GRB-223
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 4 SAMPLES				
	MDA	0.30	±	0.043
	YIELD	87	±	9

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1650

Test 93A Matrix SOLID
SDG 7191
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1650

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 7018-134						
B13DY6	R201049-01	93		7191-001	U	
BLK (QC ID=41077)	R201049-03	93		7191-003	U	
LCS (QC ID=41076)	R201049-02	93		7191-002	ok	
Duplicate (R201049-01)	R201049-04	93		7191-004	-	U

Nominal values and limits from method RDLs (pCi/g) 10
PFP Well Installation Smpl. & Analy.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7018-134 2σ prep error 20.0 % Reference Lab Notebook 7018 pg. 134																
B13DY6	R201049-01	93		5.7	0.100			87		100			40	02/12/02	02/12	GRB-105
BLK (QC ID=41077)	R201049-03	93		3.0	0.100			23		100				02/12/02	02/12	GRB-109
LCS (QC ID=41076)	R201049-02	93		3.4	0.100			23		100				02/12/02	02/14	GRB-114
Duplicate (R201049-01) (QC ID=41078)	R201049-04	93		5.5	0.100			86		100			40	02/12/02	02/12	GRB-110
Nominal values and limits from method				10	0.100			5-250		100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	4.4	±	2.8
	RESIDUE	55	±	73

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1650

Test 93B Matrix SOLID
SDG 7191
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1650

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta	
Preparation batch 7018-134						
B13DY6	R201049-01	93		7191-001	13.1	J
BLK (QC ID=41077)	R201049-03	93		7191-003	U	
LCS (QC ID=41076)	R201049-02	93		7191-002	ok	
Duplicate (R201049-01)	R201049-04	93		7191-004	ok	J

Nominal values and limits from method RDLs (pCi/g) 15
PFP Well Installation Smpl. & Analy.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7018-134 2σ prep error 15.0 % Reference Lab Notebook 7018 pg. 134																
B13DY6	R201049-01	93		8.5	0.100			87		100			40	02/12/02	02/12	GRB-105
BLK (QC ID=41077)	R201049-03	93		5.7	0.100			23		100				02/12/02	02/12	GRB-109
LCS (QC ID=41076)	R201049-02	93		8.6	0.100			23		100				02/12/02	02/14	GRB-114
Duplicate (R201049-01) (QC ID=41078)	R201049-04	93		7.3	0.100			86		100			40	02/12/02	02/12	GRB-110
Nominal values and limits from method				15	0.100			5-250		100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 7.5 ± 2.7
RESIDUE 55 ± 73

Lab id IMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/22/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1650

Test GAM Matrix SOLID
SDG 7191
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1650

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7018-134								
B13DY6	R201049-01			7191-001	U		U	
BLK (QC ID=41077)	R201049-03			7191-003	U		U	
LCS (QC ID=41076)	R201049-02			7191-002	ok		ok	
Duplicate (R201049-01)	R201049-04			7191-004	-	U	-	U
Nominal values and limits from method PFP Well Installation Smpl. & Analy.				RDLs (pCi/g)	0.050		0.10	

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 7018-134 2σ prep error 15.0 % Reference Lab Notebook 7018 pg. 134																
B13DY6	R201049-01			0.34	760					147			41	02/12/02	02/13	02,01,00
BLK (QC ID=41077)	R201049-03			0.18	760					101				02/12/02	02/13	01,01,00
LCS (QC ID=41076)	R201049-02			0.037	760					101				02/12/02	02/13	01,01,00
Duplicate (R201049-01) (QC ID=41078)	R201049-04			0.39	760					120			42	02/12/02	02/14	02,03,00
Nominal values and limits from method				0.050	760					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 4 SAMPLES
MDA 0.24 ± 0.32
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/22/02

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-35	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay; Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: H1650 (7191) 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: ERC-01-014	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express SDG # H1650	
Shipped To: TMA/RECRA TMA	Offsite Property No.: A420073	Bill of Lading/Air Bill No.: 42357955-0041	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.# 2B AT THE 3728 SHIPPING FACILITY ON 1/4/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/7/02 FOR SHIPMENT.

RT 1-7-02

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	
Volume	60mL	60mL	120mL	250mL	250mL	250mL	500mL	500mL	1000mL	
SAMPLE ANALYSIS	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	
Sample No. / Matrix* / Sample Date / Sample Time										
B13DY6 / SOIL / 1-3-02 / 1910		X							X	

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	R. Nielson	1-4-02 0415	Received By / Stored in REF #2B	1-4-02 0415
Relinquished By	Removed from Ref 2B 3728	1-7-02 0800	Received By	1-7-02 0800
Relinquished By	R Thorell ERC	1-7-02 0600	Received By	FED EX 1-7-02
Relinquished By	FED EXPRESS	1-8-02 9:30	Received By	E.S. Maestas E. MAESTAS 1-8-02 9:30
Relinquished By			Received By	
Relinquished By			Received By	

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR

RT 1-7-02

(1) ~~Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (Tributyl phosphate) - (Soil) - 9045~~
(2) ~~IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate), NO2/NO3 - 353.2; pH~~
(3) ~~ICP Metals - 6010A (TAL) (Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium); ICP Metals - 6010A (Add-on) (Phosphorus)~~ RT 1-7-02 RJN 11/5/01
(4) Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125, ~~Cesium-134~~; Ruthenium-106); Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr

Use B13F08 for Shipping

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)

From: Melissa Mannion

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc. Date/Time received 1-8-02 AT 9:30 Am

CoC No. B01-113-35

Container I.D. No. ERC-01-014 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 SAMPLES
7. Number of containers per sample: (2x EACH) (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by Chris S. Maestas Date: 1-8-02 Time: AT 9:30

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

FEB 2002
RECEIVED

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B01-113 H1650

RFW LOT # :0201L74

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B13DY6	001	S	02LVG006	01/03/02	01/08/02	N/A	01/11/02
B13DY6	001 MS	S	02LVG006	01/03/02	01/08/02	N/A	01/11/02
B13DY6	001 MSD	S	02LVG006	01/03/02	01/08/02	N/A	01/11/02
LAB QC:							
VBLKHJ	MB1	S	02LVG006	N/A	N/A	N/A	01/11/02
VBLKHJ	MB1 BS	S	02LVG006	N/A	N/A	N/A	01/11/02

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-113
LVL #: 0201L743
SDG/SAF #: H1650/B01-113

W.O. #: 11343-606-001-9999-00
Date Received: 01-08-2002

GC/MS VOLATILE

One (1) soil sample was collected on 01-03-2002.

