Eberline Services
W.O. No. R1-12-145-7184

Bechtel Hanford Inc.
SDG H1640

Case Narrative

RECEIVED
JUN 10 2002
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1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1640 was composed of two solid (soil) samples designated under SAF No. B01-113 with a Project Designation of: PFP Well Installation Sampling and Analysis – Soil.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on February 11, 2002.

2.0 ANALYSIS NOTES

2.1 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.2 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.3 Total Strontium 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
Melissa C. Mannion
Program Manager

2/12/02
Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1640

SDG 7184
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1640

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B13DY4	200 West; Well No. C3803	SOLID		R112145-02	B01-113	B01-113-33	12/19/01 01:50
B13F02	200 West; Well No. C3803	SOLID		R112145-01	B01-113	B01-113-41	12/19/01 23:45
Method Blank		SOLID		R112145-04	B01-113		
Lab Control Sample		SOLID		R112145-03	B01-113		
Duplicate (R112145-01)	200 West; Well No. C3803	SOLID		R112145-05	B01-113		12/19/01 23:45

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 02/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1640

SDG 7184
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1640

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
7184	B01-113-33	B13DY4	SOLID	82.2	1105 g		12/21/01	2	R112145-02	7184-002
	B01-113-41	B13F02	SOLID	84.1	1123 g		12/21/01	2	R112145-01	7184-001
		Method Blank	SOLID						R112145-04	7184-004
		Lab Control Sample	SOLID						R112145-03	7184-003
		Duplicate (R112145-01)	SOLID	84.1	1123 g		12/21/01	2	R112145-05	7184-005

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1640

SDG 7184
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1640

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	7018-109	5.0	2			1	1	1/1		
NP	SOLID	Neptunium in Soil	7018-109	5.0	2			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7018-109	5.0	2			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7018-109	10.0	2			1	1	1/1		
Gas Proportional Counting												
93A	SOLID	Gross Alpha in Soil	7018-109	20.0	2			1	1	1/1		
93B	SOLID	Gross Beta in Soil	7018-109	15.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7018-109	15.0	2			1	1	1/1		

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

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1640

SDG 7184
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1640

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B13DY4			R112145-02	7184-002	93A/93		01/23/02	02/11/02	MCM	Gross Alpha in Soil
200 West; Well No. C3803		SOLID	12/19/01	7184-002	93B/93		01/23/02	02/11/02	MCM	Gross Beta in Soil
B01-113-33	B01-113		12/21/01	7184-002	AM		02/05/02	02/11/02	MCM	Americium 241 in Soil
				7184-002	GAM		01/29/02	02/11/02	MCM	Gamma Scan
				7184-002	NP		01/28/02	02/11/02	MCM	Neptunium in Soil
				7184-002	PU		02/02/02	02/11/02	MCM	Plutonium, Isotopic in Solids
				7184-002	SR		01/23/02	02/11/02	MCM	Total Strontium in Soil
B13F02			R112145-01	7184-001	93A/93		01/24/02	02/11/02	MCM	Gross Alpha in Soil
200 West; Well No. C3803		SOLID	12/19/01	7184-001	93B/93		01/23/02	02/11/02	MCM	Gross Beta in Soil
B01-113-41	B01-113		12/21/01	7184-001	AM		02/05/02	02/11/02	MCM	Americium 241 in Soil
				7184-001	GAM		01/31/02	02/11/02	MCM	Gamma Scan
				7184-001	NP		01/27/02	02/11/02	MCM	Neptunium in Soil
				7184-001	PU		02/02/02	02/11/02	MCM	Plutonium, Isotopic in Solids
				7184-001	SR		01/23/02	02/11/02	MCM	Total Strontium in Soil
Method Blank			R112145-04	7184-004	93A/93		01/23/02	02/11/02	MCM	Gross Alpha in Soil
		SOLID		7184-004	93B/93		01/23/02	02/11/02	MCM	Gross Beta in Soil
	B01-113			7184-004	AM		02/06/02	02/11/02	MCM	Americium 241 in Soil
				7184-004	GAM		01/29/02	02/11/02	MCM	Gamma Scan
				7184-004	NP		01/25/02	02/11/02	MCM	Neptunium in Soil
				7184-004	PU		02/02/02	02/11/02	MCM	Plutonium, Isotopic in Solids
				7184-004	SR		01/23/02	02/11/02	MCM	Total Strontium in Soil
Lab Control Sample			R112145-03	7184-003	93A/93		01/23/02	02/11/02	MCM	Gross Alpha in Soil
		SOLID		7184-003	93B/93		01/23/02	02/11/02	MCM	Gross Beta in Soil
	B01-113			7184-003	AM		02/05/02	02/11/02	MCM	Americium 241 in Soil
				7184-003	GAM		01/29/02	02/11/02	MCM	Gamma Scan
				7184-003	NP		01/25/02	02/11/02	MCM	Neptunium in Soil
				7184-003	PU		02/02/02	02/11/02	MCM	Plutonium, Isotopic in Solids
				7184-003	SR		01/23/02	02/11/02	MCM	Total Strontium in Soil
Duplicate (R112145-01)			R112145-05	7184-005	93A/93		01/24/02	02/11/02	MCM	Gross Alpha in Soil
200 West; Well No. C3803		SOLID	12/19/01	7184-005	93B/93		01/23/02	02/11/02	MCM	Gross Beta in Soil
	B01-113		12/21/01	7184-005	AM		02/06/02	02/11/02	MCM	Americium 241 in Soil
				7184-005	GAM		01/31/02	02/11/02	MCM	Gamma Scan
				7184-005	NP		01/25/02	02/11/02	MCM	Neptunium in Soil
				7184-005	PU		02/02/02	02/11/02	MCM	Plutonium, Isotopic in Solids
				7184-005	SR		01/23/02	02/11/02	MCM	Total Strontium in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 02/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1640

SDG 7184
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1640

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	2			1	1	1		5
93B/93	B01-113	Gross Beta in Soil	900.0_ALPHABETA_GPC	2			1	1	1		5
AM	B01-113	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	2			1	1	1		5
GAM	B01-113	Gamma Scan	GAMMA_GS	2			1	1	1		5
NP	B01-113	Neptunium in Soil	NP237_LLE_PLATE_AEA	2			1	1	1		5
PU	B01-113	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	2			1	1	1		5
SR	B01-113	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	2			1	1	1		5
TOTALS				14			7	7	7		35

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1640

R112145-04 **Method Blank**

METHOD BLANK

SDG	7184	Client/Case no	Hanford	SDG H1640	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R112145-04	Client sample id	Method Blank		
Dept sample id	7184-004	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	0.254	1.3	2.5	10	U	93A
Gross Beta	12587-47-2	-1.11	3.1	5.4	15	U	93B
Total Strontium	SR-RAD	0.051	0.18	0.35	1.0	U	SR
Neptunium 237	13994-20-2	0	0.035	0.14	1.0	U	NP
Plutonium 238	13981-16-3	0	0.052	0.20	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.052	0.20	1.0	U	PU
Americium 241	14596-10-2	-0.025	0.049	0.19	1.0	U	AM
Potassium 40	13966-00-2	U		0.50		U	GAM
Cobalt 60	10198-40-0	U		0.030	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.19		U	GAM
Antimony 125	14234-35-6	U		0.065		U	GAM
Cesium 134	13967-70-9	U		0.028		U	GAM
Cesium 137	10045-97-3	U		0.026	0.10	U	GAM
Radium 226	13982-63-3	U		0.053	0.10	U	GAM
Radium 228	15262-20-1	U		0.13	0.20	U	GAM
Europium 152	14683-23-9	U		0.068	0.10	U	GAM
Europium 154	15585-10-1	U		0.10	0.10	U	GAM
Europium 155	14391-16-3	U		0.071	0.10	U	GAM
Thorium 228	14274-82-9	U		0.037		U	GAM
Thorium 232	TH-232	U		0.13		U	GAM
Uranium 235	15117-96-1	U		0.084		U	GAM
Uranium 238	U-238	U		2.7		U	GAM
Americium 241	14596-10-2	U		0.085		U	GAM

PFP Well Installation Smpl. & Anal.

QC-BLANK 40972

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1640

R112145-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7184
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1640
Case no No. 630

Lab sample id R112145-03
Dept sample id 7184-003

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	209	15	3.9	10		93A	215	8.6	97	68-132	70-130
Gross Beta	229	11	6.9	15		93B	239	9.6	96	77-123	70-130
Total Strontium	21.8	0.86	0.26	1.0		SR	22.8	0.91	96	83-117	80-120
Neptunium 237	23.4	1.4	0.14	1.0		NP	21.8	0.87	107	86-114	80-120
Plutonium 238	26.5	2.7	0.21	1.0		PU	27.0	1.1	98	82-118	80-120
Plutonium 239/240	30.0	2.9	0.21	1.0		PU	29.2	1.2	103	82-118	80-120
Americium 241	20.3	0.83	0.049	1.0		AM	21.0	0.84	97	89-111	80-120
Cobalt 60	0.294	0.059	0.048	0.050		GAM	0.365	0.015	81	69-131	80-120
Cesium 137	0.430	0.065	0.051	0.10		GAM	0.433	0.017	99	68-132	80-120

PFP Well Installation Smpl. & Anal.

QC-LCS 40971

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 02/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1640

R112145-05 B13F02

DUPLICATE

SDG	7184			Client/Case no	Hanford SDG H1640
Contact	Melissa C. Mannion			Case no	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R112145-05	Lab sample id	R112145-01	Client sample id	B13F02
Dept sample id	7184-005	Dept sample id	7184-001	Location/Matrix	200 West; Well No. C3803 SOLID
		Received	12/21/01	Collected/Weight	12/19/01 23:45 1123 g
% solids	84.1	% solids	84.1	Custody/SAF No	B01-113-41 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 TOT	PROT LIMIT
Gross Alpha	10.2	4.4	4.8	10		93A	11.3	4.4	4.1		10	97	
Gross Beta	9.36	4.3	6.4	15	J	93B	8.82	4.8	7.4	J	6	111	
Total Strontium	-0.036	0.12	0.24	1.0	U	SR	0.062	0.15	0.30	U	-		
Neptunium 237	0.088	0.071	0.053	1.0	J	NP	0.036	0.14	0.027	J	84	380	
Plutonium 238	0	0.054	0.21	1.0	U	PU	0.024	0.095	0.18	U	-		
Plutonium 239/240	0	0.054	0.21	1.0	U	PU	0	0.048	0.18	U	-		
Americium 241	-0.052	0.052	0.20	1.0	U	AM	-0.019	0.029	0.059	U	-		
Potassium 40	4.83	0.96	0.84			GAM	4.87	0.51	0.40		1	46	
Cobalt 60	U		0.064	0.050	U	GAM	U		0.036	U	-		
Ruthenium 106	U		0.51		U	GAM	U		0.26	U	-		
Antimony 125	U		0.16		U	GAM	U		0.080	U	-		
Cesium 134	U		0.075		U	GAM	U		0.043	U	-		
Cesium 137	U		0.054	0.10	U	GAM	U		0.031	U	-		
Radium 226	2.52	0.19	0.15	0.10		GAM	2.43	0.11	0.072		4	34	
Radium 228	0.498	0.25	0.26	0.20		GAM	0.403	0.11	0.12		21	96	
Europium 152	U		0.18	0.10	U	GAM	U		0.084	U	-		
Europium 154	U		0.23	0.10	U	GAM	U		0.11	U	-		
Europium 155	U		0.18	0.10	U	GAM	U		0.095	U	-		
Thorium 228	0.446	0.088	0.10			GAM	0.332	0.037	0.046		29	49	
Thorium 232	0.498	0.25	0.26			GAM	0.403	0.11	0.12		21	96	
Uranium 235	U		0.25		U	GAM	U		0.35	U	-		
Uranium 238	U		8.2		U	GAM	U		7.4	U	-		
Americium 241	U		0.24		U	GAM	U		0.14	U	-		

PFP Well Installation Smpl. & Anal.

