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1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1680 was composed of one solid (soil) sample designated under SAF No. B01-113 with a Project Designation of: PFP Well Installation Sampling and Analysis - Soil.

The sample was received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on March 14, 2002.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.3 Neptiunium-237 Analyses

No problems were encountered during the course of the analyses.

2.4 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.5 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.6 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion

Melissa C. Mannion
Program Manager

3/14/02

Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1680

SDG 7214
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1680

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B13F00	200 West, Well No. C3803	SOLID		R201188-01	B01-113	B01-113-39	01/23/02 23:22
Method Blank		SOLID		R201188-03	B01-113		
Lab Control Sample		SOLID		R201188-02	B01-113		
Duplicate (R201188-01)	200 West, Well No. C3803	SOLID		R201188-04	B01-113		01/23/02 23:22

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 03/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1680

SDG 7214
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1680

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
7214	B01-113-39	B13F00	SOLID	91.0	1170 g		01/25/02	2	R201188-01	7214-001
		Method Blank	SOLID						R201188-03	7214-003
		Lab Control Sample	SOLID						R201188-02	7214-002
		Duplicate (R201188-01)	SOLID	91.0	1170 g		01/25/02	2	R201188-04	7214-004

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 03/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1680

SDG 7214
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1680

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	7024-023	5.0	1			1	1	1/1		
NP	SOLID	Neptunium in Soil	7024-023	5.0	1			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	7024-023	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	7024-023	10.0	1			1	1	1/1		
Gas Proportional Counting												
93A	SOLID	Gross Alpha in Soil	7024-023	20.0	1			1	1	1/1		
93B	SOLID	Gross Beta in Soil	7024-023	15.0	1			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	7024-023	15.0	1			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 03/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1680

SDG 7214
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1680

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B13F00			R201188-01	7214-001	93A/93		03/06/02	03/14/02	MCM	Gross Alpha in Soil
200 West, Well No. C3803		SOLID	01/23/02	7214-001	93B/93		03/06/02	03/14/02	MCM	Gross Beta in Soil
B01-113-39	B01-113		01/25/02	7214-001	AM		03/08/02	03/14/02	MCM	Americium 241 in Soil
				7214-001	GAM		03/07/02	03/14/02	MCM	Gamma Scan
				7214-001	NP		03/07/02	03/14/02	MCM	Neptunium in Soil
				7214-001	PU		03/12/02	03/14/02	MCM	Plutonium, Isotopic in Solids
				7214-001	SR		03/08/02	03/14/02	MCM	Total Strontium in Soil
Method Blank			R201188-03	7214-003	93A/93		03/06/02	03/14/02	MCM	Gross Alpha in Soil
		SOLID		7214-003	93B/93		03/06/02	03/14/02	MCM	Gross Beta in Soil
	B01-113			7214-003	AM		03/11/02	03/14/02	MCM	Americium 241 in Soil
				7214-003	GAM		03/04/02	03/14/02	MCM	Gamma Scan
				7214-003	NP		03/13/02	03/14/02	MCM	Neptunium in Soil
				7214-003	PU		03/12/02	03/14/02	MCM	Plutonium, Isotopic in Solids
				7214-003	SR		03/08/02	03/14/02	MCM	Total Strontium in Soil
Lab Control Sample			R201188-02	7214-002	93A/93		03/07/02	03/14/02	MCM	Gross Alpha in Soil
		SOLID		7214-002	93B/93		03/07/02	03/14/02	MCM	Gross Beta in Soil
	B01-113			7214-002	AM		03/08/02	03/14/02	MCM	Americium 241 in Soil
				7214-002	GAM		03/04/02	03/14/02	MCM	Gamma Scan
				7214-002	NP		03/07/02	03/14/02	MCM	Neptunium in Soil
				7214-002	PU		03/12/02	03/14/02	MCM	Plutonium, Isotopic in Solids
				7214-002	SR		03/08/02	03/14/02	MCM	Total Strontium in Soil
Duplicate (R201188-01)			R201188-04	7214-004	93A/93		03/06/02	03/14/02	MCM	Gross Alpha in Soil
200 West, Well No. C3803		SOLID	01/23/02	7214-004	93B/93		03/06/02	03/14/02	MCM	Gross Beta in Soil
	B01-113		01/25/02	7214-004	AM		03/12/02	03/14/02	MCM	Americium 241 in Soil
				7214-004	GAM		03/08/02	03/14/02	MCM	Gamma Scan
				7214-004	NP		03/07/02	03/14/02	MCM	Neptunium in Soil
				7214-004	PU		03/12/02	03/14/02	MCM	Plutonium, Isotopic in Solids
				7214-004	SR		03/08/02	03/14/02	MCM	Total Strontium in Soil

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

SAMPLE DELIVERY GROUP H1680

SDG 7214
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1680

COUNTS OF TESTS BY SAMPLE TYPE

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 03/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1680

R201188-03 **Method Blank**

METHOD BLANK

SDG	7214	Client/Case no	Hanford SDG H1680
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R201188-03	Client sample id	Method Blank
Dept sample id	7214-003	Material/Matrix	SOLID
		SAF No	B01-113

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.567	1.4	3.0	10	U	93A
Gross Beta	12587-47-2	-0.888	4.0	7.0	15	U	93B
Total Strontium	SR-RAD	-0.104	0.14	0.31	1.0	U	SR
Neptunium 237	13994-20-2	0	0.012	0.047	1.0	U	NP
Plutonium 238	13981-16-3	0	0.061	0.23	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.061	0.23	1.0	U	PU
Americium 241	14596-10-2	-0.038	0.077	0.18	1.0	U	AM
Potassium 40	13966-00-2	U		0.92		U	GAM
Cobalt 60	10198-40-0	U		0.067	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.56		U	GAM
Antimony 125	14234-35-6	U		0.12		U	GAM
Cesium 137	10045-97-3	U		0.066	0.10	U	GAM
Radium 226	13982-63-3	U		0.14	0.10	U	GAM
Radium 228	15262-20-1	U		0.31	0.20	U	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		0.14	0.10	U	GAM
Thorium 228	14274-82-9	U		0.089		U	GAM
Thorium 232	TH-232	U		0.31		U	GAM
Uranium 235	15117-96-1	U		0.23		U	GAM
Uranium 238	U-238	U		10		U	GAM
Americium 241	14596-10-2	U		0.15		U	GAM

PFP Well Installation Smpl. & Analy.

QC-BLANK 41273

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1680

R201188-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7214
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1680
Case no No. 630

Lab sample id R201188-02
Dept sample id 7214-002

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

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	239	16	3.6	10		93A	215	8.6	111	64-136	70-130
Gross Beta	235	11	6.9	15		93B	238	9.5	99	76-124	70-130
Total Strontium	23.6	0.83	0.22	1.0		SR	22.7	0.91	104	82-118	80-120
Neptunium 237	20.6	1.8	0.28	1.0		NP	21.8	0.87	94	85-115	80-120
Plutonium 238	27.6	2.7	0.22	1.0		PU	27.0	1.1	102	82-118	80-120
Plutonium 239/240	29.8	2.9	0.22	1.0		PU	29.0	1.2	103	82-118	80-120
Americium 241	20.8	0.66	0.021	1.0		AM	21.0	0.84	99	89-111	80-120
Cobalt 60	1.15	0.10	0.053	0.050		GAM	1.16	0.046	99	74-126	80-120
Cesium 137	1.41	0.094	0.052	0.10		GAM	1.39	0.056	101	74-126	80-120

PFP Well Installation Smpl. & Analy.