The sample and its 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 01-11-2002.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy with the exception of cooler temperature; which has been recorded on the chain-of-custody upon sample receipt.

2. The analysis holding time was met.

3. Non-target compounds were not detected in the sample.

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. 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."

By J. Michael Taylor
President
Lionville Laboratory Incorporated

01-30-02
Date

som\group\data\voa\tnu-hanford\0201-743.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 9 pages.

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

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

VLI
LIONVILLE LABORATORY INC.

GLOSSARY OF VOA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

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

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

VLI
MONROVILLE 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.

VLI
LIONVILLE LABORATORY INC.

Lionville Laboratory, Inc.
Volatiles By GC/MS, Special List
Report Date: 01/18/02 14:42

RFW Batch Number: 0201L743 Client: TNUHANFORD B01-113 H1650 Work Order: 11343606001 Page: 1a

	Cust ID:	B13DY6		B13DY6		B13DY6		VBLKHJ		VBLKHJ BS	
Sample Information	RFW#:	001		001 MS		001 MSD		02LVG006-MB1		02LVG006-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.02		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	116	%	113	%	112	%	116	%	104	%
	Bromofluorobenzene	107	%	108	%	106	%	114	%	103	%
	1,2-Dichloroethane-d4	107	%	118	%	118	%	113	%	124	%
Chloromethane		11	U	11	U	11	U	10	U	10	U
Bromomethane		11	U	11	U	11	U	10	U	10	U
Vinyl Chloride		11	U	11	U	11	U	10	U	10	U
Chloroethane		11	U	11	U	11	U	10	U	10	U
Methylene Chloride		13		10		12		5	U	5	U
Acetone		11	U	11	U	11	U	10	U	10	U
Carbon Disulfide		6	U	6	U	6	U	5	U	5	U
1,1-Dichloroethene		6	U	74	%	78	%	5	U	71	%
1,1-Dichloroethane		6	U	6	U	6	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	5	U	5	U
Chloroform		6	U	6	U	6	U	5	U	5	U
1,2-Dichloroethane		6	U	6	U	6	U	5	U	5	U
2-Butanone		11	U	11	U	11	U	10	U	10	U
1,1,1-Trichloroethane		6	U	6	U	6	U	5	U	5	U
Carbon Tetrachloride		6	U	6	U	6	U	5	U	5	U
Bromodichloromethane		6	U	6	U	6	U	5	U	5	U
1,2-Dichloropropane		6	U	6	U	6	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	5	U	5	U
Trichloroethene		6	U	95	%	91	%	5	U	93	%
Dibromochloromethane		6	U	6	U	6	U	5	U	5	U
1,1,2-Trichloroethane		6	U	6	U	6	U	5	U	5	U
Benzene		6	U	98	%	94	%	5	U	97	%
Trans-1,3-Dichloropropene		6	U	6	U	6	U	5	U	5	U
Bromoform		6	U	6	U	6	U	5	U	5	U
4-Methyl-2-pentanone		11	U	11	U	11	U	10	U	10	U
2-Hexanone		11	U	11	U	11	U	10	U	10	U
Tetrachloroethene		6	U	6	U	6	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	5	U	5	U
Toluene		6	U	117	%	113	%	5	U	107	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0201L743 Client: TNUHANFORD B01-113 H1650 Work Order: 11343606001 Page: 1b

Cust ID:	B13DY6	B13DY6	B13DY6	VBLKHJ	VBLKHJ BS
RFW#:	001	001 MS	001 MSD	02LVG006-MB1	02LVG006-MB1
Chlorobenzene	6 U	109 %	106 %	5 U	103 %
Ethylbenzene	6 U	6 U	6 U	5 U	5 U
Styrene	6 U	6 U	6 U	5 U	5 U
Xylene (total)	6 U	6 U	6 U	5 U	5 U
N-butylbenzene	6 U	6 U	6 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory Use Only

0201L743

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford B01-113

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

Lionville Laboratory Project Manager: QJ

QC: Spec Del: STD TAT: 30day

Date Rec'd: 01/08/02 Date Due: 02/07/02

		A	B						C		D	E	F	G		
Refrigerator #		1	3						3		3	3	1	3		
#/Type Container	Liquid															
	Solid	1qGl	1qGl						1qGl		1qGl	1qGl	1qGl	1qGl		
Volume	Liquid															
	Solid	250	250						500		60	120	250	500		
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	oil/grease	Cr6	TTLC/TOC	pH Ignit. Reactivity		
		Lionville Laboratory Use Only														
		0624X	0625X						Met①		IOG-GR	ICR6	ETHC IOCT	Inorg①		

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	0624X	0625X						Met①		IOG-GR	ICR6	ETHC IOCT	Inorg①		
001	B13DY6	✓	✓	S	01/03/02	1910	X	X						X		X	X	X	X		

Special Instructions:

Saf # = B01-113

DATE/REVISIONS:

Met① 1. Ca, Ca, Cr, Fe, Mg, Ni, Na, P

Inorg① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, IN3N2, IPH

3.

4.

5.

6.

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Samples were: 1) Shipped ~~FEDEX~~ Hand Delivered ___ Airbill # 4235 7955 0030

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. 0.5 °C

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

NOTES:

Relinquished by	Received by	Date	Time
Fed Ex	JPerry	01/08/02	1010

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-35	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: ERC-01-043	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020100	Bill of Lading/Air Bill No.: 4235795855-0030	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.# 2B AT THE 3728 SHIPPING FACILITY ON 1/4/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/7/02 FOR SHIPMENT.