QC-DUP#1 40973

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 02/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1640

R112145-02 B13DY4

DATA SHEET

SDG	7184	Client/Case no	Hanford SDG H1640
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R112145-02	Client sample id	B13DY4
Dept sample id	7184-002	Location/Matrix	200 West; Well No. C3803 SOLID
Received	12/21/01	Collected/Weight	12/19/01 01:50 1105 g
% solids	82.2	Custody/SAF No	B01-113-33 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	8.77	3.6	3.4	10	J	93A
Gross Beta	12587-47-2	18.4	5.9	8.7	15		93B
Total Strontium	SR-RAD	0.038	0.16	0.33	1.0	U	SR
Neptunium 237	13994-20-2	0	0.050	0.075	1.0	U	NP
Plutonium 238	13981-16-3	0	0.054	0.21	1.0	U	PU
Plutonium 239/240	PU-239/240	0.027	0.054	0.21	1.0	U	PU
Americium 241	14596-10-2	-0.008	0.034	0.046	1.0	U	AM
Potassium 40	13966-00-2	15.4	1.3	0.78			GAM
Cobalt 60	10198-40-0	U		0.058	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.50		U	GAM
Antimony 125	14234-35-6	U		0.13		U	GAM
Cesium 134	13967-70-9	U		0.16		U	GAM
Cesium 137	10045-97-3	U		0.063	0.10	U	GAM
Radium 226	13982-63-3	0.720	0.13	0.13	0.10		GAM
Radium 228	15262-20-1	1.14	0.24	0.23	0.20		GAM
Europium 152	14683-23-9	U		0.14	0.10	U	GAM
Europium 154	15585-10-1	U		0.21	0.10	U	GAM
Europium 155	14391-16-3	U		0.16	0.10	U	GAM
Thorium 228	14274-82-9	1.18	0.070	0.068			GAM
Thorium 232	TH-232	1.14	0.24	0.23			GAM
Uranium 235	15117-96-1	U		0.21		U	GAM
Uranium 238	U-238	U		6.9		U	GAM
Americium 241	14596-10-2	U		0.20		U	GAM

PFP Well Installation Smpl. & Anal.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	02/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1640

R112145-01 B13F02

DATA SHEET

SDG	7184	Client/Case no	Hanford SDG H1640
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R112145-01	Client sample id	B13F02
Dept sample id	7184-001	Location/Matrix	200 West; Well No. C3803 SOLID
Received	12/21/01	Collected/Weight	12/19/01 23:45 1123 g
% solids	84.1	Custody/SAF No	B01-113-41 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	11.3	4.4	4.1	10		93A
Gross Beta	12587-47-2	8.82	4.8	7.4	15	J	93B
Total Strontium	SR-RAD	0.062	0.15	0.30	1.0	U	SR
Neptunium 237	13994-20-2	0.036	0.14	0.027	1.0	J	NP
Plutonium 238	13981-16-3	0.024	0.095	0.18	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.048	0.18	1.0	U	PU
Americium 241	14596-10-2	-0.019	0.029	0.059	1.0	U	AM
Potassium 40	13966-00-2	4.87	0.51	0.40			GAM
Cobalt 60	10198-40-0	U		0.036	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.26		U	GAM
Antimony 125	14234-35-6	U		0.080		U	GAM
Cesium 134	13967-70-9	U		0.043		U	GAM
Cesium 137	10045-97-3	U		0.031	0.10	U	GAM
Radium 226	13982-63-3	2.43	0.11	0.072	0.10		GAM
Radium 228	15262-20-1	0.403	0.11	0.12	0.20		GAM
Europium 152	14683-23-9	U		0.084	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.095	0.10	U	GAM
Thorium 228	14274-82-9	0.332	0.037	0.046			GAM
Thorium 232	TH-232	0.403	0.11	0.12			GAM
Uranium 235	15117-96-1	U		0.35		U	GAM
Uranium 238	U-238	U		7.4		U	GAM
Americium 241	14596-10-2	U		0.14		U	GAM

PFP Well Installation Smpl. & Anal.

Lab id	TMANC
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Form	DVD-DS
Version	3.06
Report date	02/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1640

Test AM Matrix SOLID
SDG 7184
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1640

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241
Preparation batch 7018-109					
B13DY4	R112145-02			7184-002	U
B13F02	R112145-01			7184-001	U
BLK (QC ID=40972)	R112145-04			7184-004	U
LCS (QC ID=40971)	R112145-03			7184-003	ok
Duplicate (R112145-01)	R112145-05			7184-005	- U
Nominal values and limits from method				RDLs (pCi/g)	1.0

PFP Well Installation Smpl. & Anal.

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 7018-109	2σ prep error 5.0 %							Reference Lab Notebook 7018 pg. 109								
B13DY4	R112145-02			0.046	0.500			81		741			48	02/05/02	02/05	SS-049
B13F02	R112145-01			0.059	0.500			66		740			48	02/05/02	02/05	SS-047
BLK (QC ID=40972)	R112145-04			0.19	0.500			79		120				02/05/02	02/06	SS-047
LCS (QC ID=40971)	R112145-03			0.049	0.500			70		741				02/05/02	02/05	SS-050
Duplicate (R112145-01) (QC ID=40973)	R112145-05			0.20	0.500			73		124			49	02/05/02	02/06	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 5 SAMPLES				
MDA	0.11	±	0.16
YIELD	74	±	12

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1640

Test NP Matrix SOLID
SDG 7184
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1640

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237
Preparation batch 7018-109					
B13DY4	R112145-02			7184-002	U
B13F02	R112145-01			7184-001	0.036 J
BLK (QC ID=40972)	R112145-04			7184-004	U
LCS (QC ID=40971)	R112145-03			7184-003	ok
Duplicate (R112145-01)	R112145-05			7184-005	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0
PFP Well Installation Smpl. & Anal.					

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 7018-109	2σ prep error 5.0 %								Reference Lab Notebook 7018 pg. 109							
B13DY4	R112145-02			0.075	0.500			76		131			40	01/24/02	01/28	SS-031
B13F02	R112145-01			0.027	0.500			68		102			39	01/24/02	01/27	SS-031
BLK (QC ID=40972)	R112145-04			0.14	0.500			71		189				01/24/02	01/25	SS-032
LCS (QC ID=40971)	R112145-03			0.14	0.500			70		188				01/24/02	01/25	SS-031
Duplicate (R112145-01) (QC ID=40973)	R112145-05			0.053	0.500			71		189			37	01/24/02	01/25	SS-033
Nominal values and limits from method				1.0	0.500			20-105		100			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.087 ± 0.10
YIELD 71 ± 6

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1640

Test PU Matrix SOLID
SDG 7184
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1640

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 7018-109								
B13DY4	R112145-02			7184-002	U		U	
B13F02	R112145-01			7184-001	U		U	
BLK (QC ID=40972)	R112145-04			7184-004	U		U	
LCS (QC ID=40971)	R112145-03			7184-003	ok		ok	
Duplicate (R112145-01)	R112145-05			7184-005	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	
PFP Well Installation Smpl. & Anal.								

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 7018-109	2σ prep error 5.0 %			Reference Lab Notebook 7018 pg. 109												
B13DY4	R112145-02			0.21	0.500			86		109			45	02/01/02	02/02	SS-055
B13F02	R112145-01			0.18	0.500			82		119			45	02/01/02	02/02	SS-043
BLK (QC ID=40972)	R112145-04			0.20	0.500			88		110				02/01/02	02/02	SS-058
LCS (QC ID=40971)	R112145-03			0.21	0.500			82		110				02/01/02	02/02	SS-056
Duplicate (R112145-01) (QC ID=40973)	R112145-05			0.21	0.500			75		110			45	02/01/02	02/02	SS-059
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	0.20	±	0.026
	YIELD	83	±	10

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1640

Test SR Matrix SOLID
SDG 7184
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1640

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 7018-109						
B13DY4	R112145-02			7184-002	U	
B13F02	R112145-01			7184-001	U	
BLK (QC ID=40972)	R112145-04			7184-004	U	
LCS (QC ID=40971)	R112145-03			7184-003	ok	
Duplicate (R112145-01)	R112145-05			7184-005	-	U
Nominal values and limits from method			RDLs (pCi/g)		1.0	
PFP Well Installation Smpl. & Anal.						