QC-LCS 41272

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 03/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1680

R201188-04 B13F00

DUPLICATE

SDG	7214			Client/Case no	Hanford SDG H1680
Contact	Melissa C. Mannion			Case no	No. 630
DUPLICATE		ORIGINAL			
Lab sample id	R201188-04	Lab sample id	R201188-01	Client sample id	B13F00
Dept sample id	7214-004	Dept sample id	7214-001	Location/Matrix	200 West, Well No. C3803 SOLID
		Received	01/25/02	Collected/Weight	01/23/02 23:22 1170 g
% solids	91.0	% solids	91.0	Custody/SAF No	B01-113-39 B01-113

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	0.913	3.1	5.5	10	U	93A	2.62	3.2	4.4	U	-	
Gross Beta	7.32	5.7	9.0	15	U	93B	12.6	4.2	6.0	J	53	112
Total Strontium	-0.011	0.17	0.36	1.0	U	SR	0.109	0.15	0.28	U	-	
Neptunium 237	0.041	0.081	0.12	1.0	U	NP	0	0.092	0.35	U	-	
Plutonium 238	0	0.055	0.21	1.0	U	PU	0	0.098	0.38	U	-	
Plutonium 239/240	0.028	0.055	0.21	1.0	U	PU	0	0.098	0.38	U	-	
Americium 241	0	0.18	0.33	1.0	U	AM	0.020	0.023	0.022	U	-	
Potassium 40	7.04	1.7	1.2			GAM	7.04	1.7	1.6		0	60
Cobalt 60	U		0.075	0.050	U	GAM	U		0.094	U	-	
Ruthenium 106	U		0.62		U	GAM	U		0.88	U	-	
Antimony 125	U		0.18		U	GAM	U		0.19	U	-	
Cesium 137	U		0.080	0.10	U	GAM	U		0.093	U	-	
Radium 226	0.187	0.10	0.11	0.10		GAM	0.292	0.14	0.16		44	113
Radium 228	0.684	0.32	0.28	0.20		GAM	0.484	0.30	0.30		34	117
Europium 152	U		0.20	0.10	U	GAM	U		0.21	U	-	
Europium 154	U		0.29	0.10	U	GAM	U		0.38	U	-	
Europium 155	U		0.18	0.10	U	GAM	U		0.19	U	-	
Thorium 228	0.328	0.11	0.13			GAM	0.389	0.12	0.14		17	75
Thorium 232	0.684	0.32	0.28			GAM	0.484	0.30	0.30		34	117
Uranium 235	U		0.28		U	GAM	U		0.32	U	-	
Uranium 238	U		11		U	GAM	U		11	U	-	
Americium 241	U		0.21		U	GAM	U		0.24	U	-	

PFP Well Installation Smpl. & Analy.

QC-DUP#1 41274

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	03/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1680

R201188-01 **B13F00**

DATA SHEET

SDG	7214	Client/Case no	Hanford SDG H1680
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R201188-01	Client sample id	B13F00
Dept sample id	7214-001	Location/Matrix	200 West, Well No. C3803 SOLID
Received	01/25/02	Collected/Weight	01/23/02 23:22 1170 g
% solids	91.0	Custody/SAF No	B01-113-39 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	2.62	3.2	4.4	10	U	93A
Gross Beta	12587-47-2	12.6	4.2	6.0	15	J	93B
Total Strontium	SR-RAD	0.109	0.15	0.28	1.0	U	SR
Neptunium 237	13994-20-2	0	0.092	0.35	1.0	U	NP
Plutonium 238	13981-16-3	0	0.098	0.38	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.098	0.38	1.0	U	PU
Americium 241	14596-10-2	0.020	0.023	0.022	1.0	U	AM
Potassium 40	13966-00-2	7.04	1.7	1.6			GAM
Cobalt 60	10198-40-0	U		0.094	0.050	U	GAM
Ruthenium 106	13967-48-1	U		0.88		U	GAM
Antimony 125	14234-35-6	U		0.19		U	GAM
Cesium 137	10045-97-3	U		0.093	0.10	U	GAM
Radium 226	13982-63-3	0.292	0.14	0.16	0.10		GAM
Radium 228	15262-20-1	0.484	0.30	0.30	0.20		GAM
Europium 152	14683-23-9	U		0.21	0.10	U	GAM
Europium 154	15585-10-1	U		0.38	0.10	U	GAM
Europium 155	14391-16-3	U		0.19	0.10	U	GAM
Thorium 228	14274-82-9	0.389	0.12	0.14			GAM
Thorium 232	TH-232	0.484	0.30	0.30			GAM
Uranium 235	15117-96-1	U		0.32		U	GAM
Uranium 238	U-238	U		11		U	GAM
Americium 241	14596-10-2	U		0.24		U	GAM

PFP Well Installation Smpl. & Analy.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	03/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1680

Test AM Matrix SOLID
SDG 7214
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1680

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 7024-023						
B13F00	R201188-01			7214-001	U	
BLK (QC ID=41273)	R201188-03			7214-003	U	
LCS (QC ID=41272)	R201188-02			7214-002	ok	
Duplicate (R201188-01)	R201188-04			7214-004	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
PFP Well Installation Smpl. & Analy.						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-023	2σ prep error 5.0 %					Reference Lab Notebook 7024 pg. 023										
B13F00	R201188-01			0.022	0.500			83		1003			44	03/08/02	03/08	SS-057
BLK (QC ID=41273)	R201188-03			0.18	0.500			68		169				03/08/02	03/11	SS-032
LCS (QC ID=41272)	R201188-02			0.021	0.500			89		1003				03/08/02	03/08	SS-058
Duplicate (R201188-01) (QC ID=41274)	R201188-04			0.33	0.500			73		111			48	03/08/02	03/12	SS-041
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
MDA	0.14	±	0.30
YIELD	78	±	19

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1680

Test NP Matrix SOLID
SDG 7214
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1680

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7024-023						
B13F00	R201188-01			7214-001	U	
BLK (QC ID=41273)	R201188-03			7214-003	U	
LCS (QC ID=41272)	R201188-02			7214-002	ok	
Duplicate (R201188-01)	R201188-04			7214-004	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
PFP Well Installation Smpl. & Analy.						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-023	2σ prep error 5.0 %				Reference Lab Notebook 7024 pg. 023											
B13F00	R201188-01			0.35	0.500			44		112			43	03/06/02	03/07	SS-044
BLK (QC ID=41273)	R201188-03			0.047	0.500			58		642				03/06/02	03/13	SS-048
LCS (QC ID=41272)	R201188-02			0.28	0.500			56		112				03/06/02	03/07	SS-045
Duplicate (R201188-01) (QC ID=41274)	R201188-04			0.12	0.500			52		112			43	03/06/02	03/07	SS-047
Nominal values and limits from method				1.0	0.500			20-105		100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	0.20	±	0.28
	YIELD	52	±	12

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1680

Test PU Matrix SOLID
SDG 7214
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1680

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 7024-023								
B13F00	R201188-01			7214-001	U		U	
BLK (QC ID=41273)	R201188-03			7214-003	U		U	
LCS (QC ID=41272)	R201188-02			7214-002	ok		ok	
Duplicate (R201188-01)	R201188-04			7214-004	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	
PFP Well Installation Smpl. & Analy.								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-023	2σ prep error 5.0 %				Reference Lab Notebook 7024 pg. 023											
B13F00	R201188-01			0.38	0.500			46		103			48	03/08/02	03/12	SS-043
BLK (QC ID=41273)	R201188-03			0.23	0.500			72		103				03/08/02	03/12	SS-045
LCS (QC ID=41272)	R201188-02			0.22	0.500			77		103				03/08/02	03/12	SS-044
Duplicate (R201188-01) (QC ID=41274)	R201188-04			0.21	0.500			81		103			48	03/08/02	03/12	SS-048
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	0.26	±	0.16
	YIELD	69	±	32

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1680

Test SR Matrix SOLID
SDG 7214
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1680