RT 1-7-02

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG	sG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	
Volume	60mL	60mL	120mL	250mL	250mL	250mL	500mL	500mL	1000mL	
SAMPLE ANALYSIS	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	
Sample No.	Matrix *	Sample Date	Sample Time							
B13DY6	SOIL	1-3-02	1910	X		X	X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	R Nielson	1-4-02 0415	Stored in Ref #2B	1-4-02 0415
Relinquished By	Removed from Ref 2B 3728	1-7-02 0800	R Thorer	1-7-02 0800
Relinquished By	R Thorer	1-7-02 0800	FEDEX	
Relinquished By			Received By	
Relinquished By			Received By	
Relinquished By			Received By	

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; NO2/NO3 - 353.2; pH (Soil) - 9045
(3) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium}; ICP Metals - 6010A (Add-on) {Phosphorus}
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60}; Gamma Spec - Add-on {Antimony-125, Cesium-134, Ruthenium-106}; Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 - Total Sr~~

RJN 1/5/01
RT 1-7-02

Use B13F08 for Shipping

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)

FEB 2002
RECEIVED

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1650

DATE RECEIVED: 01/08/02 LVL LOT # :0201L743

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13DY6	001	S	02LE0025	01/03/02	01/09/02	01/11/02
B13DY6	001 MS	S	02LE0025	01/03/02	01/09/02	01/11/02
B13DY6	001 MSD	S	02LE0025	01/03/02	01/09/02	01/11/02

LAB QC:

SBLKNV	MB1	S	02LE0025	N/A	01/09/02	01/11/02
SBLKNV	MB1 BS	S	02LE0025	N/A	01/09/02	01/11/02

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-113
LVL #: 0201L743
SDG/SAF #: H1650/B01-113

W.O. #: 11343-606-001-9999-00
Date Received: 01-08-2002

SEMIVOLATILE

One (1) soil sample was collected on 01-03-2002.

The sample and its associated QC samples were extracted on 01-09-2002 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 01-11-2002.

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 (0.5° C) upon receipt has been recorded on the chain-of-custody.

2. The sample was extracted and analyzed within required holding time.

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

4. All surrogate recoveries were within EPA QC limits.

5. Two (2) of eleven (11) blank spike recoveries were outside EPA QC limits.

6. All matrix 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.

by J. Michael Taylor
President
Lionville Laboratory Incorporated

01-24-02
Date

som\gorup\data\bna\tnu-hanford-0201-743.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 • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

GLOSSARY OF BNA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

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

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

A = Indicates that a TIC is a suspected aldol-condensation product.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

VLI
VOMMILE LABORATORY INC

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

VLI
LIONVILLE LABORATORY INC

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List — Report Date: 01/23/02 10:43

RFW Batch Number: **0201L743** — Client: **TNUHANFORD B01-113 H1650** — Work Order: 11343606001 — Page: 1a

	Cust ID:	B13DY6	B13DY6	B13DY6	SBLKNV	SBLKNV BS
Sample Information	RFW#:	001	001 MS	001 MSD	02LE0025-MB1	02LE0025-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	71 %	70 %	84 %	80 %	87 %
	2-Fluorobiphenyl	75 %	70 %	80 %	80 %	88 %
	p-Terphenyl-d14	84 %	74 %	87 %	87 %	92 %
	Phenol-d5	82 %	84 %	92 %	89 %	100 %
	2-Fluorophenol	81 %	79 %	86 %	86 %	99 %
	2,4,6-Tribromophenol	94 %	91 %	107 %	95 %	115 %
Phenol		370 U	76 %	85 %	330 U	92 * %
bis(2-Chloroethyl)ether		370 U	370 U	360 U	330 U	330 U
2-Chlorophenol		370 U	71 %	79 %	330 U	88 %
1,3-Dichlorobenzene		370 U	370 U	360 U	330 U	330 U
1,4-Dichlorobenzene		370 U	65 %	70 %	330 U	79 %
1,2-Dichlorobenzene		370 U	370 U	360 U	330 U	330 U
2-Methylphenol		370 U	370 U	360 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)		370 U	370 U	360 U	330 U	330 U
3- and/or 4-Methylphenol		370 U	370 U	360 U	330 U	330 U
N-Nitroso-Di-n-propylamine		370 U	71 %	79 %	330 U	81 %
Hexachloroethane		370 U	370 U	360 U	330 U	330 U
Nitrobenzene		370 U	370 U	360 U	330 U	330 U
Isophorone		370 U	370 U	360 U	330 U	330 U
2-Nitrophenol		370 U	370 U	360 U	330 U	330 U
2,4-Dimethylphenol		370 U	370 U	360 U	330 U	330 U
bis(2-Chloroethoxy)methane		370 U	370 U	360 U	330 U	330 U
2,4-Dichlorophenol		370 U	370 U	360 U	330 U	330 U
1,2,4-Trichlorobenzene		370 U	65 %	77 %	330 U	79 %
Naphthalene		370 U	370 U	360 U	330 U	330 U
4-Chloroaniline		370 U	370 U	360 U	330 U	330 U
Hexachlorobutadiene		370 U	370 U	360 U	330 U	330 U
4-Chloro-3-methylphenol		370 U	73 %	84 %	330 U	86 %
2-Methylnaphthalene		370 U	370 U	360 U	330 U	330 U
Hexachlorocyclopentadiene		370 U	370 U	360 U	330 U	330 U
2,4,6-Trichlorophenol		370 U	370 U	360 U	330 U	330 U
2,4,5-Trichlorophenol		920 U	920 U	910 U	840 U	840 U

*= Outside of EPA CLP QC limits.

Cust ID:	B13DY6		B13DY6		B13DY6		SBLKNV		SBLKNV BS	
RFW#:	001		001 MS		001 MSD		02LE0025-MB1		02LE0025-MB1	
2-Chloronaphthalene	370	U	370	U	360	U	330	U	330	U
2-Nitroaniline	920	U	920	U	910	U	840	U	840	U
Dimethylphthalate	370	U	370	U	360	U	330	U	330	U
Acenaphthylene	370	U	370	U	360	U	330	U	330	U
2,6-Dinitrotoluene	370	U	370	U	360	U	330	U	330	U
3-Nitroaniline	920	U	920	U	910	U	840	U	840	U
Acenaphthene	370	U	69	%	78	%	330	U	84	%
2,4-Dinitrophenol	920	U	920	U	910	U	840	U	840	U
4-Nitrophenol	920	U	63	%	65	%	840	U	81	%
Dibenzofuran	370	U	370	U	360	U	330	U	330	U
2,4-Dinitrotoluene	370	U	73	%	75	%	330	U	90 *	%
Diethylphthalate	370	U	370	U	360	U	330	U	330	U
4-Chlorophenyl-phenylether	370	U	370	U	360	U	330	U	330	U
Fluorene	370	U	370	U	360	U	330	U	330	U
4-Nitroaniline	920	U	920	U	910	U	840	U	840	U
4,6-Dinitro-2-methylphenol	920	U	920	U	910	U	840	U	840	U
N-Nitrosodiphenylamine (1)	370	U	370	U	360	U	330	U	330	U
4-Bromophenyl-phenylether	370	U	370	U	360	U	330	U	330	U
Hexachlorobenzene	370	U	370	U	360	U	330	U	330	U
Pentachlorophenol	920	U	73	%	84	%	840	U	94	%
Phenanthrene	370	U	370	U	360	U	330	U	330	U
Anthracene	370	U	370	U	360	U	330	U	330	U
Carbazole	370	U	370	U	360	U	330	U	330	U
Di-n-Butylphthalate	370	U	370	U	360	U	330	U	330	U
Fluoranthene	370	U	370	U	360	U	330	U	330	U
Pyrene	370	U	72	%	85	%	330	U	87	%
Butylbenzylphthalate	370	U	370	U	360	U	330	U	330	U
3,3'-Dichlorobenzidine	370	U	370	U	360	U	330	U	330	U
Benzo(a)anthracene	370	U	370	U	360	U	330	U	330	U
Chrysene	370	U	370	U	360	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	370	U	370	U	360	U	330	U	330	U
Di-n-Octyl phthalate	370	U	370	U	360	U	330	U	330	U
Benzo(b)fluoranthene	370	U	370	U	360	U	330	U	330	U
Benzo(k)fluoranthene	370	U	370	U	360	U	330	U	330	U
Benzo(a)pyrene	370	U	370	U	360	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	370	U	370	U	360	U	330	U	330	U
Dibenzo(a,h)anthracene	370	U	370	U	360	U	330	U	330	U
Benzo(g,h,i)perylene	370	U	370	U	360	U	330	U	330	U
Tributylphosphate	370	U	370	U	360	U	330	U	330	U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13DY6