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 7018-109	2σ prep error 10.0 % Reference Lab Notebook 7018 pg. 109															
B13DY4	R112145-02			0.33	1.00			99		100			35	01/23/02	01/23	GRB-229
B13F02	R112145-01			0.30	1.00			99		100			35	01/23/02	01/23	GRB-224
BLK (QC ID=40972)	R112145-04			0.35	1.00			91		100				01/23/02	01/23	GRB-231
LCS (QC ID=40971)	R112145-03			0.26	1.00			91		100				01/23/02	01/23	GRB-218
Duplicate (R112145-01) (QC ID=40973)	R112145-05			0.24	1.00			100		100			35	01/23/02	01/23	GRB-219
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	MDA	0.30	± 0.092
FOR 5 SAMPLES	YIELD	96	± 9

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1640

Test 93A Matrix SOLID
SDG 7184
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1640

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha
Preparation batch 7018-109					
B13DY4	R112145-02	93		7184-002	8.77 J
B13F02	R112145-01	93		7184-001	11.3
BLK (QC ID=40972)	R112145-04	93		7184-004	U
LCS (QC ID=40971)	R112145-03	93		7184-003	ok
Duplicate (R112145-01)	R112145-05	93		7184-005	ok

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

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 7018-109	2σ prep error 20.0 % Reference Lab Notebook 7018 pg. 109															
B13DY4	R112145-02	93		3.4	0.100			32		100			35	01/23/02	01/23	GRB-114
B13F02	R112145-01	93		4.1	0.100			56		100			36	01/23/02	01/24	GRB-114
BLK (QC ID=40972)	R112145-04	93		2.5	0.100			25		100				01/23/02	01/23	GRB-101
LCS (QC ID=40971)	R112145-03	93		3.9	0.100			24		100				01/23/02	01/23	GRB-115
Duplicate (R112145-01) (QC ID=40973)	R112145-05	93		4.8	0.100			57		100			36	01/23/02	01/24	GRB-115
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 5 SAMPLES
MDA 3.7 ± 1.7
RESIDUE 39 ± 33

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1640

Test 93B Matrix SOLID
SDG 7184
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1640

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta	
Preparation batch 7018-109						
B13DY4	R112145-02	93		7184-002	18.4	
B13F02	R112145-01	93		7184-001	8.82	J
BLK (QC ID=40972)	R112145-04	93		7184-004	U	
LCS (QC ID=40971)	R112145-03	93		7184-003	ok	
Duplicate (R112145-01)	R112145-05	93		7184-005	ok	J

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

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 7018-109 2σ prep error 15.0 % Reference Lab Notebook 7018 pg. 109																
B13DY4	R112145-02	93		8.7	0.100			32		100			35	01/23/02	01/23	GRB-114
B13F02	R112145-01	93		7.4	0.100			56		100			35	01/23/02	01/23	GRB-112
BLK (QC ID=40972)	R112145-04	93		5.4	0.100			25		100				01/23/02	01/23	GRB-101
LCS (QC ID=40971)	R112145-03	93		6.9	0.100			24		100				01/23/02	01/23	GRB-115
Duplicate (R112145-01) (QC ID=40973)	R112145-05	93		6.4	0.100			57		100			35	01/23/02	01/23	GRB-102
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 5 SAMPLES				
	MDA	7.0	±	2.4
	RESIDUE	39	±	33

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1640

Test GAM Matrix SOLID
SDG 7184
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1640

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7018-109								
B13DY4	R112145-02			7184-002	U		U	
B13F02	R112145-01			7184-001	U		U	
BLK (QC ID=40972)	R112145-04			7184-004	U		U	
LCS (QC ID=40971)	R112145-03			7184-003	ok		ok	
Duplicate (R112145-01)	R112145-05			7184-005	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.10	
PFP Well Installation Smpl. & Anal.								

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 7018-109	2σ prep error 15.0 % Reference Lab Notebook 7018 pg. 109															
B13DY4	R112145-02			0.50	755					105			41	01/28/02	01/29	02,03,00
B13F02	R112145-01			0.26	608					116			43	01/28/02	01/31	02,04,00
BLK (QC ID=40972)	R112145-04			0.19	608					101				01/28/02	01/29	01,03,00
LCS (QC ID=40971)	R112145-03			0.048	608					106				01/28/02	01/29	01,03,00
Duplicate (R112145-01) (QC ID=40973)	R112145-05			0.51	608					110			43	01/28/02	01/31	02,03,00
Nominal values and limits from method				0.050	608					100			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	0.30	±	0.40
	YIELD		±	

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 02/11/02

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-41	Page 1 of 2
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 (H1640 (7184))	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: ERC-01-026	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA TMA	Offsite Property No.: A02C076	Bill of Lading/Air Bill No.: 4235574984 0	

POSSIBLE SAMPLE HAZARDS/REMARKS

TIE TO: B13F08
<2000pCi/g

Special Handling and/or Storage

SAMPLE ANALYSIS	Ammonia - 350.3	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	Sulfides - 9030; Total Cyanide - 9010	Technetium-99; Tritium - H3; Isotopic Uranium	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.
Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	250mL	60mL	60mL	120mL	250mL	120mL	250mL	250mL	250mL	500mL
	RJN 12/20/01				RJN 12/20/01			RT 12-20-01		

Sample No.	Matrix *	Sample Date	Sample Time	Ammonia - 350.3	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	Sulfides - 9030; Total Cyanide - 9010	Technetium-99; Tritium - H3; Isotopic Uranium	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.
B13F02	SOIL	12/19/01	2345			X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson / R. Nielson	12/20/01 0405	Rec # 2B	12/20/01 0405
Relinquished By / Renee Nielson	Date/Time 0400	Received By	Date/Time 0400
R. Nielson 2B 3728	12-20-01	R.T. Thorson	12-20-01
Relinquished By	Date/Time 0400	Received By	Date/Time
R.T. Thorson ERC	12-20-01	FEDEX	12-20-01
Relinquished By	Date/Time 1:30	Received By	Date/Time 1:30
FED EXPRESS	12-21-01	E.S. Maddox	12-21-01
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.

RT 12-20-01

~~(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~~

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 12/20/01.
Collector not available to relinquish samples on 12/20/01 for shipment.

RT 12-20-01

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

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

BHI-EE-011 (10/99)

Melissa Mannion

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-41	Page 2 of 2
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 H1640 (7184)	SAF No.: B01-113	Air Quality ☐
Ice Chest No.: ERC-01-026	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA - TMA	Offsite Property No.: A020076	Bill of Lading/Air Bill No.: 4235754-9840	

POSSIBLE SAMPLE HAZARDS/REMARKS

Tie to B13F08
<2000pCi/g

Special Handling and/or Storage

Preservation	Cool 4C	None	None								
Type of Container	aG	aG	aG								
No. of Container(s)	1		1								
Volume	500mL	500mL	1000mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470	See item (2) in Special Instructions.								
Sample No. / Matrix * / Sample Date / Sample Time											
B13F02 / SOIL / 12/19/01 / 2345	X RJN 12/20/01		X								

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 12/20/01.
Collector not available to relinquish samples on 12/20/01 for shipment.
RT 12-20-01

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	Renee Nielson / R. Nielson	12/20/01 0405	Ref # 2B	12/20/01 0405
Relinquished By	Removed Ref 2B 3728	12-20-01 0900	Received By	R F Thoren 12-20-01 0900
Relinquished By	R F Thoren ERC	12-20-01 0900	Received By	FED EX 12-20-01
Relinquished By	FED. EXPRESS	12-21-01 1:30	Received By	E. Maestas 12-21-01 1:20
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

RT 12-20-01

~~(1) ICP Metals - 6010A (TAL); Barium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium; IC Anions - 6010A (Add-on) (Phosphorus)~~
(2) 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

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-33	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: H1640 (7184) 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	
Ice Chest No.: ERC-01-026	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA TMA	Offsite Property No.: A020676	Bill of Lading/Air Bill No.: 4235775 4-9840	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 12/19/01.
Collector not available to relinquish samples on 12/20/01 for shipment..
RT 12-20-01

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG	sG
No. of Container(s)	1	1	1	1	1	1	1	1	1
Volume	120mL	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										
B13DY4	SOIL	12/19/01	0150		X							X	TIC TC BBF08

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R Nielson	12/19/01 0445	R Nielson #2C	12/19/01 0445
R Nielson #2C 3726	12.20.01 0900	R Thoren	12.20.01 0900
R Thoren ERC	12.20.01	FEDEX	12-20-01
FEDEX EXPRESS	12-21-01 1:30	E.S. Maestas	12-21-01 1:30

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 12-20-01

~~(1) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (Triethyl phosphate); (2) IC - Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); NO2/NO3 - 353.2; pH (Soil) - 9045; (3) ICP1 (Metals - 6010A (TAL) (Aluminum, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium); ICP Metals - 6010A (Add-on) (Phosphorus)~~

RJN 11/8/01

(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

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)

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc. Date/Time received 12-21-01 1:30

CoC No. B01-113-33, 41, 50, AND 58,

Container I.D. No. ERC-01-26 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: 4 samples
7. Number of containers per sample: check (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. Marstal Date: 12-21-01 Time: 1:30

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B01-113 H1640

FEB 2002
RECEIVED

RFW LOT # :01L12L685

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B13DY4	001	S	01LVG114	12/19/01	12/21/01	N/A	12/27/01
B13DY4	001 MS	S	01LVG114	12/19/01	12/21/01	N/A	12/27/01
B13DY4	001 MSD	S	01LVG114	12/19/01	12/21/01	N/A	12/27/01
B13F02	002	S	01LVG114	12/19/01	12/21/01	N/A	12/27/01
LAB QC:							
VBLKGH	MB1	S	01LVG114	N/A	N/A	N/A	12/27/01
VBLKGH	MB1 BS	S	01LVG114	N/A	N/A	N/A	12/27/01

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-113
LVL #: 0112L685
SDG/SAF #: H1640/B01-113

W.O. #: 11343-606-001-9999-00
Date Received: 12-21-2001

GC/MS VOLATILE

Two (2) soil samples were collected on 12-18,19-2001.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260B for client specified Volatile target compounds on 12-27-2001.

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

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The analysis holding time was met.
3. Non-target compounds were not detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than 2x the CRQL.
8. Internal standard area and retention time criteria were met.
9. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

for J. Michael Taylor
President
Lionville Laboratory Incorporated

01-18-02
Date

som\group\data\voa\tnu-hanford\0112-685.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 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.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

Lionville Laboratory, Inc.

Volatiles By GC/MS, Special List

Report Date: 01/10/02 12:18

RFW Batch Number: **0112L685** Client: **TNUHANFORD B01-113 H1640** Work Order: 11343606001 Page: 1a

	Cust ID:	B13DY4		B13DY4		B13DY4		B13F02		VBLKGH		VBLKGH BS	
Sample Information	RFW#:	001		001 MS		001 MSD		002		01LVG114-MB1		01LVG114-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		0.980		1.04		1.04		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	101	%	100	%	100	%	104	%	101	%	98	%
	Bromofluorobenzene	98	%	97	%	100	%	104	%	98	%	96	%
	1,2-Dichloroethane-d4	95	%	97	%	98	%	96	%	97	%	99	%
			fl		fl		fl		fl		fl		fl
Chloromethane		12	U	12	U	13	U	12	U	10	U	10	U
Bromomethane		12	U	12	U	13	U	12	U	10	U	10	U
Vinyl Chloride		12	U	12	U	13	U	12	U	10	U	10	U
Chloroethane		12	U	12	U	13	U	12	U	10	U	10	U
Methylene Chloride		16	B	15	B	17	B	17	B	6		5	B
Acetone		2	JB	3	JB	1	JB	6	JB	2	J	10	U
Carbon Disulfide		6	U	6	U	6	U	6	U	5	U	5	U
1,1-Dichloroethene		6	U	91	%	96	%	6	U	5	U	79	%
1,1-Dichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	6	U	5	U	5	U
Chloroform		6	U	6	U	6	U	6	U	5	U	5	U
1,2-Dichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
2-Butanone		12	U	12	U	13	U	12	U	10	U	10	U
1,1,1-Trichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
Carbon Tetrachloride		6	U	6	U	6	U	6	U	5	U	5	U
Bromodichloromethane		6	U	6	U	6	U	6	U	5	U	5	U
1,2-Dichloropropane		6	U	6	U	6	U	6	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	6	U	5	U	5	U
Trichloroethene		6	U	98	%	101	%	6	U	5	U	97	%
Dibromochloromethane		6	U	6	U	6	U	6	U	5	U	5	U
1,1,2-Trichloroethane		6	U	6	U	6	U	6	U	5	U	5	U
Benzene		6	U	96	%	99	%	6	U	5	U	96	%
Trans-1,3-Dichloropropene		6	U	6	U	6	U	6	U	5	U	5	U
Bromoform		6	U	6	U	6	U	6	U	5	U	5	U
4-Methyl-2-pentanone		12	U	12	U	13	U	12	U	10	U	10	U
2-Hexanone		12	U	12	U	13	U	12	U	10	U	10	U
Tetrachloroethene		6	U	6	U	6	U	6	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	6	U	5	U	5	U
Toluene		6	U	103	%	104	%	6	U	5	U	103	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0112L685** Client: **TNUHANFORD B01-113 H1640** Work Order: 11343606001 Page: 1b