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 7024-023						
B13F00	R201188-01			7214-001	U	
BLK (QC ID=41273)	R201188-03			7214-003	U	
LCS (QC ID=41272)	R201188-02			7214-002	ok	
Duplicate (R201188-01)	R201188-04			7214-004	-	U
Nominal values and limits from method PFP Well Installation Smpl. & Analy.				RDLs (pCi/g)	1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-023 2σ prep error 10.0 % Reference Lab Notebook 7024 pg. 023																
B13F00	R201188-01			0.28	1.00			97		100			44	03/08/02	03/08	GRB-217
BLK (QC ID=41273)	R201188-03			0.31	1.00			92		100				03/08/02	03/08	GRB-219
LCS (QC ID=41272)	R201188-02			0.22	1.00			96		97				03/08/02	03/08	GRB-205
Duplicate (R201188-01) (QC ID=41274)	R201188-04			0.36	1.00			71		100			44	03/08/02	03/08	GRB-220
Nominal values and limits from method				1.0	1.00			30-105		100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	0.29	±	0.12
	YIELD	89	±	24

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1680

Test 93A Matrix SOLID
SDG 7214
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1680

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 7024-023						
B13F00	R201188-01	93		7214-001	U	
BLK (QC ID=41273)	R201188-03	93		7214-003	U	
LCS (QC ID=41272)	R201188-02	93		7214-002	ok	
Duplicate (R201188-01)	R201188-04	93		7214-004	-	U
Nominal values and limits from method				RDLs (pCi/g)	10	
PFP Well Installation Smpl. & Analy.						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-023	2σ prep error 20.0 % Reference Lab Notebook 7024 pg. 023															
B13F00	R201188-01	93		4.4	0.100			77		100			42	03/06/02	03/06	GRB-109
BLK (QC ID=41273)	R201188-03	93		3.0	0.100			21		100				03/06/02	03/06	GRB-112
LCS (QC ID=41272)	R201188-02	93		3.6	0.100			21		100				03/06/02	03/07	GRB-115
Duplicate (R201188-01) (QC ID=41274)	R201188-04	93		5.5	0.100			76		100			42	03/06/02	03/06	GRB-114
Nominal values and limits from method				10	0.100			5-250		100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	4.1	±	2.2
	RESIDUE	49	±	64

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1680

Test 93B Matrix SOLID
SDG 7214
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1680

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta	
Preparation batch 7024-023						
B13F00	R201188-01	93		7214-001	12.6	J
BLK (QC ID=41273)	R201188-03	93		7214-003	U	
LCS (QC ID=41272)	R201188-02	93		7214-002	ok	
Duplicate (R201188-01)	R201188-04	93		7214-004	ok	U

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

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-023	2σ prep error 15.0 %				Reference Lab Notebook 7024 pg. 023											
B13F00	R201188-01	93		6.0	0.100			77		100			42	03/06/02	03/06	GRB-109
BLK (QC ID=41273)	R201188-03	93		7.0	0.100			21		100				03/06/02	03/06	GRB-112
LCS (QC ID=41272)	R201188-02	93		6.9	0.100			21		100				03/06/02	03/07	GRB-115
Duplicate (R201188-01) (QC ID=41274)	R201188-04	93		9.0	0.100			76		100			42	03/06/02	03/06	GRB-114
Nominal values and limits from method				15	0.100			5-250		100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	7.2	±	2.5
	RESIDUE	49	±	64

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/14/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1680

Test GAM Matrix SOLID
SDG 7214
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1680

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7024-023								
B13F00	R201188-01			7214-001	U		U	
BLK (QC ID=41273)	R201188-03			7214-003	U		U	
LCS (QC ID=41272)	R201188-02			7214-002	ok		ok	
Duplicate (R201188-01)	R201188-04			7214-004	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.10	
PFP Well Installation Smpl. & Analy.								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-023	2σ prep error 15.0 % Reference Lab Notebook 7024 pg. 023															
B13F00	R201188-01			0.88	189					123			43	03/04/02	03/07	JR,03,00
BLK (QC ID=41273)	R201188-03			0.56	189					132				03/04/02	03/04	JR,03,00
LCS (QC ID=41272)	R201188-02			0.053	189					132				03/04/02	03/04	JR,04,00
Duplicate (R201188-01) (QC ID=41274)	R201188-04			0.62	189					140			44	03/04/02	03/08	JR,03,00
Nominal values and limits from method				0.050	189					100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	0.53	±	0.69
	YIELD		±	

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 03/14/02

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-39	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 H1680 (7214) 200 West; Well Number C3803, Well Name 299-W15-42	SAF No. B01-113	
Ice Chest No. ERC-01-020	Field Logbook No. EL-1562	COA T20ZP1D722	Method of Shipment Federal Express
Shipped To TMA/RECRA TMA	Offsite Property No. A020606	Bill of Lading/Air Bill No. 4235745505 45	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 1 24 02
Collector not available to relinquish samples on 1/24/02 for shipment.
RT 1-24-02

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

Sample No.	Matrix *	Sample Date	Sample Time									
B13F00	SOIL	1/23/02	2322		X						X	

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
R Nielson	1/24/02 0455	Stored in Ref # 2C	1/24/02 0455
R Nielson	1/24/02 0800	R.T. Thorp	1.24.02 0800
R.T. Thorp	1.24.02	FEDEX	1-24-02
FED EXPRESS	1-25-02 9:30	U.S. Mail	1-25-02 9:30

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 1.24.02

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

RN 1/5/01

RT 1-24-02
use ~~B13F04~~ for Shipping
B12XL3

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 1-24-02 9:20

CoC No. B01-113-39

Container I.D. No. ERC-01-020 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: 1
7. Number of containers per sample: (2x EACH) (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Red 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 E. S. Maestas Date: 1-25-02 Time: 9:20

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-113
LVL #: 0201L862
SDG/SAF #: H1680/B01-113

W.O. #: 11343-606-001-9999-00
Date Received: 01-25-02

GC/MS VOLATILE

One (1) soil sample was collected on 01-23-02.

The sample and its 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 01-29,30-02.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. The required holding time for analysis was met.
3. Non-target compounds were detected in the blank.
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.

J. Michael Taylor
President
Lionville Laboratory Incorporated

02-08-02
Date

pef\group\data\voa\tnu-hanford\0201-862.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 14 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.

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: 02/07/02 07:5

RFW Batch Number: 0201L862 Client: TNUHANFORD B01-113 H1680 Work Order: 11343606001 Page: 1a

	Cust ID:	B13F00		B13F00		B13F00		VBLKIK		VBLKIK BS		VBLKJA	
Sample Information	RFW#:	001		001 MS		001 MSD		02LVG017-MB1		02LVG017-MB1		02LVG018-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.943		0.962		1.09		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	103	%	101	%	94	%	107	%	93	%	98	%
	Bromofluorobenzene	108	%	111	%	99	%	113	%	105	%	116	%
	1,2-Dichloroethane-d4	115	%	125	%	104	%	114	%	107	%	103	%
			fl		fl		fl		fl		fl		fl
Chloromethane		10	U	11	U	12	U	10	U	10	U	10	U
Bromomethane		10	U	11	U	12	U	10	U	10	U	10	U
Vinyl Chloride		10	U	11	U	12	U	10	U	10	U	10	U
Chloroethane		10	U	11	U	12	U	10	U	10	U	10	U
Methylene Chloride		16		19		21		5	U	2	J	5	U
Acetone		9	J	9	J	7	J	10	U	10	U	10	U
Carbon Disulfide		5	U	6	U	6	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	91	%	75	%	5	U	82	%	5	U
1,1-Dichloroethane		5	U	6	U	6	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	6	U	6	U	5	U	5	U	5	U
Chloroform		13		12		6	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	6	U	6	U	5	U	5	U	5	U
2-Butanone		10	U	11	U	12	U	10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	6	U	6	U	5	U	5	U	5	U
Carbon Tetrachloride		4	J	4	J	6	U	5	U	5	U	5	U
Bromodichloromethane		5	U	6	U	6	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	6	U	6	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	6	U	6	U	5	U	5	U	5	U
Trichloroethene		5	U	105	%	94	%	5	U	102	%	5	U
Dibromochloromethane		5	U	6	U	6	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	6	U	6	U	5	U	5	U	5	U
Benzene		5	U	109	%	95	%	5	U	101	%	5	U
Trans-1,3-Dichloropropene		5	U	6	U	6	U	5	U	5	U	5	U
Bromoform		5	U	6	U	6	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	11	U	12	U	10	U	10	U	10	U
2-Hexanone		10	U	11	U	12	U	10	U	10	U	10	U
Tetrachloroethene		5	U	6	U	6	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	6	U	6	U	5	U	5	U	5	U
Toluene		5	U	112	%	100	%	5	U	109	%	5	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0201L862** Client: **TNUHANFORD B01-113 H1680** Work Order: 11343606001 Page: 1b