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

Client: TNUHANFORD B01-113 H1650

Matrix: (soil/water) SOIL

Lab Sample ID: 0201L743-001

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

Lab File ID: D011106

Level: (low/med) LOW

Date Received: 01/08/02

% Moisture: 9 decanted: (Y/N)__

Date Extracted: 01/09/02

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 01/11/02

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.591	600	JB

FORM 1 SV-TIC

RFW (v3.3)

8

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKNV

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

Client: TNUHANFORD B01-113 H1650

Matrix: (soil/water) SOIL

Lab Sample ID: 02LE0025-MB1

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

Lab File ID: D011104

Level: (low/med) LOW

Date Received: 01/09/02

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

Date Extracted: 01/09/02

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 01/11/02

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	6.599	600	J

FORM 1 SV-TIC

RFW (v3.3)

Lionville Laboratory Use Only
0201L743

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI Lionville Laboratory Inc.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford B01-113
Est. Final Proj. Sampling Date:
Project #: 11343-606-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: STD TAT: 30day
Date Rec'd: 01/08/02 Date Due: 02/07/02

		A	B						C		D	E	F	G		
Refrigerator #		1	3						3		3	3	1	3		
#/Type Container	Liquid															
	Solid	1aGl	1aGl						1aGl		1aGl	1aGl	1aGl	1aGl		
Volume	Liquid															
	Solid	250	250						500		60	150	250	500		
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	oil/grease	Cr6	TTIC/TOC	Fe Mn on air filtering		
		Lionville Laboratory Use Only														
		06234X	06235X						Met①		IOG-GR	ICR6	F-TTIC IOCT	Inorg①		

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	06234X	06235X						Met①		IOG-GR	ICR6	F-TTIC IOCT	Inorg①		
001	B13DY6	✓	✓	S	01/03/02	1910	X	X						X		X	X	X	X		

Special Instructions:
Saf # = B01-113

DATE/REVISIONS:
Met① 1. Ca, Ca, Cr, Fe, Mg, Ni, Na, P
Inorg① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, IN3N2, IPH
3.
4.
5.
6.

Lionville Laboratory Use Only

Samples were:
1) Shipped ~~FedEx~~
Hand Delivered
Airbill # 4335 7455 0030
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. 0.5 °C

Relinquished by	Received by	Date	Time
FedEx	JPerry	01/08/02	1010

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-35	Page 1 of 1

Collector Renee Nielson	Company Contact Virginia Rohay	Telephone No. 372-9100	Project Coordinator TRENT, SJ
Price Code 8N	Data Turnaround 45 Days	Air Quality ☐	
Project Designation PFP Well Installation Sampling and Analysis - Soil	Sampling Location 200 West; Well Number C3803, Well Name 299-W15-42	SAF No. B01-113	
Ice Chest No. ERC-01-043	Field Logbook No. EL-1562	COA T20ZP1D722	Method of Shipment Federal Express
Shipped To TMA/RECRA RECRA	Offsite Property No. A020100		Bill of Lading/Air Bill No. 4235795885-0030 RT 1-7-02

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.#2B AT THE 3728 SHIPPING FACILITY ON 1/4/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/7/02 FOR SHIPMENT.

RT 1-7-02

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None RP 1-7-02		
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	60mL	120mL	250mL	250mL	250mL	500mL	500mL	1000mL		
SAMPLE ANALYSIS	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time								
B13DY6	SOIL	1-3-02	1910	X		X	X	X	X	X	X

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By: R Nielson	Date/Time 0415 1-4-02	Received By: Stored in Ref #2B	Date/Time 1-4-02 0415
Relinquished By: Remove from Ref 2B 3728	Date/Time 0800 1-7-02	Received By: R Thorn	Date/Time 0800 1-7-02
Relinquished By: R Thorn ERC	Date/Time 0800 1-7-02	Received By: FEDEX	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR.

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(2) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); NO2/NO3 - 353.2; pH (Soil) - 9045
(3) ICP Metals - 6010A (TAL) (Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium); ICP Metals - 6010A (Add-on) (Phosphorus) RJN 11/5/01
~~(4) Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125, Cesium-134, Ruthenium-106); Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 = Total Sr~~ RT 1-7-02

Use B13F08 for Shipping

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)