Cust ID:	B13DY4		B13DY4		B13DY4		B13F02		VBLKGH		VBLKGH BS	
RFW#:	001		001 MS		001 MSD		002		01LVG114-MB1		01LVG114-MB1	
Chlorobenzene	6	U	101	%	102	%	6	U	5	U	103	%
Ethylbenzene	6	U	6	U	6	U	6	U	5	U	5	U
Styrene	6	U	6	U	6	U	6	U	5	U	5	U
Xylene (total)	6	U	6	U	6	U	6	U	5	U	5	U
N-butylbenzene	6	U	6	U	6	U	6	U	5	U	5	U

*= Outside of EPA CLP QC limits.

Lionville Laboratory Use Only

01121685

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

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: 30 day

Date Rec'd: 12/21/01 Date Due: 1/20/02

		A	B						C		D	E	F	G		
Refrigerator #		1	3						3		3	3	3	3		
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG		1AG	1AG	1AG	1AG		
Volume	Liquid															
	Solid	250	250						500		250	500	125	60		
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	TIC TOC	IC Anions Not NO3/NO2	Cr6	O+G		
		Lionville Laboratory Use Only														
		0624 X	0625 X						MCT		ZTIC ZOCT	IN3N2	ICR6	IOGGR		

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	0624 X	0625 X						MCT		ZTIC ZOCT	IN3N2	ICR6	IOGGR		
001	B13DY4			S	12/19/01	0150	1	1						1		1	1	1	1		
002	B13F02			L	12/18/01	2245	1	1						1		1	1	1	1		

Special Instructions:

SAF # B01-113

Run Matrix QC

DATE/REVISIONS:

MCT 1. Cd, Ca, Cr, Fe, Mg, Ni, Na, P

TAORG 2. ICCL, ICPL, ICN03, ICN02, ICPO4, ICSO4,

3. IN3N2, IPH

4.

5.

6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___

Airbill # 4235-7954-9850

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

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

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

Cooler Temp 1 °C

Relinquished by	Received by	Date	Time
fedex	JPerry	12/21/01	1615

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		B01-113-33	Page 1 of 1
Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N
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-99.065	Field Logbook No.: EL-1562	COA: T20ZP1D722	Method of Shipment: Federal Express	Data Turnaround: 45 Days
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A02D101		Bill of Lading/Air Bill No.: 4235 7754 - 9850	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 12/20/01. Collector not available to relinquish samples on 12/20/01 for shipment.

RT 12-20-01

12-19-01

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	
Volume	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									
B13DY4	SOIL	12/19/01	0150	X		X	X	X	X	X	X	Tie to B13F08

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Nielson/R. Nielson	Date/Time: 12/19/01 0445	Received By: Ref #2C	Date/Time: 12/19/01 0445
Relinquished By: Removed from Ref #2C 3728	Date/Time: 12-20-01 0900	Received By: R. Thoren	Date/Time: 12-20-01 0900
Relinquished By: R. Thoren ERC	Date/Time: 12-20-01 0900	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex	Date/Time: 12/21/01 1615	Received By: J Perry	Date/Time: 12/21/01 1615
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, {Barium-137, Cobalt-60}; Gamma Spec - Add-on {Antimony-125, Europium-154, Ruthenium-106}, Americium-241, Neptunium-237, Isotopic Plutonium; Strontium-89,90 -- Total Sr~~

RJN 11/5/01

RT 12-19-01

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-41	Page 1 of 2

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-99-065	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A02101	Bill of Lading/Air Bill No.: 4235795 4 - 9850	

POSSIBLE SAMPLE HAZARDS/REMARKS
TICTO: B13F08
<2000pCi/g

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	250mL	60mL	60mL	120mL	120mL	120mL	250mL	250mL	250mL	500mL
SAMPLE ANALYSIS	Ammonia - 350.3	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	Sulfides - 9030; Total Cyanide - 9010	Technetium-99; Tritium - H3; Isotopic Uranium	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.
					RJN 12/19/01	RJN 12/19/01				

Sample No.	Matrix *	Sample Date	Sample Time	Ammonia - 350.3	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	Sulfides - 9030; Total Cyanide - 9010	Technetium-99; Tritium - H3; Isotopic Uranium	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.
B13F02	SOIL	12/19/01	2345		X		X			X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	12/20/01 0405	STORDIN Rec # 2B	12/20/01 0405
Removed from Ref 2B 3728	12.20.01 0400	R. Thorer	12.20.01 0400
R. Thorer ERC	12.20.01 0400	FEDEX	
FEDEX	12/21/01 1615	JRuy	12/21/01 1615

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

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 12/20/01.
Collector not available to relinquish samples on 12/20/01 for shipment.

RT 12-20-01

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-41	Page 2 of 2

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-99-065	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020101	Bill of Lading/Air Bill No.: 42357954-9850	

POSSIBLE SAMPLE HAZARDS/REMARKS

TIE TO B13F08
<2000PCI/g

Special Handling and/or Storage

Preservation	Cool 4C	None	None	
Type of Container	aG	aG	aG	
No. of Container(s)	1			
Volume	500mL	500mL	1000mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions ✓	Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470	See item (2) in Special Instructions ✓	

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 12 20 01.
Collector not available to relinquish samples on 12/20/01 for shipment.
RT 12-20-01

Sample No.	Matrix *	Sample Date	Sample Time										
B13F02	SOIL	12/19/01	2345	X ✓									

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By	Date/Time
Relinquished By: R. Nielson	12/20/01 0405	Received By: Ref # 2B	12/20/01 0405
Relinquished By: Removed from Ref 2B 3728	12.2001 0400	Received By: R Thoren	12.2001 0400
Relinquished By: R Thoren ERC	12.20.01 0900	Received By: FEDEX	
Relinquished By: fedex	12/21/01 1615	Received By: JPerry	12/21/01 1615
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) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium}; ICP Metals - 6010A (Add-on) {Phosphorus}
~~(2) 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 12-19-01 RT 12-19-01

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)

FEB 2002
RECEIVED

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1640

DATE RECEIVED: 12/21/01 LVL LOT # :0112L685

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13DY4	001	S	01LE1557	12/19/01	12/26/01	01/18/02
B13F02	002	S	01LE1557	12/19/01	12/26/01	01/18/02
B13F02	002 MS	S	01LE1557	12/19/01	12/26/01	01/18/02
B13F02	002 MSD	S	01LE1557	12/19/01	12/26/01	01/18/02

LAB QC:

SBLKNH	MB1	S	01LE1557	N/A	12/26/01	01/11/02
SBLKNH	MB1 BS	S	01LE1557	N/A	12/26/01	01/11/02

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-113
LVL #: 0112L685
SDG/SAF #: H1640/B01-113

W.O. #: 11343-606-001-9999-00
Date Received: 12-21-2001

SEMIVOLATILE

Two (2) soil samples were collected on 12-19-2001.

The samples and their associated QC samples were extracted on 12-26-2001 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL and Tributylphosphate Semivolatile target compounds on 01-11,18-2002.

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

2. Samples were extracted and analyzed within required holding time.

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

4. All surrogate recoveries were within EPA QC limits.

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

6. All blank spike recoveries were within EPA QC limits.

7. 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-0112-685.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 4 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.

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 10:20

RFW Batch Number: 0112L685 Client: TNUHANFORD B01-113 H1640 Work Order: 11343606001 Page: 1a

	Cust ID:	B13DY4		B13F02		B13F02		B13F02		SBLKNH		SBLKNH BS	
Sample Information	RFW#:	001		002		002 MS		002 MSD		01LE1557-MB1		01LE1557-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	90	%	90	%	81	%	84	%	83	%	62	%
	2-Fluorobiphenyl	93	%	86	%	86	%	79	%	84	%	60	%
	p-Terphenyl-d14	97	%	101	%	92	%	83	%	88	%	75	%
	Phenol-d5	96	%	93	%	86	%	90	%	97	%	75	%
	2-Fluorophenol	95	%	96	%	88	%	87	%	90	%	70	%
	2,4,6-Tribromophenol	96	%	93	%	95	%	87	%	105	%	88	%
			fl		fl		fl		fl		fl		fl
Phenol		400	U	400	U	77	%	80	%	330	U	69	%
bis(2-Chloroethyl)ether		400	U	400	U	400	U	400	U	330	U	330	U
2-Chlorophenol		400	U	400	U	76	%	80	%	330	U	63	%
1,3-Dichlorobenzene		400	U	400	U	400	U	400	U	330	U	330	U
1,4-Dichlorobenzene		400	U	400	U	76	%	77	%	330	U	57	%
1,2-Dichlorobenzene		400	U	400	U	400	U	400	U	330	U	330	U
2-Methylphenol		400	U	400	U	400	U	400	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		400	U	400	U	400	U	400	U	330	U	330	U
3- and/or 4-Methylphenol		400	U	400	U	400	U	400	U	330	U	330	U
N-Nitroso-Di-n-propylamine		400	U	400	U	89	%	86	%	330	U	61	%
Hexachloroethane		400	U	400	U	400	U	400	U	330	U	330	U
Nitrobenzene		400	U	400	U	400	U	400	U	330	U	330	U
Isophorone		400	U	400	U	400	U	400	U	330	U	330	U
2-Nitrophenol		400	U	400	U	400	U	400	U	330	U	330	U
2,4-Dimethylphenol		400	U	400	U	400	U	400	U	330	U	330	U
bis(2-Chloroethoxy)methane		400	U	400	U	400	U	400	U	330	U	330	U
2,4-Dichlorophenol		400	U	400	U	400	U	400	U	330	U	330	U
1,2,4-Trichlorobenzene		400	U	400	U	77	%	77	%	330	U	56	%
Naphthalene		400	U	400	U	400	U	400	U	330	U	330	U
4-Chloroaniline		400	U	400	U	400	U	400	U	330	U	330	U
Hexachlorobutadiene		400	U	400	U	400	U	400	U	330	U	330	U
4-Chloro-3-methylphenol		400	U	400	U	79	%	78	%	330	U	62	%
2-Methylnaphthalene		400	U	400	U	400	U	400	U	330	U	330	U
Hexachlorocyclopentadiene		400	U	400	U	400	U	400	U	330	U	330	U
2,4,6-Trichlorophenol		400	U	400	U	400	U	400	U	330	U	330	U
2,4,5-Trichlorophenol		1000	U	990	U	990	U	990	U	830	U	830	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0112L685 Client: TNUHANFORD B01-113 H1640 Work Order: 11343606001 Page: 1b