Cust ID:	B13F00	B13F00	B13F00	VBLKIK	VBLKIK BS	VBLKJA
RFW#:	001	001 MS	001 MSD	02LVG017-MB1	02LVG017-MB1	02LVG018-MB1
Chlorobenzene	5 U	104 %	95 %	5 U	103 %	5 U
Ethylbenzene	5 U	6 U	6 U	5 U	5 U	5 U
Styrene	5 U	6 U	6 U	5 U	5 U	5 U
Xylene (total)	5 U	6 U	6 U	5 U	5 U	5 U
N-butylbenzene	5 U	6 U	6 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Cust ID: **VBLKJA BS**

Sample Information		
RFW#:	02LVG018-MB1	
Matrix:	SOIL	
D.F.:	1.00	
Units:	ug/Kg	

Surrogate Recovery			
	Toluene-d8	93	%
	Bromofluorobenzene	109	%
	1,2-Dichloroethane-d4	104	%

Chloromethane	10	U
Bromomethane	10	U
Vinyl Chloride	10	U
Chloroethane	10	U
Methylene Chloride	2	J
Acetone	10	U
Carbon Disulfide	5	U
1,1-Dichloroethene	76	%
1,1-Dichloroethane	5	U
1,2-Dichloroethene (total)	5	U
Chloroform	5	U
1,2-Dichloroethane	5	U
2-Butanone	10	U
1,1,1-Trichloroethane	5	U
Carbon Tetrachloride	5	U
Bromodichloromethane	5	U
1,2-Dichloropropane	5	U
cis-1,3-Dichloropropene	5	U
Trichloroethene	95	%
Dibromochloromethane	5	U
1,1,2-Trichloroethane	5	U
Benzene	94	%
Trans-1,3-Dichloropropene	5	U
Bromoform	5	U
4-Methyl-2-pentanone	10	U
2-Hexanone	10	U
Tetrachloroethene	5	U
1,1,2,2-Tetrachloroethane	5	U
Toluene	101	%

*= Outside of EPA CLP QC limits.

Cust ID: **VBLKJA BS**

RFW#: **02LVG018-MB1**

Chlorobenzene	98	%
Ethylbenzene	5	U
Styrene	5	U
Xylene (total)	5	U
N-butylbenzene	5	U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B13F00

Lab Name: Lionville Labs, Inc. Contract: 11343606001

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

Matrix: (soil/water) SOIL Lab Sample ID: 0201L862-001

Sample wt/vol: 5.30 (g/mL) G Lab File ID: q012921

Level: (low/med) LOW Date Received: 01/25/02

% Moisture: not dec. 9 Date Analyzed: 01/29/02

Column: (pack/cap) CAP Dilution Factor: 0.943

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKIK

Lab Name: Lionville Labs, Inc. Contract: 11343606001

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

Matrix: (soil/water) SOIL Lab Sample ID: 02LVG017-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: q012905

Level: (low/med) LOW Date Received: 01/29/02

% Moisture: not dec. 0 Date Analyzed: 01/29/02

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKJA

Lab Name: Lionville Labs, Inc. Contract: 11343606001

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

Matrix: (soil/water) SOIL Lab Sample ID: 02LVG018-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: g013004

Level: (low/med) LOW Date Received: 01/30/02

% Moisture: not dec. 0 Date Analyzed: 01/30/02

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	19.660	9	J

FORM 1 VOA-TIC 1/87 Rev.

Lionville Laboratory Use Only
02018862

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 days

Date Rec'd: 1-25-02 Date Due: 2-24-02

	A	B						C		D	E	F	G		
Refrigerator #	1	3						3		3	3	1	3		
#/Type Container: Liquid															
#/Type Container: Solid	1pc	1pc						1pg		1pc	1pc	1pc	1pg		
Volume: Liquid															
Volume: Solid	250	250						500		60	120	250	500		
Preservatives	—	—						—		—	—	—	—		
ANALYSES REQUESTED	ORGANIC: TCL VOA	ORGANIC: BNA (1)	ORGANIC: Pest/PCB	ORGANIC: Herb				INORG: Metal (3)	INORG: CN	Oil + Grease	Hex Chrom	TIC, TOC, TCLP, Ignit			
Lionville Laboratory Use Only	8260X	8270X						MCTO		IOGGQ	ICRQ	ITIC ICCT	INORGQ		

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8260X	8270X					MCTO		IOGGQ	ICRQ	ITIC ICCT	INORGQ		
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	B13F00	X	X	S	1/23/02	2322	X	X					X		X	X	X	X		

Special Instructions: JAF # B01-113

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

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	1/25/02	0955

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 7955 0562
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 4.3 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-39	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	
Ice Chest No.: ERC-01-014	Field Logbook No.: EL-1562	COA: T20ZP1D722	Method of Shipment: Federal Express
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A026091	Bill of Lading/Air Bill No.: 42307455-0556	

POSSIBLE SAMPLE HAZARDS/REMARKS
Sampler not available To Sign over to Storage.
Special Handling and/or Storage

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	G	
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										
B13F00	SOIL	1/23/02	2322	X		X	X	X	X	X	X		

Samples stored in Ref.# 7A at the 3728 Shipping Facility on 1/24/02
Collector not available to relinquish samples on 1/24/02 for shipment.

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Sampler not available		Ref 7A 3728	1.24.02
Removed from Ref 7A 3728	1/24/02	R Thoren	0800 1.24.02
R Thoren ERC	0800 1.24.02	FED EX	
Fed Ex	1.25.02 0955		1.25.02 0955

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

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

Use B13F09 for shipping
B12XL3

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)

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1680

DATE RECEIVED: 01/25/02 LVL LOT # :0201L862

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13F00	001	S	02LE0096	01/23/02	01/29/02	02/06/02
B13F00	001 MS	S	02LE0096	01/23/02	01/29/02	02/06/02
B13F00	001 MSD	S	02LE0096	01/23/02	01/29/02	02/06/02

LAB QC:

SBLKOQ	MB1	S	02LE0096	N/A	01/29/02	02/01/02
SBLKOQ	MB1 BS	S	02LE0096	N/A	01/29/02	02/01/02

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-113
LVL #: 0201L862
SDG/SAF #: H1680/B01-113

W.O. #: 11343-606-001-9999-00
Date Received: 01-25-2002

SEMIVOLATILE

One (1) soil sample was collected on 01-23-2002.

The sample and its associated QC samples were extracted on 01-29-2002 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL and Tributylphosphate Semivolatile target compounds on 02-01,06-2002.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.

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

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

4. One (1) of thirty (30) surrogate recoveries was outside EPA QC limits. However, EPA CLP surrogate recovery criteria were met (i.e., no more than one outlier per fraction {acid and base neutral} and no recoveries less than 10%).

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

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

7. The method blank contained the common laboratory contaminant Di-n-butylphthalate at a level less than the CRQL.

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

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

2/15/02
Date

som\gorup\data\bma\tnu-hanford-0201-862.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 1 pages.