FEB 2002
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1650

DATE RECEIVED: 01/08/02 LVL LOT # :0201L743

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13DY6						
CALCIUM, TOTAL	001	S	02L0875	01/03/02	01/11/02	01/14/02
CALCIUM, TOTAL	001 REP	S	02L0875	01/03/02	01/11/02	01/14/02
CALCIUM, TOTAL	001 MS	S	02L0875	01/03/02	01/11/02	01/14/02
CADMIUM, TOTAL	001	S	02L0875	01/03/02	01/11/02	01/14/02
CADMIUM, TOTAL	001 REP	S	02L0875	01/03/02	01/11/02	01/14/02
CADMIUM, TOTAL	001 MS	S	02L0875	01/03/02	01/11/02	01/14/02
CHROMIUM, TOTAL	001	S	02L0875	01/03/02	01/11/02	01/14/02
CHROMIUM, TOTAL	001 REP	S	02L0875	01/03/02	01/11/02	01/14/02
CHROMIUM, TOTAL	001 MS	S	02L0875	01/03/02	01/11/02	01/14/02
IRON, TOTAL	001	S	02L0875	01/03/02	01/11/02	01/14/02
IRON, TOTAL	001 REP	S	02L0875	01/03/02	01/11/02	01/14/02
IRON, TOTAL	001 MS	S	02L0875	01/03/02	01/11/02	01/14/02
MAGNESIUM, TOTAL	001	S	02L0875	01/03/02	01/11/02	01/14/02
MAGNESIUM, TOTAL	001 REP	S	02L0875	01/03/02	01/11/02	01/14/02
MAGNESIUM, TOTAL	001 MS	S	02L0875	01/03/02	01/11/02	01/14/02
SODIUM, TOTAL	001	S	02L0875	01/03/02	01/11/02	01/14/02
SODIUM, TOTAL	001 REP	S	02L0875	01/03/02	01/11/02	01/14/02
SODIUM, TOTAL	001 MS	S	02L0875	01/03/02	01/11/02	01/14/02
NICKEL, TOTAL	001	S	02L0875	01/03/02	01/11/02	01/14/02
NICKEL, TOTAL	001 REP	S	02L0875	01/03/02	01/11/02	01/14/02
NICKEL, TOTAL	001 MS	S	02L0875	01/03/02	01/11/02	01/14/02
PHOSPHORUS, TOTAL	001	S	02L0875	01/03/02	01/11/02	01/14/02
PHOSPHORUS, TOTAL	001 REP	S	02L0875	01/03/02	01/11/02	01/14/02
PHOSPHORUS, TOTAL	001 MS	S	02L0875	01/03/02	01/11/02	01/14/02

LAB QC:

CALCIUM LABORATORY	LC1 BS	S	02L0875	N/A	01/11/02	01/14/02
CALCIUM, TOTAL	MB1	S	02L0875	N/A	01/11/02	01/14/02
CADMIUM LABORATORY	LC1 BS	S	02L0875	N/A	01/11/02	01/14/02
CADMIUM, TOTAL	MB1	S	02L0875	N/A	01/11/02	01/14/02
CHROMIUM LABORATORY	LC1 BS	S	02L0875	N/A	01/11/02	01/14/02
CHROMIUM, TOTAL	MB1	S	02L0875	N/A	01/11/02	01/14/02
IRON LABORATORY	LC1 BS	S	02L0875	N/A	01/11/02	01/14/02
IRON, TOTAL	MB1	S	02L0875	N/A	01/11/02	01/14/02

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1650

DATE RECEIVED: 01/08/02 LVL LOT # :0201L743

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MAGNESIUM LABORATORY	LC1 BS	S	02L0875	N/A	01/11/02	01/14/02
MAGNESIUM, TOTAL	MB1	S	02L0875	N/A	01/11/02	01/14/02
SODIUM LABORATORY	LC1 BS	S	02L0875	N/A	01/11/02	01/14/02
SODIUM, TOTAL	MB1	S	02L0875	N/A	01/11/02	01/14/02
NICKEL LABORATORY	LC1 BS	S	02L0875	N/A	01/11/02	01/14/02
NICKEL, TOTAL	MB1	S	02L0875	N/A	01/11/02	01/14/02
PHOSPHORUS LCS	LC1 BS	S	02L0875	N/A	01/11/02	01/14/02
PHOSPHORUS, TOTAL	MB1	S	02L0875	N/A	01/11/02	01/14/02

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-113
LVL#: 0201L743
SDG/SAF#: H1650/B01-113

W.O.#: 11343-606-001-9999-00
Date Received: 01-08-02

METALS CASE NARRATIVE

1. This narrative covers the analysis of 1 soil sample.

2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.

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

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

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

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

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), 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) recovery for 1 analyte was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B13DY6R	Iron	30,000	93.2

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 13 pages.

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

12. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. 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.

14. 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
Laboratory Manager
Lionville Laboratory Incorporated

01-24-02
Date

gmb/m01-743

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#: 0201L743

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: Phosphorous **Method:** 6010 B

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/23/02

CLIENT: TNUHANFORD B01-113 H1650 LVL LOT #: 0201L743

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B13DY6	Calcium, Total	4830	MG/KG	0.94	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	19.7	MG/KG	0.06	1.0
		Iron, Total	20300	MG/KG	1.8	1.0
		Magnesium, Total	3780	MG/KG	0.43	1.0
		Sodium, Total	624	MG/KG	0.38	1.0
		Nickel, Total	14.3	MG/KG	0.11	1.0
		Phosphorus, Total	628	MG/KG	4.2	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/23/02

CLIENT: TNUHANFORD B01-113 H1650 LVL LOT #: 0201L743

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	02L0875-MB1	Calcium, Total	1.2	MG/KG	0.89	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.13	MG/KG	0.06	1.0
		Iron, Total	1.7 u	MG/KG	1.7	1.0
		Magnesium, Total	0.48	MG/KG	0.41	1.0
		Sodium, Total	2.4	MG/KG	0.36	1.0
		Nickel, Total	0.10 u	MG/KG	0.10	1.0
		Phosphorus, Total	4.0 u	MG/KG	4.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/23/02

CLIENT: TNUHANFORD B01-113 H1650 LVL LOT #: 0201L743

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B13DY6	Calcium, Total	7780	4830	2640	111.8	1.0
		Cadmium, Total	4.8	0.03u	5.3	90.6	1.0
		Chromium, Total	40.0	19.7	21.1	96.2	1.0
		Iron, Total	22700	20300	105	2257 *	1.0
		Magnesium, Total	6810	3780	2640	114.7	1.0
		Sodium, Total	3080	624	2640	93.1	1.0
		Nickel, Total	65.5	14.3	52.7	97.2	1.0
		Phosphorus, Total	1130	628	527	96.1	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/23/02

CLIENT: TNUHANFORD B01-113 H1650 LVL LOT #: 0201L743

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B13DY6	Calcium, Total	4830	4990	3.2	1.0
		Cadmium, Total	0.03u	0.03u	NC	1.0
		Chromium, Total	19.7	19.6	0.51	1.0
		Iron, Total	20300	22400	9.6	1.0
		Magnesium, Total	3780	4260	11.8	1.0
		Sodium, Total	624	579	7.5	1.0
		Nickel, Total	14.3	14.6	2.1	1.0
		Phosphorus, Total	628	701	11.0	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/23/02