Cust ID:	B13DY4		B13F02		B13F02		B13F02		SBLKNH		SBLKNH BS	
RFW#:	001		002		002 MS		002 MSD		01LE1557-MB1		01LE1557-MB1	
2-Chloronaphthalene	400	U	400	U	400	U	400	U	330	U	330	U
2-Nitroaniline	1000	U	990	U	990	U	990	U	830	U	830	U
Dimethylphthalate	400	U	400	U	400	U	400	U	330	U	330	U
Acenaphthylene	400	U	400	U	400	U	400	U	330	U	330	U
2,6-Dinitrotoluene	400	U	400	U	400	U	400	U	330	U	330	U
3-Nitroaniline	1000	U	990	U	990	U	990	U	830	U	830	U
Acenaphthene	400	U	400	U	81	%	75	%	330	U	60	%
2,4-Dinitrophenol	1000	U	990	U	990	U	990	U	830	U	830	U
4-Nitrophenol	1000	U	990	U	92	%	79	%	830	U	70	%
Dibenzofuran	400	U	400	U	400	U	400	U	330	U	330	U
2,4-Dinitrotoluene	400	U	400	U	89	%	79	%	330	U	74	%
Diethylphthalate	400	U	400	U	400	U	400	U	330	U	330	U
4-Chlorophenyl-phenylether	400	U	400	U	400	U	400	U	330	U	330	U
Fluorene	400	U	400	U	400	U	400	U	330	U	330	U
4-Nitroaniline	1000	U	990	U	990	U	990	U	830	U	830	U
4,6-Dinitro-2-methylphenol	1000	U	990	U	990	U	990	U	830	U	830	U
N-Nitrosodiphenylamine (1)	400	U	400	U	400	U	400	U	330	U	330	U
4-Bromophenyl-phenylether	400	U	400	U	400	U	400	U	330	U	330	U
Hexachlorobenzene	400	U	400	U	400	U	400	U	330	U	330	U
Pentachlorophenol	1000	U	990	U	90	%	84	%	830	U	79	%
Phenanthrene	400	U	400	U	400	U	400	U	330	U	330	U
Anthracene	400	U	400	U	400	U	400	U	330	U	330	U
Carbazole	400	U	400	U	400	U	400	U	330	U	330	U
Di-n-Butylphthalate	400	U	400	U	400	U	400	U	330	U	330	U
Fluoranthene	400	U	400	U	400	U	400	U	330	U	330	U
Pyrene	400	U	400	U	92	%	79	%	330	U	73	%
Butylbenzylphthalate	400	U	400	U	400	U	400	U	330	U	330	U
3,3'-Dichlorobenzidine	400	U	400	U	400	U	400	U	330	U	330	U
Benzo(a)anthracene	400	U	400	U	400	U	400	U	330	U	330	U
Chrysene	400	U	400	U	400	U	400	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	400	U	400	U	400	U	400	U	330	U	330	U
Di-n-Octyl phthalate	400	U	400	U	400	U	400	U	330	U	330	U
Benzo(b)fluoranthene	400	U	400	U	400	U	400	U	330	U	330	U
Benzo(k)fluoranthene	400	U	400	U	400	U	400	U	330	U	330	U
Benzo(a)pyrene	400	U	400	U	400	U	400	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	400	U	400	U	400	U	400	U	330	U	330	U
Dibenzo(a,h)anthracene	400	U	400	U	400	U	400	U	330	U	330	U
Benzo(g,h,i)perylene	400	U	400	U	400	U	400	U	330	U	330	U
Tributylphosphate	400	U	400	U	400	U	400	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.

B13DY4

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

Client: TNUHANFORD B01-113 H1640

Matrix: (soil/water) SOIL

Lab Sample ID: 0112L685-001

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

Lab File ID: D011804

Level: (low/med) LOW

Date Received: 12/21/01

% Moisture: 17 decanted: (Y/N)__

Date Extracted: 12/26/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 01/18/02

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	6.309	600	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13F02

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

Client: TNUHANFORD B01-113 H1640

Matrix: (soil/water) SOIL

Lab Sample ID: 0112L685-002

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

Lab File ID: D011805

Level: (low/med) LOW

Date Received: 12/21/01

% Moisture: 16 decanted: (Y/N)__

Date Extracted: 12/26/01

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 01/18/02

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	6.298	700	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKNH

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

Client: TNUHANFORD B01-113 H1640

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE1557-MB1

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

Lab File ID: D011114

Level: (low/med) LOW

Date Received: 12/26/01

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

Date Extracted: 12/26/01

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	6.584	600	J

Lionville Laboratory Use Only

01121685

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: OJ

QC: SPEC Del: STD TAT: 30 day

Date Rec'd: 12/21/01 Date Due: 1/28/02

	A	B	C	D	E	F	G
Refrigerator #	1	3	3	3	3	3	3
#/Type Container: Liquid							
#/Type Container: Solid	1AG	1AG	1AG				
Volume: Liquid							
Volume: Solid	250	250	500	250	250	250	250
Preservatives							
ANALYSES REQUESTED	ORGANIC: VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	ORGANIC: Herb	INORG: Metal	INORG: CN	TIC TOC / TEA Nitrate Nitrite / Cl2 / O-G

Lionville Laboratory Use Only

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X					MCTO		ZTIC ZOCT	ZWCHO	ICRG	IOGGR		
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	B13D44			S	12/20/01	1150	1	1					1		1	1	1	1		
	002	B13F02			L	12/20/01	1245	1	1					1		1	1	1	1		

Special Instructions:

SAF # B01-113

Run Matrix QC

DATE/REVISIONS:

MCTO 1. Cd, Ca, Cr, Fe, Mg, Ni, Na, P

TADRGO 2. ICCL, ICPL, ICN03, ICN02, ICP04, IC504,

3. IN3N2, IPH

4.

5.

6.

Relinquished by	Received by	Date	Time
Fed ex	JPerry	12/21/01	1615

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___

Airbill # 4235-7954-9850

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

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

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

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

Cooler Temp 1 °C

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

NOTES:

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-33	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-99.065	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA (circled) RECRA	Offsite Property No.: A020101	Bill of Lading/Air Bill No.: 4235 7754-9850	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 12-19-01. Collector not available to relinquish samples on 12-20-01 for shipment. 12-19-01

RT 12-20-01

Sample No.	Matrix *	Sample Date	Sample Time	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.	
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	
B13DY4	SOIL	12/19/01	0150	X		X	X	X	X	X	X		Tie to B13FD8

SAMPLE ANALYSIS

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Nielson / R. Nielson	Date/Time: 12/19/01 0445	Received By: Ref #2C	Date/Time: 12/19/01 0445
Relinquished By: Removed from Ref 2C 3728	Date/Time: 12-20-01 0900	Received By: R. Thoren	Date/Time: 12-20-01 0900
Relinquished By: R. Thoren ERC	Date/Time: 12-20-01 0900	Received By: FEDEX	Date/Time:
Relinquished By: fedex	Date/Time: 12/21/01 1615	Received By: TPerry	Date/Time: 12/21/01 1615
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 Spectrometry (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 12-19-01

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-41	Page 1 of 2

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-99-065	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A02101	Bill of Lading/Air Bill No.: 4235795 4 - 9850	

POSSIBLE SAMPLE HAZARDS/REMARKS
TIE TO: B13F08
<2000pCi/g

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	250mL	60mL	60mL	120mL	120mL	120mL	250mL	250mL	250mL	500mL
SAMPLE ANALYSIS	Ammonia - 350.3	Oil & Grease - 413.1 ✓	Gross Alpha; Gross Beta ✓	Chromium Hex - 7196 ✓	Sulfides - 9030; Total Cyanide - 9010 RIN 12/21/01	Technetium-99; Tritium - H3; Isotopic Uranium RIN 12/19/01	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. ✓

Sample No.	Matrix *	Sample Date	Sample Time										
B13F02	SOIL	12/19/01	2345		X		X			X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	12/20/01 0405	JTorrin RCC #2B	12/20/01 0405
Removed from RCC #2B 3778	12-20-01 0400	R. Thorer	12-20-01 0400
R. Thorer ERC	12-20-01 0400	FEDEX	
FedEx	12/21/01 1615	JRuny	12/21/01 1615

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

Samples stored in Ref.# 23 at the 3728 Shipping Facility on 12/20/01.
Collector not available to relinquish samples on 12/20/01 for shipment.
RT 12-20-01

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-41	Page 2 of 2

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-99-065	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020101	Bill of Lading/Air Bill No.: 42357954-9850	

POSSIBLE SAMPLE HAZARDS/REMARKS

Tie to B13F08
<2000pCi/g

Special Handling and/or Storage

Preservation	Cool 4C	None	None
Type of Container	aG	aG	aG
No. of Container(s)	1	1	1
Volume	500mL	500mL	1000mL
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470	See item (2) in Special Instructions.