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

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

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

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

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

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

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

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

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

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

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

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

Report Date: 02/14/02 13:46

RFW Batch Number: 0201L862 Client: TNUHANFORD B01-113 H1680 Work Order: 11343606001 Page: 1a

	Cust ID:	B13F00		B13F00		B13F00		SBLKOQ		SBLKOQ BS	
Sample Information	RFW#:	001		001 MS		001 MSD		02LE0096-MB1		02LE0096-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	68	%	63	%	82	%	103	%	96	%
	2-Fluorobiphenyl	68	%	66	%	79	%	111	%	103	%
	p-Terphenyl-d14	77	%	86	%	92	%	113	%	110	%
	Phenol-d5	77	%	70	%	93	%	91	%	83	%
	2-Fluorophenol	77	%	71	%	97	%	97	%	90	%
	2,4,6-Tribromophenol	68	%	79	%	100	%	122	%	125 *	%
Phenol		360	U	59	%	74	%	330	U	75	%
bis(2-Chloroethyl)ether		360	U	360	U	360	U	330	U	330	U
2-Chlorophenol		360	U	60	%	78	%	330	U	82	%
1,3-Dichlorobenzene		360	U	360	U	360	U	330	U	330	U
1,4-Dichlorobenzene		360	U	55	%	71	%	330	U	84	%
1,2-Dichlorobenzene		360	U	360	U	360	U	330	U	330	U
2-Methylphenol		360	U	360	U	360	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		360	U	360	U	360	U	330	U	330	U
3- and/or 4-Methylphenol		360	U	360	U	360	U	330	U	330	U
N-Nitroso-Di-n-propylamine		360	U	56	%	78	%	330	U	88	%
Hexachloroethane		360	U	360	U	360	U	330	U	330	U
Nitrobenzene		360	U	360	U	360	U	330	U	330	U
Isophorone		360	U	360	U	360	U	330	U	330	U
2-Nitrophenol		360	U	360	U	360	U	330	U	330	U
2,4-Dimethylphenol		360	U	360	U	360	U	330	U	330	U
bis(2-Chloroethoxy)methane		360	U	360	U	360	U	330	U	330	U
2,4-Dichlorophenol		360	U	360	U	360	U	330	U	330	U
1,2,4-Trichlorobenzene		360	U	59	%	76	%	330	U	96	%
Naphthalene		360	U	360	U	360	U	330	U	330	U
4-Chloroaniline		360	U	360	U	360	U	330	U	330	U
Hexachlorobutadiene		360	U	360	U	360	U	330	U	330	U
4-Chloro-3-methylphenol		360	U	66	%	85	%	330	U	86	%
2-Methylnaphthalene		360	U	360	U	360	U	330	U	330	U
Hexachlorocyclopentadiene		360	U	360	U	360	U	330	U	330	U
2,4,6-Trichlorophenol		360	U	360	U	360	U	330	U	330	U
2,4,5-Trichlorophenol		900	U	910	U	900	U	830	U	830	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0201L862 Client: TNUHANFORD B01-113 H1680 Work Order: 11343606001 Page: 1b

Cust ID:	B13F00		B13F00		B13F00		SBLKOQ		SBLKOQ BS	
RFW#:	001		001 MS		001 MSD		02LE0096-MB1		02LE0096-MB1	
2-Chloronaphthalene	360	U	360	U	360	U	330	U	330	U
2-Nitroaniline	900	U	910	U	900	U	830	U	830	U
Dimethylphthalate	360	U	360	U	360	U	330	U	330	U
Acenaphthylene	360	U	360	U	360	U	330	U	330	U
2,6-Dinitrotoluene	360	U	360	U	360	U	330	U	330	U
3-Nitroaniline	900	U	910	U	900	U	830	U	830	U
Acenaphthene	360	U	63	%	77	%	330	U	96	%
2,4-Dinitrophenol	900	U	910	U	900	U	830	U	830	U
4-Nitrophenol	900	U	57	%	81	%	830	U	106	%
Dibenzofuran	360	U	360	U	360	U	330	U	330	U
2,4-Dinitrotoluene	360	U	71	%	86	%	330	U	98 *	%
Diethylphthalate	360	U	360	U	360	U	330	U	330	U
4-Chlorophenyl-phenylether	360	U	360	U	360	U	330	U	330	U
Fluorene	360	U	360	U	360	U	330	U	330	U
4-Nitroaniline	900	U	910	U	900	U	830	U	830	U
4,6-Dinitro-2-methylphenol	900	U	910	U	900	U	830	U	830	U
N-Nitrosodiphenylamine (1)	360	U	360	U	360	U	330	U	330	U
4-Bromophenyl-phenylether	360	U	360	U	360	U	330	U	330	U
Hexachlorobenzene	360	U	360	U	360	U	330	U	330	U
Pentachlorophenol	900	U	75	%	96	%	830	U	115 *	%
Phenanthrene	360	U	360	U	360	U	330	U	330	U
Anthracene	360	U	360	U	360	U	330	U	330	U
Carbazole	360	U	360	U	360	U	330	U	330	U
Di-n-Butylphthalate	360	U	360	U	360	U	28	J	25	JB
Fluoranthene	360	U	360	U	360	U	330	U	330	U
Pyrene	360	U	84	%	93	%	330	U	101	%
Butylbenzylphthalate	360	U	360	U	360	U	330	U	330	U
3,3'-Dichlorobenzidine	360	U	360	U	360	U	330	U	330	U
Benzo(a)anthracene	360	U	360	U	360	U	330	U	330	U
Chrysene	360	U	360	U	360	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	360	U	360	U	360	U	330	U	330	U
Di-n-Octyl phthalate	360	U	360	U	360	U	330	U	330	U
Benzo(b)fluoranthene	360	U	360	U	360	U	330	U	330	U
Benzo(k)fluoranthene	360	U	360	U	360	U	330	U	330	U
Benzo(a)pyrene	360	U	360	U	360	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	360	U	360	U	360	U	330	U	330	U
Dibenzo(a,h)anthracene	360	U	360	U	360	U	330	U	330	U
Benzo(g,h,i)perylene	360	U	360	U	360	U	330	U	330	U
Tributylphosphate	360	U	360	U	360	U	330	U	330	U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B13F00

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

Client: TNUHANFORD B01-113 H1680

Matrix: (soil/water) SOIL

Lab Sample ID: 0201L862-001

Sample wt/vol: 30.8 (g/mL) G

Lab File ID: D020604

Level: (low/med) LOW

Date Received: 01/25/02

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

Date Extracted: 01/29/02

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 02/06/02

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	4.820	200	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKOQ

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

Client: TNUHANFORD B01-113 H1680

Matrix: (soil/water) SOIL

Lab Sample ID: 02LE0096-MB1

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

Lab File ID: D020104

Level: (low/med) LOW

Date Received: 01/29/02

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

Date Extracted: 01/29/02

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 02/01/02

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.285	300	J
2.	PHTHALATE	18.269	100	J

Lionville Laboratory Use Only

02012862

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 days

Date Rec'd: 1.25.02 Date Due: 2-24-02

	A	B						C		D	E	F	G		
Refrigerator #	1	3						3		3	3	1	3		
#/Type Container – Liquid															
#/Type Container – Solid	1pg	1pg						1pg		1pg	1pg	1pg	1pg		
Volume – Liquid															
Volume – Solid	250	250						500		60	120	250	500		
Preservatives	—	—						—		—	—	—	—		
ANALYSES REQUESTED	ORGANIC							INORG							
	Full VOA	BNA (1)	Pest/PCB	Herb				Metal (3)	CN	Oil + Grease	Hex Chrom	TIC, TOC	TCLP Anions		
Lionville Laboratory Use Only	0624X	0625X						METO		IOGGO	ICRB	ITIC IOCT	INORGO		

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish	001	B13F00	X	X	S	1/23/02	2322

Special Instructions: SAF # B01-113

DATE/REVISIONS:

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

INORG 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4

3. IN3N2, IPH

4.

5.