CLIENT: TNUHANFORD B01-113 H1650 LVL LOT #: 0201L743

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	02L0875-LC1	Calcium, LCS	2460	2500	MG/KG	98.2
		Cadmium, LCS	24.5	25.0	MG/KG	98.0
		Chromium, LCS	49.3	50.0	MG/KG	98.6
		Iron, LCS	487	500	MG/KG	97.3
		Magnesium, LCS	2480	2500	MG/KG	99.3
		Sodium, LCS	2410	2500	MG/KG	96.5
		Nickel, LCS	200	200	MG/KG	99.8
		Phosphorus, LCS	482	500	MG/KG	96.4

Lionville Laboratory Use Only
0201L743

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford B01-113
Est. Final Proj. Sampling Date:
Project #: 11343-6060-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: STD TAT: 30day
Date Rec'd: 01/08/02 Date Due: 02/07/02

		A	B						C		D	E	F	G		
Refrigerator #		1	3						3		3	3	1	3		
#/Type Container	Liquid															
	Solid	1aGl	1aGl						1aGl		1aGl	1aGl	1aGl	1aGl		
Volume	Liquid															
	Solid	250	250						500		60	120	250	500		
Preservatives																
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb				INORG: Metal	CN	oil/grease	Cr6	TTC/TOC	Ammonia/Nitrate/Nitrite		
Lionville Laboratory Use Only		01234X	01235X						Met①		IOG6R	ICR6	ITIC IOCT	Inorg①		

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected														
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish	001	B13DY6	✓	✓	S	01/03/02	1910	X	X						Met①		X	X	X	X	

Special Instructions:
Saf # = B01-113

DATE/REVISIONS:
Met① 1. Ca, Ca, Cr, Fe, Mg, Ni, Na, P
Inorg① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, IN3N2, IPH
3.
4.
5.
6.

Lionville Laboratory Use Only

Samples were: 1) Shipped FedEx
Hand Delivered ___
Airbill # 4235 7955 0030
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. 0.5 °C

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

Relinquished by	Received by	Date	Time
FedEx	JPerry	01/08/02	1010

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-35	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days — Air Quality ☐
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	
Ice Chest No.: ERC-01-043	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A020100	Bill of Lading/Air Bill No.: 4235795885-0030 RT 1-7-02	

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.# 2B AT THE 3728 SHIPPING FACILITY ON 1/4/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/7/02 FOR SHIPMENT.

RT 1-7-02

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None RT 1-7-02
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	60mL	120mL	250mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B13DY6	SOIL	1-3-02	1910	X		X	X	X	X	X	X	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By	Date/Time
Relinquished By: R Nielson	1-4-02 0415	Received By: Stored in Ref #2B	1-4-02 0415
Relinquished By: Remove from Ref 2B 3728	1-7-02 0600	Received By: R Thorer	1-7-02 0600
Relinquished By: R Thorer ERC	1-7-02 0600	Received By: FEDEX	
Relinquished By		Received By	
Relinquished By		Received By	
Relinquished By		Received By	

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; NO2/NO3 - 353.2; pH (Soil) - 9045
(3) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium}; ICP Metals - 6010A (Add-on) {Phosphorus} RJN 1/8/01
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60}; Gamma Spec - Add-on {Antimony-125, Cesium-134, Ruthenium-106}; Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 = Total Sr~~ RT 1-7-02

Use B13F08 for Shipping

Matrix *
S=Soil
SE=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)

3

FEB 2002
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1650

DATE RECEIVED: 01/08/02 LVL LOT # :0201L743

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13DY6						
% SOLIDS	001	S	02L%S001	01/03/02	01/10/02	01/11/02
% SOLIDS	001 REP	S	02L%S001	01/03/02	01/10/02	01/11/02
CHLORIDE BY IC	001	S	02LICB09	01/03/02	01/24/02	01/24/02
CHLORIDE BY IC	001 REP	S	02LICB09	01/03/02	01/24/02	01/24/02
CHLORIDE BY IC	001 MS	S	02LICB09	01/03/02	01/24/02	01/24/02
FLUORIDE BY IC	001	S	02LICB09	01/03/02	01/24/02	01/24/02
FLUORIDE BY IC	001 REP	S	02LICB09	01/03/02	01/24/02	01/24/02
FLUORIDE BY IC	001 MS	S	02LICB09	01/03/02	01/24/02	01/24/02
NITRITE BY IC	001	S	02LICB09	01/03/02	01/24/02	01/24/02
NITRITE BY IC	001 REP	S	02LICB09	01/03/02	01/24/02	01/24/02
NITRITE BY IC	001 MS	S	02LICB09	01/03/02	01/24/02	01/24/02
NITRATE BY IC	001	S	02LICB09	01/03/02	01/24/02	01/24/02
NITRATE BY IC	001 REP	S	02LICB09	01/03/02	01/24/02	01/24/02
NITRATE BY IC	001 MS	S	02LICB09	01/03/02	01/24/02	01/24/02
PHOSPHATE BY IC	001	S	02LICB09	01/03/02	01/24/02	01/24/02
PHOSPHATE BY IC	001 REP	S	02LICB09	01/03/02	01/24/02	01/24/02
PHOSPHATE BY IC	001 MS	S	02LICB09	01/03/02	01/24/02	01/24/02
CHROMIUM VI	001	S	02LVI002	01/03/02	01/10/02	01/10/02
CHROMIUM VI	001 REP	S	02LVI002	01/03/02	01/10/02	01/10/02
CHROMIUM VI	001 MS	S	02LVI002	01/03/02	01/10/02	01/10/02
CHROMIUM VI	001 MSD	S	02LVI002	01/03/02	01/10/02	01/10/02
SULFATE BY IC	001	S	02LICB09	01/03/02	01/24/02	01/24/02
SULFATE BY IC	001 REP	S	02LICB09	01/03/02	01/24/02	01/24/02
SULFATE BY IC	001 MS	S	02LICB09	01/03/02	01/24/02	01/24/02
NITRATE NITRITE	001	S	02LN3008	01/03/02	01/29/02	01/29/02
NITRATE NITRITE	001 REP	S	02LN3008	01/03/02	01/29/02	01/29/02
NITRATE NITRITE	001 MS	S	02LN3008	01/03/02	01/29/02	01/29/02
TOTAL ORGANIC CARBON	001	S	02LTZ001	01/03/02	01/16/02	01/16/02
TOTAL ORGANIC CARBON	001 REP	S	02LTZ001	01/03/02	01/16/02	01/16/02
TOTAL ORGANIC CARBON	001 MS	S	02LTZ001	01/03/02	01/16/02	01/16/02
OIL & GREASE BY GRAV	001	S	02LOG004	01/03/02	01/31/02	02/01/02
OIL AND GREASE BY GR	001 REP	S	02LOG004	01/03/02	01/31/02	02/01/02
OIL AND GREASE BY GR	001 MS	S	02LOG004	01/03/02	01/31/02	02/01/02
PH	001	S	02LPH001	01/03/02	01/11/02	01/11/02
PH	001 REP	S	02LPH001	01/03/02	01/11/02	01/11/02