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 12 20 01.
Collector not available to relinquish samples on 12/20/01 for shipment.
RT 12-20-01

Sample No.	Matrix *	Sample Date	Sample Time			
B13F02	SOIL	12/19/01	2345	X		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	12/20/01 0405	Storegin Ref # 20	12/20/01 0405
Removed from Ref 2B 3728	12.20.01 0900	R. Thoren	12.20.01 0900
R Thoren ERC	12.20.01 0900	FEDEX	
FedEx	12/21/01 1615	JPerry	12/21/01 1615

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) ICP Metals - 6010A (TAL) (Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium); ICP Metals - 6010A (Add-on) (Phosphorus)
~~(2) Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125, Cesium-134, Ruthenium-106); Americium-241, Neptunium-237, Plutonium, Uranium 89,90 - Total Sr~~
RT 12-19-01 RT 12-19-01

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

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

BHI-EE-011 (10/99)

FEB 2002
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1640

DATE RECEIVED: 12/21/01 LVL LOT # :0112L685

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13DY4						
% SOLIDS	001	S	01L%S179	12/19/01	12/22/01	12/23/01
% SOLIDS	001 REP	S	01L%S179	12/19/01	12/22/01	12/23/01
CHLORIDE BY IC	001	S	02LICA05	12/19/01	01/14/02	01/14/02
CHLORIDE BY IC	001 REP	S	02LICA05	12/19/01	01/14/02	01/14/02
CHLORIDE BY IC	001 MS	S	02LICA05	12/19/01	01/14/02	01/14/02
FLUORIDE BY IC	001	S	02LICA05	12/19/01	01/14/02	01/14/02
FLUORIDE BY IC	001 REP	S	02LICA05	12/19/01	01/14/02	01/14/02
FLUORIDE BY IC	001 MS	S	02LICA05	12/19/01	01/14/02	01/14/02
NITRITE BY IC	001	S	02LICA05	12/19/01	01/14/02	01/14/02
NITRITE BY IC	001 REP	S	02LICA05	12/19/01	01/14/02	01/14/02
NITRITE BY IC	001 MS	S	02LICA05	12/19/01	01/14/02	01/14/02
NITRATE BY IC	001	S	02LICA05	12/19/01	01/14/02	01/14/02
NITRATE BY IC	001 REP	S	02LICA05	12/19/01	01/14/02	01/14/02
NITRATE BY IC	001 MS	S	02LICA05	12/19/01	01/14/02	01/14/02
PHOSPHATE BY IC	001	S	02LICA05	12/19/01	01/14/02	01/14/02
PHOSPHATE BY IC	001 REP	S	02LICA05	12/19/01	01/14/02	01/14/02
PHOSPHATE BY IC	001 MS	S	02LICA05	12/19/01	01/14/02	01/14/02
CHROMIUM VI	001	S	02LVI002	12/19/01	01/10/02	01/10/02
CHROMIUM VI	001 REP	S	02LVI002	12/19/01	01/10/02	01/10/02
CHROMIUM VI	001 MS	S	02LVI002	12/19/01	01/10/02	01/10/02
CHROMIUM VI	001 MSD	S	02LVI002	12/19/01	01/10/02	01/10/02
SULFATE BY IC	001	S	02LICA05	12/19/01	01/14/02	01/14/02
SULFATE BY IC	001 REP	S	02LICA05	12/19/01	01/14/02	01/14/02
SULFATE BY IC	001 MS	S	02LICA05	12/19/01	01/14/02	01/14/02
NITRATE NITRITE	001	S	02LN3A04	12/19/01	01/15/02	01/15/02
NITRATE NITRITE	001 REP	S	02LN3A04	12/19/01	01/15/02	01/15/02
NITRATE NITRITE	001 MS	S	02LN3A04	12/19/01	01/15/02	01/15/02
TOTAL ORGANIC CARBON	001	S	02LTZ001	12/19/01	01/16/02	01/16/02
TOTAL ORGANIC CARBON	001 REP	S	02LTZ001	12/19/01	01/16/02	01/16/02
TOTAL ORGANIC CARBON	001 MS	S	02LTZ001	12/19/01	01/16/02	01/16/02
OIL & GREASE BY GRAV	001	S	02LOG002	12/19/01	01/22/02	01/22/02
OIL AND GREASE BY GR	001 REP	S	02LOG002	12/19/01	01/22/02	01/22/02
OIL AND GREASE BY GR	001 MS	S	02LOG002	12/19/01	01/22/02	01/22/02
PH	001	S	01LPH085	12/19/01	12/22/01	12/22/01
PH	001 REP	S	01LPH085	12/19/01	12/22/01	12/22/01

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1640

DATE RECEIVED: 12/21/01 LVL LOT # :0112L685

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL INORGANIC CARB	001	S	02LTZA01	12/19/01	01/16/02	01/16/02
B13F02						
% SOLIDS	002	S	01L%S179	12/19/01	12/22/01	12/23/01
CHLORIDE BY IC	002	S	02LICA05	12/19/01	01/14/02	01/14/02
FLUORIDE BY IC	002	S	02LICA05	12/19/01	01/14/02	01/14/02
NITRITE BY IC	002	S	02LICA05	12/19/01	01/14/02	01/14/02
NITRATE BY IC	002	S	02LICA05	12/19/01	01/14/02	01/14/02
PHOSPHATE BY IC	002	S	02LICA05	12/19/01	01/14/02	01/14/02
CHROMIUM VI	002	S	02LVI002	12/19/01	01/10/02	01/10/02
SULFATE BY IC	002	S	02LICA05	12/19/01	01/14/02	01/14/02
NITRATE NITRITE	002	S	02LN3A04	12/19/01	01/15/02	01/15/02
TOTAL ORGANIC CARBON	002	S	02LTZ001	12/19/01	01/16/02	01/16/02
OIL & GREASE BY GRAV	002	S	02LOG002	12/19/01	01/22/02	01/22/02
PH	002	S	01LPH085	12/19/01	12/22/01	12/22/01
TOTAL INORGANIC CARB	002	S	02LTZA01	12/19/01	01/16/02	01/16/02

LAB QC:

CHLORIDE BY IC	MB1	S	02LICA05	N/A	01/14/02	01/14/02
CHLORIDE BY IC	MB1 BS	S	02LICA05	N/A	01/14/02	01/14/02
FLUORIDE BY IC	MB1	S	02LICA05	N/A	01/14/02	01/14/02
FLUORIDE BY IC	MB1 BS	S	02LICA05	N/A	01/14/02	01/14/02
NITRITE BY IC	MB1	S	02LICA05	N/A	01/14/02	01/14/02
NITRITE BY IC	MB1 BS	S	02LICA05	N/A	01/14/02	01/14/02
NITRATE BY IC	MB1	S	02LICA05	N/A	01/14/02	01/14/02
NITRATE BY IC	MB1 BS	S	02LICA05	N/A	01/14/02	01/14/02
PHOSPHATE BY IC	MB1	S	02LICA05	N/A	01/14/02	01/14/02
PHOSPHATE BY IC	MB1 BS	S	02LICA05	N/A	01/14/02	01/14/02
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	02LICA05	N/A	01/14/02	01/14/02
SULFATE BY IC	MB1 BS	S	02LICA05	N/A	01/14/02	01/14/02
NITRATE NITRITE	MB1	S	02LN3A04	N/A	01/15/02	01/15/02
NITRATE NITRITE	MB1 BS	S	02LN3A04	N/A	01/15/02	01/15/02
TOTAL ORGANIC CARBON	MB1	W	02LTZ001	N/A	01/16/02	01/16/02

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1640

DATE RECEIVED: 12/21/01 LVL LOT # :0112L685

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL ORGANIC CARBON	MB1 BS	W	02LTZ001	N/A	01/16/02	01/16/02
OIL & GREASE BY GRAV	MB1	S	02LOG002	N/A	01/22/02	01/22/02
OIL AND GREASE BY GR	MB1 BS	S	02LOG002	N/A	01/22/02	01/22/02
TOTAL INORGANIC CARB	MB1	W	02LTZA01	N/A	01/16/02	01/16/02
TOTAL INORGANIC CARB	MB1 BS	W	02LTZA01	N/A	01/16/02	01/16/02

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-113 H1640
LVL#: 0112L685

W.O.#: 11343-606-001-9999-00
Date Received: 12-12-01

INORGANIC NARRATIVE

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

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

3. All results presented in this report are derived from samples that met LvLI's sample acceptance policy with the exception of the 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 with the exception of LCS 02LOG002-MB1 for Oil and Grease that was below the 80-120% control limits.

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

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

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

01-31-02
Date

njp\i12-685

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 15 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		✓ 3060A/7196A	
Corrosivity __ by coupon __ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		__ 9010B	__ 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/413.1	
Carbon, Total Organic and Inorganic		__ 9060	✓ Lloyd Kahn (mod)/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.)

L-WI-034/B-01/01

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/31/02

CLIENT: TNUHANFORD B01-113 H1640 LVL LOT #: 0112L685

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B13DY4	% Solids	82.8		%	0.01	1.0
		Chloride by IC	41.1		MG/KG	1.5	1.0
		Fluoride by IC	3.0	u	MG/KG	3.0	1.0
		Nitrite by IC	1.51	u	MG/KG	1.51	1.0
		Nitrate by IC	102		MG/KG	3.02	2.0
		Phosphate by IC	1.5	u	MG/KG	1.5	1.0
		Chromium VI	1.6		MG/KG	0.48	1.0
		Sulfate by IC	27.7		MG/KG	1.5	1.0
		Nitrate Nitrite	22.1		MG/KG	1.0	5.0
		Total Organic Carbon	258		MG/KG	43.9	1.0
		Oil & Grease Gravimetri	161	u	MG/KG	161	1.0
		pH	8.4		SOIL PH	0.01	1.0
		Total Inorganic Carbon	4840		MG/KG	43.9	1.0
-002	B13F02	% Solids	84.2		%	0.01	1.0
		Chloride by IC	24.2		MG/KG	1.5	1.0
		Fluoride by IC	3.0	u	MG/KG	3.0	1.0
		Nitrite by IC	1.48	u	MG/KG	1.48	1.0
		Nitrate by IC	68.5		MG/KG	2.97	2.0
		Phosphate by IC	1.5	u	MG/KG	1.5	1.0
		Chromium VI	0.48	u	MG/KG	0.48	1.0
		Sulfate by IC	46.9		MG/KG	1.5	1.0
		Nitrate Nitrite	16.8		MG/KG	0.87	5.0
		Total Organic Carbon	4870		MG/KG	50.5	1.0
		Oil & Grease Gravimetri	158	u	MG/KG	158	1.0
		pH	8.9		SOIL PH	0.01	1.0
		Total Inorganic Carbon	12800		MG/KG	50.5	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/31/02

CLIENT: TNUHANFORD B01-113 H1640 *LVL LOT #: 0112L685*

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	02LICA05-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	02LN3A04-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	02LOG002-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 01/31/02

CLIENT: TNUHANFORD B01-113 H1640 LVL LOT #: 0112L685

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B13DY4	Chloride by IC	203	41.1	151	107.0	5.0
		Fluoride by IC	65.7	0.0	60.0	109.5	1.0
		Nitrite by IC	33.6	1.51u	30.0	112.0	1.0
		Nitrate by IC	255	102	151	101.5	5.0
		Phosphate by IC	31.7	1.5 u	30.0	105.5	1.0
		Soluble Chromium VI	6.8	1.6	4.8	109.1	1.0
		Insoluble Chromium VI	1740	1.6	1630	106.2	100
		Sulfate by IC	59.9	27.7	30.0	107.3	1.0
		Nitrate Nitrite	48.9	22.1	25.2	106.2	5.0
		Total Organic Carbon	3190	259	2980	98.1	1.0
		Oil & Grease Gravimetr	6730	161 u	8300	81.0	1.0
BLANK10	02LICA05-MB1	Chloride by IC	24.3	1.2 u	25.0	97.0	1.0
		Fluoride by IC	54.2	2.5 u	50.0	108.4	1.0
		Nitrite by IC	23.9	1.25u	25.0	95.5	1.0
		Nitrate by IC	24.9	1.25u	25.0	99.5	1.0
		Phosphate by IC	26.6	1.2 u	25.0	106.3	1.0
		Sulfate by IC	24.6	1.2 u	25.0	98.6	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	02LN3A04-MB1	Nitrate Nitrite	5.3	0.20u	5.0	105.6	1.0
BLANK10	02LTZ001-MB1	Total Organic Carbon	395	4.7 u	400	98.6	1.0
BLANK10	02LOG002-MB1	Oil & Grease Gravimetr	5430	133 u	6880	78.9	1.0
BLANK10	02LTZA01-MB1	Total Inorganic Carbon	395	4.7 u	400	98.6	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/31/02