6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	1/25/02	0955

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 7955 0562
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

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

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

Cooler Temp. 4.3 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-39	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	
Ice Chest No.: ERC-01-014	Field Logbook No.: EL-1562	COA: T20ZP1D722	Method of Shipment: Federal Express
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A026691	Bill of Lading/Air Bill No.: 42007455-0556	

POSSIBLE SAMPLE HAZARDS/REMARKS
Sampler not available To Sign over to Storage.

Special Handling and/or Storage

Preservation	Cool 4C	None RT 1-24-02	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None RT 1-24-02	
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG	sG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	
Volume	60mL	60mL	120mL	250mL	250mL	250mL	500mL	500mL	1000mL	
SAMPLE ANALYSIS	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	

Sample No.	Matrix *	Sample Date	Sample Time										
B13F00	SOIL	1/23/02	2322	X		X	X	X	X	X	X		

Samples stored in Ref.# 7A at the 3728 Shipping Facility on 1/24/02
Collector not available to relinquish samples on 1/24/02 for shipment.
RT 1-24-02

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By / Date/Time	Received By / Date/Time
Sampler not available	Received by / stored in Ref 7A 3728 1.24.02
RT 1-24-02 Removed from Ref 7A 3728 1/24/02	RT RThoren 0800 1.24.02
RT RThoren 0800 ERC 1.24.02	FEDEX
Fed Ex 1.25.02 0955	D. Ahner 1.25.02 0955

SPECIAL INSTRUCTIONS

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

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

RT 1-24-02
Use B12XL3 for shipping
RT 1-24-02

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)

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1680

DATE RECEIVED: 01/25/02 LVL LOT # :0201L862

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13F00						
CALCIUM, TOTAL	001	S	02L0051	01/23/02	02/02/02	02/06/02
CALCIUM, TOTAL	001 REP	S	02L0051	01/23/02	02/02/02	02/06/02
CALCIUM, TOTAL	001 MS	S	02L0051	01/23/02	02/02/02	02/06/02
CADMIUM, TOTAL	001	S	02L0051	01/23/02	02/02/02	02/06/02
CADMIUM, TOTAL	001 REP	S	02L0051	01/23/02	02/02/02	02/06/02
CADMIUM, TOTAL	001 MS	S	02L0051	01/23/02	02/02/02	02/06/02
CHROMIUM, TOTAL	001	S	02L0051	01/23/02	02/02/02	02/06/02
CHROMIUM, TOTAL	001 REP	S	02L0051	01/23/02	02/02/02	02/06/02
CHROMIUM, TOTAL	001 MS	S	02L0051	01/23/02	02/02/02	02/06/02
IRON, TOTAL	001	S	02L0051	01/23/02	02/02/02	02/06/02
IRON, TOTAL	001 REP	S	02L0051	01/23/02	02/02/02	02/06/02
IRON, TOTAL	001 MS	S	02L0051	01/23/02	02/02/02	02/06/02
MAGNESIUM, TOTAL	001	S	02L0051	01/23/02	02/02/02	02/06/02
MAGNESIUM, TOTAL	001 REP	S	02L0051	01/23/02	02/02/02	02/06/02
MAGNESIUM, TOTAL	001 MS	S	02L0051	01/23/02	02/02/02	02/06/02
SODIUM, TOTAL	001	S	02L0051	01/23/02	02/02/02	02/06/02
SODIUM, TOTAL	001 REP	S	02L0051	01/23/02	02/02/02	02/06/02
SODIUM, TOTAL	001 MS	S	02L0051	01/23/02	02/02/02	02/06/02
NICKEL, TOTAL	001	S	02L0051	01/23/02	02/02/02	02/06/02
NICKEL, TOTAL	001 REP	S	02L0051	01/23/02	02/02/02	02/06/02
NICKEL, TOTAL	001 MS	S	02L0051	01/23/02	02/02/02	02/06/02
PHOSPHORUS, TOTAL	001	S	02L0051	01/23/02	02/02/02	02/06/02
PHOSPHORUS, TOTAL	001 REP	S	02L0051	01/23/02	02/02/02	02/06/02
PHOSPHORUS, TOTAL	001 MS	S	02L0051	01/23/02	02/02/02	02/06/02

LAB QC:

CALCIUM LABORATORY	LC1 BS	S	02L0051	N/A	02/02/02	02/06/02
CALCIUM, TOTAL	MB1	S	02L0051	N/A	02/02/02	02/06/02
CADMIUM LABORATORY	LC1 BS	S	02L0051	N/A	02/02/02	02/06/02
CADMIUM, TOTAL	MB1	S	02L0051	N/A	02/02/02	02/06/02
CHROMIUM LABORATORY	LC1 BS	S	02L0051	N/A	02/02/02	02/06/02
CHROMIUM, TOTAL	MB1	S	02L0051	N/A	02/02/02	02/06/02
IRON LABORATORY	LC1 BS	S	02L0051	N/A	02/02/02	02/06/02
IRON, TOTAL	MB1	S	02L0051	N/A	02/02/02	02/06/02

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1680

DATE RECEIVED: 01/25/02 LVL LOT # :0201L862

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MAGNESIUM LABORATORY	LC1 BS	S	02L0051	N/A	02/02/02	02/06/02
MAGNESIUM, TOTAL	MB1	S	02L0051	N/A	02/02/02	02/06/02
SODIUM LABORATORY	LC1 BS	S	02L0051	N/A	02/02/02	02/06/02
SODIUM, TOTAL	MB1	S	02L0051	N/A	02/02/02	02/06/02
NICKEL LABORATORY	LC1 BS	S	02L0051	N/A	02/02/02	02/06/02
NICKEL, TOTAL	MB1	S	02L0051	N/A	02/02/02	02/06/02
PHOSPHORUS LCS	LC1 BS	S	02L0051	N/A	02/02/02	02/06/02
PHOSPHORUS, TOTAL	MB1	S	02L0051	N/A	02/02/02	02/06/02

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-113
LVL#: 0201L862
SDG/SAF#: H1680/B01-113

W.O.#: 11343-606-001-9999-00
Date Received: 01-25-02

METALS CASE NARRATIVE

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

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

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

4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.

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

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

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 13 pages.

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B13F00	Iron	20,000	99.5
	Magnesium	20,000	99.7

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

13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

02-12-02
Date

gmb/m01-862

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 0201L862

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 02/08/02

CLIENT: TNUHANFORD B01-113 H1680 LVL LOT #: 0201L862

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B13F00	Calcium, Total	3040	MG/KG	1.1	1.0
		Cadmium, Total	0.04	MG/KG	0.03	1.0
		Chromium, Total	15.9	MG/KG	0.09	1.0
		Iron, Total	18400	MG/KG	1.6	1.0
		Magnesium, Total	3590	MG/KG	1.0	1.0
		Sodium, Total	216	MG/KG	0.63	1.0
		Nickel, Total	19.3	MG/KG	0.13	1.0
		Phosphorus, Total	366	MG/KG	2.2	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/08/02

CLIENT: TNUHANFORD B01-113 H1680 LVL LOT #: 0201L862

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	02L0051-MB1	Calcium, Total	3.5	MG/KG	1.0	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.12	MG/KG	0.08	1.0
		Iron, Total	21.0	MG/KG	1.5	1.0
		Magnesium, Total	0.92 u	MG/KG	0.92	1.0
		Sodium, Total	2.5	MG/KG	0.58	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Phosphorus, Total	3.5	MG/KG	2.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/08/02

CLIENT: TNUHANFORD B01-113 H1680 LVL LOT #: 0201L862

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B13F00	Calcium, Total	5510	3040	2730	90.3	1.0
		Cadmium, Total	4.9	0.04	5.5	88.4	1.0
		Chromium, Total	35.4	15.9	21.9	89.0	1.0
		Iron, Total	16600	18400	109	-1600. *	1.0
		Magnesium, Total	5300	3590	2730	62.4	1.0
		Sodium, Total	2810	216	2730	94.9	1.0
		Nickel, Total	62.8	19.3	54.7	79.5	1.0
		Phosphorus, Total	920	366	546	101.3	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/08/02