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1650

DATE RECEIVED: 01/08/02 LVL LOT # :0201L743

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL INORGANIC CARB	001	S	02LTZA01	01/03/02	01/16/02	01/16/02

LAB QC:

CHLORIDE BY IC	MB1	S	02LICB09	N/A	01/24/02	01/24/02
CHLORIDE BY IC	MB1 BS	S	02LICB09	N/A	01/24/02	01/24/02
FLUORIDE BY IC	MB1	S	02LICB09	N/A	01/24/02	01/24/02
FLUORIDE BY IC	MB1 BS	S	02LICB09	N/A	01/24/02	01/24/02
NITRITE BY IC	MB1	S	02LICB09	N/A	01/24/02	01/24/02
NITRITE BY IC	MB1 BS	S	02LICB09	N/A	01/24/02	01/24/02
NITRATE BY IC	MB1	S	02LICB09	N/A	01/24/02	01/24/02
NITRATE BY IC	MB1 BS	S	02LICB09	N/A	01/24/02	01/24/02
PHOSPHATE BY IC	MB1	S	02LICB09	N/A	01/24/02	01/24/02
PHOSPHATE BY IC	MB1 BS	S	02LICB09	N/A	01/24/02	01/24/02
CHROMIUM VI	MB1	S	02LVI002	N/A	01/10/02	01/10/02
CHROMIUM VI	MB1 BS	S	02LVI002	N/A	01/10/02	01/10/02
CHROMIUM VI	MB1 BSD	S	02LVI002	N/A	01/10/02	01/10/02
SULFATE BY IC	MB1	S	02LICB09	N/A	01/24/02	01/24/02
SULFATE BY IC	MB1 BS	S	02LICB09	N/A	01/24/02	01/24/02
NITRATE NITRITE	MB1	S	02LN3008	N/A	01/29/02	01/29/02
NITRATE NITRITE	MB1 BS	S	02LN3008	N/A	01/29/02	01/29/02
TOTAL ORGANIC CARBON	MB1	S	02LTZ001	N/A	01/16/02	01/16/02
TOTAL ORGANIC CARBON	MB1 BS	S	02LTZ001	N/A	01/16/02	01/16/02
OIL & GREASE BY GRAV	MB1	S	02LOG004	N/A	01/31/02	02/01/02
OIL AND GREASE BY GR	MB1 BS	S	02LOG004	N/A	01/31/02	02/01/02
TOTAL INORGANIC CARB	MB1	S	02LTZA01	N/A	01/16/02	01/16/02
TOTAL INORGANIC CARB	MB1 BS	S	02LTZA01	N/A	01/16/02	01/16/02

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-113 H1650
LVL#: 0201L743

W.O.#: 11343-606-001-9999-00
Date Received: 01-08-02

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 soil sample.

2. The sample was prepared and analyzed in accordance with the methods indicated on the attached glossary.

3. All results presented in this report are derived from samples that met LvLI's sample acceptance policy with the exception of cooler temperature that was recorded on the chain of custody.

4. Sample holding times as required by the method and/or contract were met.

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits.

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

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.

9. Results for solid samples are reported on a dry weight basis and Total Organic and Inorganic Carbon samples are dried prior to analysis.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

02-06-02
Date

njp\i01-743

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 12 pages.

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

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		✓ 3060A/7196A	
Corrosivity __ by coupon __ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		__ 9010B	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		✓ 9071A / EPA 413.1	
Carbon, Total Organic and Inorganic		__ 9060	✓ Lloyd Kahn (mod) / EPA 415.1 (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: Chloride, Fluoride, Nitrate, **Method:** EPA 300.0 (mod.)

Other: Nitrite, Phosphate, Sulfate **Method**

Nitrate Nitrite EPA 353.2 (mod.)

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/04/02

CLIENT: TNUHANFORD B01-113 H1650 LVL LOT #: 0201L743

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B13DY6	% Solids	91.2		%	0.01	1.0
		Chloride by IC	6.0		MG/KG	1.4	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	1.37	u	MG/KG	1.37	1.0
		Nitrate by IC	21.2		MG/KG	1.37	1.0
		Phosphate by IC	1.4	u	MG/KG	1.4	1.0
		Chromium VI	0.44	u	MG/KG	0.44	1.0
		Sulfate by IC	10.9		MG/KG	1.4	1.0
		Nitrate Nitrite, as N	3.1		MG/KG	0.21	1.0
		Total Organic Carbon	140		MG/KG	48.4	1.0
		Oil & Grease Gravimetri	263		MG/KG	146	1.0
		pH	9.2		SOIL PH	0.01	1.0
		Total Inorganic Carbon	182		MG/KG	48.4	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/04/02

CLIENT: *TNUHANFORD B01-113 H1650* *LVL LOT #: 0201L743*

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	02LICB09-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.25	u	MG/KG	1.25	1.0
		Nitrate by IC	1.25	u	MG/KG	1.25	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	02LVI002-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	02LN3008-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	02LTZ001-MB1	Total Organic Carbon	4.7	u	MG/KG	4.7	1.0
BLANK10	02LOG004-MB1	Oil & Grease Gravimetri	133	u	MG/KG	133	1.0
BLANK10	02LTZA01-MB1	Total Inorganic Carbon	4.7	u	MG/KG	4.7	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/04/02