CLIENT: TNUHANFORD B01-113 H1640 LVL LOT #: 0112L685

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B13DY4	% Solids	82.8	82.5	0.30	1.0
		Chloride by IC	41.1	42.7	3.8	1.0
		Fluoride by IC	3.0 u	3.0 u	NC	1.0
		Nitrite by IC	1.51u	1.51u	NC	1.0
		Nitrate by IC	102	103	0.80	2.0
		Phosphate by IC	1.5 u	1.5 u	NC	1.0
		Chromium VI	1.6	1.3	15.8	1.0
		Sulfate by IC	27.7	27.0	2.8	1.0
		Nitrate Nitrite	22.1	22.6	2.2	5.0
		Total Organic Carbon	258	255	0.94	1.0
		Oil & Grease Gravimetri	161 u	161 u	NC	1.0
		pH	8.4	8.4	0.4	1.0

Lionville Laboratory Use Only

01121.685

Custody Transfer Record/Lab Work Request

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: OJ

QC: SPEC Del: STD TAT: 30 day

Date Rec'd: 12/21/01 Date Due: 1/20/02

		A	B						C		D	E	F	G		
Refrigerator #		1	3						3		3	3	3	3		
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG		1AG	1AG	1AG	1AG		
Volume	Liquid															
	Solid	250	250						500		250	500	125	250		
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	TIC TOC	TIC Anions Nitrate	Cr6	O+G		

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
Wt - Wipe
X - Other
F - Fish

Lionville Laboratory Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X						MET(1)		TIC TOC	INANI	ICR6	IOGGR		
001	B13D44			S	12/20/01	0150	1	1						1		1	1	1	1		
002	B13F02			L	12/20/01	2345	1	1						1		1	1	1	1		

Special Instructions:
SAF # B01-113
Run Matrix QC

DATE/REVISIONS:
MET(1) 1. Cd, Ca, Cr, Fe, Mg, Ni, Na, P
IAORG(1) 2. ICCL, ICPCL, ICNO3, ICNO2, ICPO4, ICSO4,
3. IN3N2, IPH
4.
5.
6.

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___
Airbill # 4235-7954-9850
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

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

Relinquished by	Received by	Date	Time
fed ex	JPerry	12/21/01	1615

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	B01-113-33	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-99.0165	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A020101	Bill of Lading/Air Bill No.: 4235 7954-9850	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 12/20/01. Collector not available to relinquish samples on 12/20/01 for shipment. 12.19.01 RT 12-20-01 RT 12-20-01

SAMPLE ANALYSIS

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
	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									
B13DY4	SOIL	12/19/01	0150	X		X	X	X	X	X	X	Tie to B13F08

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson/R. Nielson	12/19/01 0445	Ref #2C	12/19/01 0445
Remove from Ref 2C 3728	12.20.01 0900	R. Thorsen	12.20.01 0900
R. Thorsen ERC	12.20.01 0900	FEDEX	
Fed ex	12/21/01 1615	Jerry	12/21/01 1615

Sign/Print Names

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, Europium-154, Ruthenium-106); Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr~~ RT 12-19-01

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-41	Page 1 of 2

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-99-065	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A02010 1	Bill of Lading/Air Bill No.: 4235795 4 - 9850	

POSSIBLE SAMPLE HAZARDS/REMARKS
TICTO: B13F08
<2000pCi/g

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	120mL	120mL	250mL	250mL	250mL	500mL
SAMPLE ANALYSIS	Ammonia - 350.3	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	Cyanides - 9010; Total Cyanide - 9010	Technetium-99; Tritium - H3 Isotopic Uranium	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.

Sample No.	Matrix *	Sample Date	Sample Time										
B13F02	SOIL	12/19/01	2345		X		X			X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	12/20/01 0405	JLGordon Rec # 23	12/20/01 0405
Removed from Rec # 23 3728	12/20/01 0400	R. R Thorer	12/20/01 0400
R. R Thorer ERC	12/20/01 0400	FEDEX	
FedEx	12/21/01 1615	Jerry	12/21/01 1615

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

Samples stored in Ref.# 23 at the 3728 Shipping Facility on 12/20/01.
Collector not available to relinquish samples on 12/20/01 for shipment.
RT 12-20-01

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-41	Page 2 of 2

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-99-065	Field Logbook No.: EL-1562	COA: T20ZP1D722	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A020101		Bill of Lading/Air Bill No.: 42357954-9850

POSSIBLE SAMPLE HAZARDS/REMARKS

TIE TO B13F08
<2000PCI/g

Special Handling and/or Storage

Preservation	Cool 4C	None	None
Type of Container	aG	aG	aG
No. of Container(s)	1		
Volume	500mL	500mL	1000mL
SAMPLE ANALYSIS	See item (1) in Special Instructions	Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470	See item (2) in Special Instructions

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 12 20 01. Collector not available to relinquish samples on 12/20/01 for shipment.
RT 12-20-01

Sample No.	Matrix *	Sample Date	Sample Time			
B13F02	SOIL	12/19/01	2345	X		

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By: R. Nielson	12/20/01 0405	Received By: Kel # 20	12/20/01 0405
Relinquished By: Removed from Ref 2B 3728	12.2001 0900	Received By: R Thoren	12.2001 0900
Relinquished By: R Thoren ERC	12.20.01 0900	Received By: FEDEX	
Relinquished By: fedex	12/21/01 1615	Received By: JPerry	12/21/01 1615
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) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium}; ICP Metals - 6010A (Add-on) {Phosphorus}
~~(2) Gamma Spectroscopy, {Cesium-137, Cobalt-60}; Gamma Spec - Add-on {Antimony-125, Cesium-134, Ruthenium-106}; Americium-241; Neptunium-237; Iodine-129; Strontium-90; Total U;~~
RT 12-14-01 RT 12-14-01

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 12/21/01 1615

SDG#: 0112L685

Work Order Number: _____ SAF# B101-113

Shipping Container ID: _____ 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 1°C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 2 samples (14 jars)
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: JPerry / LVLI Date: 12/21/01

Telephoned to: _____ On _____ By _____

FEB 2002
RECEIVED

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1640

DATE RECEIVED: 12/21/01 LVL LOT # :0112L685

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13DY4						
CALCIUM, TOTAL	001	S	01L0867	12/19/01	01/08/02	01/09/02
CALCIUM, TOTAL	001 REP	S	01L0867	12/19/01	01/08/02	01/09/02
CALCIUM, TOTAL	001 MS	S	01L0867	12/19/01	01/08/02	01/09/02
CADMIUM, TOTAL	001	S	01L0867	12/19/01	01/08/02	01/09/02
CADMIUM, TOTAL	001 REP	S	01L0867	12/19/01	01/08/02	01/09/02
CADMIUM, TOTAL	001 MS	S	01L0867	12/19/01	01/08/02	01/09/02
CHROMIUM, TOTAL	001	S	01L0867	12/19/01	01/08/02	01/09/02
CHROMIUM, TOTAL	001 REP	S	01L0867	12/19/01	01/08/02	01/09/02
CHROMIUM, TOTAL	001 MS	S	01L0867	12/19/01	01/08/02	01/09/02
IRON, TOTAL	001	S	01L0867	12/19/01	01/08/02	01/09/02
IRON, TOTAL	001 REP	S	01L0867	12/19/01	01/08/02	01/09/02
IRON, TOTAL	001 MS	S	01L0867	12/19/01	01/08/02	01/09/02
MAGNESIUM, TOTAL	001	S	01L0867	12/19/01	01/08/02	01/09/02
MAGNESIUM, TOTAL	001 REP	S	01L0867	12/19/01	01/08/02	01/09/02
MAGNESIUM, TOTAL	001 MS	S	01L0867	12/19/01	01/08/02	01/09/02
SODIUM, TOTAL	001	S	01L0867	12/19/01	01/08/02	01/09/02
SODIUM, TOTAL	001 REP	S	01L0867	12/19/01	01/08/02	01/09/02
SODIUM, TOTAL	001 MS	S	01L0867	12/19/01	01/08/02	01/09/02
NICKEL, TOTAL	001	S	01L0867	12/19/01	01/08/02	01/09/02
NICKEL, TOTAL	001 REP	S	01L0867	12/19/01	01/08/02	01/09/02
NICKEL, TOTAL	001 MS	S	01L0867	12/19/01	01/08/02	01/09/02
PHOSPHORUS, TOTAL	001	S	01L0867	12/19/01	01/08/02	01/09/02
PHOSPHORUS, TOTAL	001 REP	S	01L0867	12/19/01	01/08/02	01/09/02
PHOSPHORUS, TOTAL	001 MS	S	01L0867	12/19/01	01/08/02	01/09/02
B13F02						
CALCIUM, TOTAL	002	S	01L0867	12/19/01	01/08/02	01/10/02
CADMIUM, TOTAL	002	S	01L0867	12/19/01	01/08/02	01/09/02
CHROMIUM, TOTAL	002	S	01L0867	12/19/01	01/08/02	01/09/02
IRON, TOTAL	002	S	01L0867	12/19/01	01/08/02	01/09/02
MAGNESIUM, TOTAL	002	S	01L0867	12/19/01	01/08/02	01/09/02
SODIUM, TOTAL	002	S	01L0867	12/19/01	01/08/02	01/09/02
NICKEL, TOTAL	002	S	01L0867	12/19/01	01/08/02	01/09/02
PHOSPHORUS, TOTAL	002	S	01L0867	12/19/01	01/08/02	01/09/02

LAB QC:

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1640

DATE RECEIVED: 12/21/01 LVL LOT # :0112L685

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CALCIUM LABORATORY	LC1 BS	S	01L0867	N/A	01/08/02	01/09/02
CALCIUM, TOTAL	MB1	S	01L0867	N/A	01/08/02	01/09/02
CADMIUM LABORATORY	LC1 BS	S	01L0867	N/A	01/08/02	01/09/02
CADMIUM, TOTAL	MB1	S	01L0867	N/A	01/08/02	01/09/02
CHROMIUM LABORATORY	LC1 BS	S	01L0867	N/A	01/08/02	01/09/02
CHROMIUM, TOTAL	MB1	S	01L0867	N/A	01/08/02	01/09/02
IRON LABORATORY	LC1 BS	S	01L0867	N/A	01/08/02	01/09/02
IRON, TOTAL	MB1	S	01L0867	N/A	01/08/02	01/09/02
MAGNESIUM LABORATORY	LC1 BS	S	01L0867	N/A	01/08/02	01/09/02
MAGNESIUM, TOTAL	MB1	S	01L0867	N/A	01/08/02	01/09/02
SODIUM LABORATORY	LC1 BS	S	01L0867	N/A	01/08/02	01/09/02
SODIUM, TOTAL	MB1	S	01L0867	N/A	01/08/02	01/09/02
NICKEL LABORATORY	LC1 BS	S	01L0867	N/A	01/08/02	01/09/02
NICKEL, TOTAL	MB1	S	01L0867	N/A	01/08/02	01/09/02
PHOSPHORUS LCS	LC1 BS	S	01L0867	N/A	01/08/02	01/09/02
PHOSPHORUS, TOTAL	MB1	S	01L0867	N/A	01/08/02	01/09/02

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-113
LVL#: 0112L685
SDG/SAF#: H1640/B01-113

W.O.#: 11343-606-001-9999-00
Date Received: 12-21-01

METALS CASE NARRATIVE

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

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

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

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

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

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
B13DY4	Iron	30,000	113.7

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 15 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.

for Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

01-21-02
Date

gmb/m12-685

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#: 01126685

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: 6010B

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

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

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/18/02

CLIENT: TNUHANFORD B01-113 H1640 LVL LOT #: 0112L68S

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B13DY4	Calcium, Total	13000	MG/KG	1.1	1.0
		Cadmium, Total	0.12	MG/KG	0.04	1.0
		Chromium, Total	16.9	MG/KG	0.07	1.0
		Iron, Total	19000	MG/KG	2.1	1.0
		Magnesium, Total	6670	MG/KG	0.50	1.0
		Sodium, Total	246	MG/KG	0.43	1.0
		Nickel, Total	14.7	MG/KG	0.12	1.0
		Phosphorus, Total	611	MG/KG	2.4	1.0
-002	B13F02	Calcium, Total	170000	MG/KG	10.2	10.0
		Cadmium, Total	0.13	MG/KG	0.03	1.0
		Chromium, Total	8.9	MG/KG	0.07	1.0
		Iron, Total	10500	MG/KG	2.0	1.0
		Magnesium, Total	13500	MG/KG	0.47	1.0
		Sodium, Total	430	MG/KG	0.41	1.0
		Nickel, Total	9.7	MG/KG	0.11	1.0
		Phosphorus, Total	347	MG/KG	2.3	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/18/02

CLIENT: TNUHANFORD B01-113 H1640 LVL LOT #: 0112L685

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0867-MB1	Calcium, Total	3.8	MG/KG	0.89	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.06 u	MG/KG	0.06	1.0
		Iron, Total	1.7 u	MG/KG	1.7	1.0
		Magnesium, Total	0.87	MG/KG	0.41	1.0
		Sodium, Total	5.7	MG/KG	0.36	1.0
		Nickel, Total	0.10 u	MG/KG	0.10	1.0
		Phosphorus, Total	3.1	MG/KG	2.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/18/02

CLIENT: TNUHANFORD B01-113 H1640

LVL LOT #: 0112L685

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B13DY4	Calcium, Total	15800	13000	3020	92.8*	1.0
		Cadmium, Total	5.5	0.12	6.0	89.7	1.0
		Chromium, Total	39.3	16.9	24.2	92.6	1.0
		Iron, Total	19300	19000	121	235.6*	1.0
		Magnesium, Total	9700	6670	3020	100.4	1.0
		Sodium, Total	3290	246	3020	100.7	1.0
		Nickel, Total	70.3	14.7	60.4	92.1	1.0
		Phosphorus, Total	1140	611	604	87.5	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/18/02

CLIENT: TNUHANFORD B01-113 H1640 LVL LOT #: 0112L685

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B13DY4	Calcium, Total	13000	13000	0.36	1.0
		Cadmium, Total	0.12	0.1	18.2	1.0
		Chromium, Total	16.9	16.6	1.8	1.0
		Iron, Total	19000	18800	0.96	1.0
		Magnesium, Total	6670	6720	0.89	1.0
		Sodium, Total	246	243	1.3	1.0
		Nickel, Total	14.7	14.7	0.00	1.0
		Phosphorus, Total	611	593	2.9	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/18/02

CLIENT: TNUHANFORD B01-113 H1640 LVL LOT #: 0112L685

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	01L0867-LC1	Calcium, LCS	2370	2500	MG/KG	94.7
		Cadmium, LCS	23.7	25.0	MG/KG	94.8
		Chromium, LCS	48.3	50.0	MG/KG	96.6
		Iron, LCS	486	500	MG/KG	97.2
		Magnesium, LCS	2400	2500	MG/KG	95.8
		Sodium, LCS	2400	2500	MG/KG	95.9
		Nickel, LCS	193	200	MG/KG	96.6
		Phosphorus, LCS	450	500	MG/KG	90.1

Lionville Laboratory Use Only

01121685

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: TNU Hanford B01-113

Est. Final Proj. Sampling Date:

Project #: 11343-606-00 129999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30 day

Date Rec'd: 12/21/01 Date Due: 1/20/02

Refrigerator #		A	B						C		D	E	F	G		
		1	3						3		3	3	3	3		
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG		1AG	1AG	1AG	1AG		
Volume	Liquid															
	Solid	250	250						500		250	500	125	60		
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	TIC TOC	IC Anions Nitrite	Cr6	Cr+6		
		Lionville Laboratory Use Only														
		0624 X	0625 X						MCO		ZTIC IOCC	IN3N2 O	ICRG	IOGGC		

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	0624 X	0625 X						MCO		ZTIC IOCC	IN3N2 O	ICRG	IOGGC		
001	B13D44			S	11/16/01	11:00	1	1						1		1	1	1	1		
002	B13F02			W	11/16/01	13:45	1	1						1		1	1	1			

Special Instructions:

SAF # B01-113

Run Matrix QC

DATE/REVISIONS:

MCO 1. Cd, Ca, Cr, Fe, Mg, Ni, Na, P

ICRG 2. ICCL, ICPL, ICNO3, ICNO2, ICPO4, ICSO4,

3. IN3N2, IPH

4.

5.

6.

Relinquished by	Received by	Date	Time
Fed ex	JPerry	12/21/01	1615

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES:

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___

Airbill # 4235-7954-9850

2) Ambient or (Chilled)

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

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

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

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

Cooler Temp 1 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-33	Page 1 of 1
Collector: Renee Nielson	Company Contact: Virginia Rohay; Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N; Air Quality ☐	Date 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	
Ice Chest No.: ERC-99-0165	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A020101	Bill of Lading/Air Bill No.: 4235 7754-9850	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 12/20/01. Collector not available to relinquish samples on 12/20/01 for shipment. RT 12-20-01

12-19-01

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
Type of Container	sG	RT 12-19-01	sG	sG	sG	sG	sG	sG	RT 12-19-01	
No. of Container(s)	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							
B13DY4	SOIL	12/19/01	0150	X		X	X	X	X	X	X	Tie to B13F06

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	R. Nielson/R. Nielson	12/19/01 0445	Received By: Ref #2C	12/19/01 0445
Relinquished By: Remove Ref #2C 3728		Date/Time 0400 12-20-01	Received By: R. Thorer	Date/Time 0400 12-20-01
Relinquished By: R. Thorer ERC		Date/Time 0400 12-20-01	Received By: FEDEX	Date/Time
Relinquished By: fed ex		Date/Time 12/21/01 1615	Received By: JRuny	Date/Time 12/21/01 1615
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 Spectrometry (Sodium-22, Cobalt-60); Gamma Spec - Add-on (Antimony-125, Cesium-134, Ruthenium-106); Americium-241; Plutonium-238, Isotopic Plutonium; Strontium-89,90 - Total Sr~~

RJN 11/5/01
RT 12-19-01

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-41	Page 1 of 2

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-99-065	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A02101	Bill of Lading/Air Bill No.: 4235-7954-9850	

POSSIBLE SAMPLE HAZARDS/REMARKS
TICTO: B13F08
<2000pCi/g

Special Handling and/or Storage

SAMPLE ANALYSIS												
Preservation	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1	1
Volume	250mL	60mL	60mL	120mL	120mL	120mL	250mL	250mL	250mL	500mL
	Ammonia - 350.3	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	Nitrates - 9056; Total Cyanide - 9010	Technetium-99; Uranium - H3 Isotopic Uranium	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.
Sample No.	Matrix*	Sample Date	Sample Time									
B13F02	SOIL	12/19/01	2345		X		X			X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Nielson	Date/Time: 12/20/01 0405	Received By: R. Nielson Rec# 2B	Date/Time: 12/20/01 0405
Relinquished By: Removed from Rec# 2B 3728	Date/Time: 0400 12-20-01	Received By: R. Thorer	Date/Time: 0400 12-20-01
Relinquished By: R. Thorer ERC	Date/Time: 0400 12-20-01	Received By: FEDEX	Date/Time:
Relinquished By: Fedex	Date/Time: 12/21/01 1615	Received By: JRuy	Date/Time: 12/21/01 1615
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

Samples stored in Ref.# 23 at the 3728 Shipping Facility on 12/20/01.
Collector not available to relinquish samples on 12/20/01 for shipment.
RT 12-20-01

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)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-41	Page 2 of 2
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-99-065	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020101	Bill of Lading/Air Bill No.: 4235 7954 9850	

POSSIBLE SAMPLE HAZARDS/REMARKS

TIE TO B13F08
<2000pCi/g

Special Handling and/or Storage

Preservation	Cool 4C	None	None	
Type of Container	aG	aG	aG	
No. of Container(s)	1			
Volume	500mL	500mL	1000mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions	Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470	See item (2) in Special Instructions	

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 12.20.01.
Collector not available to relinquish samples on 12/20/01 for shipment.
RT 12-20-01

Sample No.	Matrix *	Sample Date	Sample Time			
B13F02	SOIL	12/19/01	2345	X ✓		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	12/20/01 0445	Ref # 20	12/20/01 0405
Removed from Ref 2B 3728	12.2001 0400	R. Thorent	12.2001 0400
R Thorent ERC	12.20.01 0400	FEDEX	
FedEx	12/21/01 1615	JPerry	12/21/01 1615

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) ICP Metals - 6010A (TAL) (Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium); ICP Metals - 6010A (Add-on) (Phosphorus)
~~(2) Gamma Spectrometry (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125, Cesium-134, Europium-154, Europium-155, Ruthenium-106); Americium-241, Neptunium-237, Isotopic Plutonium, Strontium-89/90, Total U~~
RT 12-19-01 RT 12-19-01

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

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

BHI-EE-011 (10/99)