CLIENT: TNUHANFORD B01-113 H1680 LVL LOT #: 0201L862

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B13F00	Calcium, Total	3040	2580	16.6	1.0
		Cadmium, Total	0.04	0.03u	NC 200	1.0
		Chromium, Total	15.9	24.0	40.6	1.0
		Iron, Total	18400	16000	13.8	1.0
		Magnesium, Total	3590	2770	25.9	1.0
		Sodium, Total	216	168	25.0	1.0
		Nickel, Total	19.3	17.5	9.8	1.0
		Phosphorus, Total	366	391	6.5	1.0

ugB 2/11/2

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 02/08/02

CLIENT: TNUHANFORD B01-113 H1680 LVL LOT #: 0201L862

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	02L0051-LC1	Calcium, LCS	2410	2500	MG/KG	96.3
		Cadmium, LCS	24.6	25.0	MG/KG	98.4
		Chromium, LCS	49.7	50.0	MG/KG	99.4
		Iron, LCS	505	500	MG/KG	101.0
		Magnesium, LCS	2460	2500	MG/KG	98.3
		Sodium, LCS	2400	2500	MG/KG	96.1
		Nickel, LCS	198	200	MG/KG	98.8
		Phosphorus, LCS	475	500	MG/KG	95.0

Lionville Laboratory Use Only
02011862

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B01-113
Est. Final Proj. Sampling Date:
Project #: 11343-606-001-9999-00
Project Contact/Phone #:
Lionville Laboratory Project Manager: OJ
QC: SPEC Del: STD TAT: 30 days
Date Rec'd: 1-25-02 Date Due: 2-24-02

		A	B						C		D	E	F	G		
Refrigerator #		1	3						3		3	3	1	3		
#/Type Container	Liquid															
	Solid	1pg	1pg						1pg		1pg	1pg	1pg	1pg		
Volume	Liquid															
	Solid	250	250						500		60	120	250	500		
Preservatives		—	—						—		—	—	—	—		
ANALYSES REQUESTED		ORGANIC							INORG							
		TCL VOA	BNA (1)	Pest/PCB	Herb				Metal (3)	CN	Oil + Grease	Hex Chrom	TIC: TOC (2) HCL(2) Acidity			
		Lionville Laboratory Use Only														
		0624X	0625X						METO		IOGGA	ICPG	ITIC ECT	INORGO		

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X	METO	IOGGA	ICPG	ITIC ECT	INORGO
001	B13F00	X	X	S	1/23/02	2322	X	X	X	X	X	X	X

Special Instructions: SAF # B01-113

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

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	1/25/02	0955

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 7955 0552
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

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

COC Record Present Upon Sample Rec'd (Y) or N

Cooler Temp. 4.3 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-39	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days — Air Quality ☐
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	
Ice Chest No.: ERC-01-014	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/ECRA RECRA	Offsite Property No.: A026091	Bill of Lading/Air Bill No.: 4238 7455 - 0556	

POSSIBLE SAMPLE HAZARDS/REMARKS
Sampler not available to sign over to storage.

Special Handling and/or Storage

Preservation	Cool 4C	None RT 1-24-02	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None RT 1-24-02		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	120mL	250mL	250mL	250mL	500mL	500mL	1000mL		
SAMPLE ANALYSIS	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time								
B13F00	SOIL	1/23/02	2322	X		X	X	X	X	X	X

Samples stored in Ref.# 7A at the 3728 Shipping Facility on 1 124 02
Collector not available to relinquish samples on 1 124 02 for shipment.
RT 1-24-02

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Sampler not available		Ref 7A 3728 (stored in)	0455 1.24.02
RT 1-24-02 Removed from Ref 1A 3728	1/24/02	R Thoren	0800 1.24.02
R Thoren ERC	0800 1.24.02	FEDEX	
Fed Ex	1.25.02 0955		1.25.02 0955

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

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

RN 1/5/01
RT 1-24-02
Use B15F09 for shipping
B12XL3
RT 1.24.02

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)

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1680

DATE RECEIVED: 01/25/02 LVL LOT # :0201L862

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B13F00						
% SOLIDS	001	S	02L%S008	01/23/02	01/29/02	01/30/02
% SOLIDS	001 REP	S	02L%S008	01/23/02	01/29/02	01/30/02
CHLORIDE BY IC	001	S	02LICD13	01/23/02	02/07/02	02/07/02
CHLORIDE BY IC	001 REP	S	02LICD13	01/23/02	02/07/02	02/07/02
CHLORIDE BY IC	001 MS	S	02LICD13	01/23/02	02/07/02	02/07/02
FLUORIDE BY IC	001	S	02LICD13	01/23/02	02/07/02	02/07/02
FLUORIDE BY IC	001 REP	S	02LICD13	01/23/02	02/07/02	02/07/02
FLUORIDE BY IC	001 MS	S	02LICD13	01/23/02	02/07/02	02/07/02
NITRITE BY IC	001	S	02LICD13	01/23/02	02/07/02	02/07/02
NITRITE BY IC	001 REP	S	02LICD13	01/23/02	02/07/02	02/07/02
NITRITE BY IC	001 MS	S	02LICD13	01/23/02	02/07/02	02/07/02
NITRATE BY IC	001	S	02LICD13	01/23/02	02/07/02	02/07/02
NITRATE BY IC	001 REP	S	02LICD13	01/23/02	02/07/02	02/07/02
NITRATE BY IC	001 MS	S	02LICD13	01/23/02	02/07/02	02/07/02
PHOSPHATE BY IC	001	S	02LICD13	01/23/02	02/07/02	02/07/02
PHOSPHATE BY IC	001 REP	S	02LICD13	01/23/02	02/07/02	02/07/02
PHOSPHATE BY IC	001 MS	S	02LICD13	01/23/02	02/07/02	02/07/02
CHROMIUM VI	001	S	02LVI005	01/23/02	02/08/02	02/08/02
CHROMIUM VI	001 REP	S	02LVI005	01/23/02	02/08/02	02/08/02
CHROMIUM VI	001 MS	S	02LVI005	01/23/02	02/08/02	02/08/02
CHROMIUM VI	001 MSD	S	02LVI005	01/23/02	02/08/02	02/08/02
SULFATE BY IC	001	S	02LICD13	01/23/02	02/07/02	02/07/02
SULFATE BY IC	001 REP	S	02LICD13	01/23/02	02/07/02	02/07/02
SULFATE BY IC	001 MS	S	02LICD13	01/23/02	02/07/02	02/07/02
NITRATE NITRITE	001	S	02LN3F10	01/23/02	02/11/02	02/11/02
NITRATE NITRITE	001 REP	S	02LN3F10	01/23/02	02/11/02	02/11/02
NITRATE NITRITE	001 MS	S	02LN3F10	01/23/02	02/11/02	02/11/02
TOTAL ORGANIC CARBON	001	S	02LTZ002	01/23/02	02/14/02	02/14/02
TOTAL ORGANIC CARBON	001 REP	S	02LTZ002	01/23/02	02/14/02	02/14/02
TOTAL ORGANIC CARBON	001 MS	S	02LTZ002	01/23/02	02/14/02	02/14/02
OIL & GREASE BY GRAV	001	S	02LOG004	01/23/02	01/31/02	02/01/02
OIL AND GREASE BY GR	001 REP	S	02LOG004	01/23/02	01/31/02	02/01/02
OIL AND GREASE BY GR	001 MS	S	02LOG004	01/23/02	01/31/02	02/01/02
PH	001	S	02LPH005	01/23/02	01/29/02	01/29/02
PH	001 REP	S	02LPH005	01/23/02	01/29/02	01/29/02

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-113 H1680

DATE RECEIVED: 01/25/02 LVL LOT # :0201L862

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL INORGANIC CARB	001	S	02LTZA02	01/23/02	02/14/02	02/14/02