CLIENT: TNUHANFORD B01-113 H1650 LVL LOT #: 0201L743

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B13DY6	Chloride by IC	35.3	6.0	27.4	107.2	1.0
		Fluoride by IC	61.1	1.1	54.8	109.5	1.0
		Nitrite by IC	28.0	1.37u	27.4	102.1	1.0
		Nitrate by IC	39.9	11.2	27.4	104.7	1.0
		Phosphate by IC	28.4	1.4 u	27.4	103.8	1.0
		Soluble Chromium VI	4.6	0.44u	4.4	100.7	1.0
		Insoluble Chromium VI	1240	0.44u	1480	83.6	100
		Sulfate by IC	39.3	10.9	27.4	103.5	1.0
		Nitrate Nitrite	8.2	3.1	5.3	97.4	1.0
		Total Organic Carbon	4160	1.1	4080	101.8	1.0
		Oil & Grease Gravimetr	7710	263	8450	88.1	1.0
BLANK10	02LICB09-MB1	Chloride by IC	22.6	1.2 u	25.0	90.3	1.0
		Fluoride by IC	52.8	2.5 u	50.0	105.6	1.0
		Nitrite by IC	24.4	1.25u	25.0	97.4	1.0
		Nitrate by IC	23.5	1.25u	25.0	94.0	1.0
		Phosphate by IC	24.9	1.2 u	25.0	99.6	1.0
		Sulfate by IC	23.2	1.2 u	25.0	92.7	1.0
BLANK10	02LVI002-MB1	Soluble Chromium VI	4.0	0.40u	4.0	100.2	1.0
		Insoluble Chromium VI	1280	0.40u	1290	99.4	100
BLANK10	02LN3008-MB1	Nitrate Nitrite	5.0	0.20u	5.0	100.6	1.0
BLANK10	02LTZ001-MB1	Total Organic Carbon	395	4.7 u	400	98.6	1.0
BLANK10	02LOG004-MB1	Oil & Grease Gravimetr	6930	133 u	7710	90.0	1.0
BLANK10	02LTZA01-MB1	Total Inorganic Carbon	395	4.7 u	400	98.6	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/04/02

CLIENT: TNUHANFORD B01-113 H1650 LVL LOT #: 0201L743

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B13DY6	% Solids	91.2	91.2	0.011	1.0
		Chloride by IC	6.0	5.9	0.66	1.0
		Fluoride by IC	2.7 u	2.7 u	NC	1.0
		Nitrite by IC	1.37u	1.37u	NC	1.0
		Nitrate by IC	11.2	11.5	2.6	1.0
		Phosphate by IC	1.4 u	1.4 u	NC	1.0
		Chromium VI	0.44u	0.44u	NC	1.0
		Sulfate by IC	10.9	11.0	0.95	1.0
		Nitrate Nitrite	3.1	3.0	2.6	1.0
		Total Organic Carbon	140	116	18.6	1.0
		Oil & Grease Gravimetri	263	234	11.8	1.0
		pH	9.2	9.2	0.3	1.0

Lionville Laboratory Use Only
0201L743

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

VLI — Lionville Laboratory Inc.

Client: TNU Hanford B01-113
Est. Final Proj. Sampling Date:
Project #: 11343-6006-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: Spec Del: STD TAT: 30day
Date Rec'd: 01/08/02 Date Due: 02/07/02

		A	B						C		D	E	F	G		
Refrigerator #		1	3						3		3	3	1	3		
#/Type Container	Liquid															
	Solid	1aGl	1aGl						1aGl		1aGl	1aGl	1aGl	1aGl		
Volume	Liquid															
	Solid	250	250						500		60	120	250	500		
Preservatives																
ANALYSES REQUESTED →		ORGANIC: VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	ORGANIC: Herb				INORG: Metal	INORG: CN	Oil/grease	Cr6	TTIC/TOC	TC Amino pH NH3/NO3		
Lionville Laboratory Use Only		0624X	0625X						Met①		K IDGGR	ICRL6	ETHC IOCT	Inorg①		

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected													
S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	001	B13DY6	✓	✓	S	01/03/02	1910	X	X				X		K	X	X	X		

Special Instructions:

Saf # = B01-113

DATE/REVISIONS:

Met① 1. Ca, Cu, Cr, Fe, Mg, Ni, Na, P
Inorg① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, IN3N2, IPH
3.
4.
5.
6.

Lionville Laboratory Use Only

Samples were: 1) Shipped FEDEX; Hand Delivered ___; Airbill # 4235 7455 0030
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. 0.5 °C

Relinquished by	Received by	Date	Time
FedEx	JPerry	01/08/02	1010

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-35	Page 1 of 1

Collector Renee Nielson	Company Contact Virginia Rohay	Telephone No. 372-9100	Project Coordinator TRENT, SJ
Price Code 8N	Data Turnaround 45 Days	Air Quality ☐	
Project Designation PFP Well Installation Sampling and Analysis - Soil	Sampling Location 200 West; Well Number C3803, Well Name 299-W15-42		SAF No. B01-113
Ice Chest No. ERC-01-043	Field Logbook No. EL-1562	COA T20ZP1D722	Method of Shipment Federal Express
Shipped To TMA/RECRA RECRA	Offsite Property No. A020100		Bill of Lading/Air Bill No. 4235795855-0030 RT 1-7-02

POSSIBLE SAMPLE HAZARDS/REMARKS

SAMPLES STORED IN REF.#2B AT THE 3728 SHIPPING FACILITY ON 1/4/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/7/02 FOR SHIPMENT.

RT 1-7-02

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	120mL	250mL	250mL	250mL	500mL	500mL	1000mL		
SAMPLE ANALYSIS	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time								
B13DY6	SOIL	1-3-02	1910	X		X	X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R Nielson	Date/Time 0415 1-4-02	Received By: Stored in Ref #2B	Date/Time 1-4-02 0415
Relinquished By: Remove from Ref 2B 3728	Date/Time 0800 1-7-02	Received By: R Thoren	Date/Time 0800 1-7-02
Relinquished By: R Thoren ERC	Date/Time 0800 1-7-02	Received By: FEDEX	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

** The ERC acknowledges that the holding time for Nitrate by EPA Method 300.0 will not be met. **
The lab is to analyze pH within 24 hours of sample receipt. If a limited quantity of sample material is received, perform analysis in order listed on FSR

(1) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; NO2/NO3 - 353.2; pH (Soil) - 9045
(3) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium}; ICP Metals - 6010A (Add-on) {Phosphorus}
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60}; Gamma Spec - Add-on {Antimony-125, Cesium-134, Ruthenium-106}; Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 = Total Sr~~ RJN 11/5/01

RT 1-7-02

Use B13F08 for Shipping

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: 01/08/02 @ 1010

SDG#: 02-01L743-001

Work Order Number: _____ SAF# B01-113-35

Shipping Container ID: ERC-01-043 Chain of Custody # _____

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 0.5°C
5. Vermiculite/packing materials is Wet [✓] Dry [ ]
6. Number of samples in shipping container: 7 jars, one sample #
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: JPerry / LVGI Date: 01/08/02

Telephoned to: _____ On _____ By _____