LAB QC:

CHLORIDE BY IC	MB1	S	02LICD13	N/A	02/07/02	02/07/02
CHLORIDE BY IC	MB1 BS	S	02LICD13	N/A	02/07/02	02/07/02
FLUORIDE BY IC	MB1	S	02LICD13	N/A	02/07/02	02/07/02
FLUORIDE BY IC	MB1 BS	S	02LICD13	N/A	02/07/02	02/07/02
NITRITE BY IC	MB1	S	02LICD13	N/A	02/07/02	02/07/02
NITRITE BY IC	MB1 BS	S	02LICD13	N/A	02/07/02	02/07/02
NITRATE BY IC	MB1	S	02LICD13	N/A	02/07/02	02/07/02
NITRATE BY IC	MB1 BS	S	02LICD13	N/A	02/07/02	02/07/02
PHOSPHATE BY IC	MB1	S	02LICD13	N/A	02/07/02	02/07/02
PHOSPHATE BY IC	MB1 BS	S	02LICD13	N/A	02/07/02	02/07/02
CHROMIUM VI	MB1	S	02LVI005	N/A	02/08/02	02/08/02
CHROMIUM VI	MB1 BS	S	02LVI005	N/A	02/08/02	02/08/02
CHROMIUM VI	MB1 BSD	S	02LVI005	N/A	02/08/02	02/08/02
SULFATE BY IC	MB1	S	02LICD13	N/A	02/07/02	02/07/02
SULFATE BY IC	MB1 BS	S	02LICD13	N/A	02/07/02	02/07/02
NITRATE NITRITE	MB1	S	02LN3F10	N/A	02/11/02	02/11/02
NITRATE NITRITE	MB1 BS	S	02LN3F10	N/A	02/11/02	02/11/02
TOTAL ORGANIC CARBON	MB1	W	02LTZ002	N/A	02/14/02	02/14/02
TOTAL ORGANIC CARBON	MB1 BS	W	02LTZ002	N/A	02/14/02	02/14/02
OIL & GREASE BY GRAV	MB1	S	02LOG004	N/A	01/31/02	02/01/02
OIL AND GREASE BY GR	MB1 BS	S	02LOG004	N/A	01/31/02	02/01/02
TOTAL INORGANIC CARB	MB1	W	02LTZA02	N/A	02/14/02	02/14/02
TOTAL INORGANIC CARB	MB1 BS	W	02LTZA02	N/A	02/14/02	02/14/02

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B010-113 H1680
LVL#: 0201L862

W.O.#: 11343-606-001-9999-00
Date Received: 01-25-02

INORGANIC NARRATIVE

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

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

3. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.

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

5. The method blanks were within the method criteria.

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

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

8. The replicate analyses were within the 20% RPD control limit with the exception of Sulfate, Total Organic Carbon (TOC) and Oil and Grease that were outside the control limit and may be attributed to sample inhomogeneity.

9. Results for solid samples are reported on a dry weight basis TOC samples are dried prior to analysis.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

02-20-02
Date

njp\i01-862

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 12 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Chromium VI		✓ 3060A/7196A	
Corrosivity __ by coupon __ by pH		__ 1110(mod) __ 9045C	
Cyanide, Total		__ 9010B	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
Halides, Extractable Organic		__ 9020B	__ EPA 600/4/84-008
Halides, Total		__ 9020B	__ EPA 600/4/84-008
EP Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Oil & Grease		✓ 9071A / EPA 413.1	
Carbon, Total Organic and Inorganic		__ 9060	✓ Lloyd Kahn (mod) / EPA 415.1
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		✓ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		__ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		__ 9095A	

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

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

Nitrate Nitrite EPA 353.2(mod.)

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 02/20/02

CLIENT: TNUHANFORD B01-113 H1680 LVL LOT #: 0201L862

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B13F00	% Solids	90.6		%	0.01	1.0
		Chloride by IC	2.3		MG/KG	1.4	1.0
		Fluoride by IC	1.4	u	MG/KG	1.4	1.0
		Nitrite by IC	1.38	u	MG/KG	1.38	1.0
		Nitrate by IC	7.02		MG/KG	1.38	1.0
		Phosphate by IC	1.4	u	MG/KG	1.4	1.0
		Chromium VI	1.0		MG/KG	0.44	1.0
		Sulfate by IC	5.8		MG/KG	1.4	1.0
		Nitrate Nitrite	1.7		MG/KG	0.22	1.0
		Total Organic Carbon	139		MG/KG	19.4	1.0
		Oil & Grease Gravimetri	264		MG/KG	147	1.0
		pH	9.0		SOIL PH	0.01	1.0
		Total Inorganic Carbon	111		MG/KG	19.4	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/20/02

CLIENT: TNUHANFORD B01-113 H1680 LVL LOT #: 0201L862

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	02LICD13-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	1.2	u	MG/KG	1.2	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	02LVI005-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	02LN3F10-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	02LTZ002-MB1	Total Organic Carbon	4.7	u	MG/KG	4.7	1.0
BLANK10	02LOG004-MB1	Oil & Grease Gravimetri	133	u	MG/KG	133	1.0
BLANK10	02LTZA02-MB1	Total Inorganic Carbon	4.7	u	MG/KG	4.7	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/20/02

CLIENT: TNUHANFORD B01-113 H1680 LVL LOT #: 0201L862

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B13F00	Chloride by IC	32.0	2.3	27.6	107.7	1.0
		Fluoride by IC	30.1	0.46	27.6	107.5	1.0
		Nitrite by IC	27.9	1.38u	27.6	101.1	1.0
		Nitrate by IC	36.1	7.02	27.6	105.3	1.0
		Phosphate by IC	28.3	1.4 u	27.6	102.8	1.0
		Soluble Chromium VI	5.6	1.0	4.4	103.2	1.0
		Insoluble Chromium VI	1250	1.0	1240	101.0	100
		Sulfate by IC	33.9	5.8	27.6	101.9	1.0
		Nitrate Nitrite	7.2	1.7	5.4	102.0	1.0
		Total Organic Carbon	1590	139	1500	96.6	1.0
		Oil & Grease Gravimetr	7810	264	8500	88.8	1.0
BLANK10	02LICD13-MB1	Chloride by IC	23.3	1.2 u	25.0	93.1	1.0
		Fluoride by IC	51.6	1.2 u	50.0	103.3	1.0
		Nitrite by IC	23.6	1.25u	25.0	94.3	1.0
		Nitrate by IC	24.4	1.25u	25.0	97.6	1.0
		Phosphate by IC	25.9	1.2 u	25.0	103.6	1.0
		Sulfate by IC	24.1	1.2 u	25.0	96.2	1.0
BLANK10	02LVI005-MB1	Soluble Chromium VI	3.9	0.40u	4.0	98.0	1.0
		Insoluble Chromium VI	1240	0.40u	1170	106.5	100
BLANK10	02LN3F10-MB1	Nitrate Nitrite	4.9	0.20u	5.0	98.6	1.0
BLANK10	02LTZ002-MB1	Total Organic Carbon	409	4.7 u	400	102.2	1.0
BLANK10	02LOG004-MB1	Oil & Grease Gravimetr	6930	133 u	7710	90.0	1.0
BLANK10	02LTZA02-MB1	Total Inorganic Carbon	409	4.7 u	400	102.2	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/20/02

CLIENT: TNUHANFORD B01-113 H1680 LVL LOT #: 0201L862

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-001REP	B13F00	% Solids	90.6	90.7	0.077	1.0
		Chloride by IC	2.3	2.4	3.8	1.0
		Fluoride by IC	1.4 u	1.4 u	NC	1.0
		Nitrite by IC	1.38u	1.38u	NC	1.0
		Nitrate by IC	7.02	7.04	0.31	1.0
		Phosphate by IC	1.4 u	1.4 u	NC	1.0
		Chromium VI	1.0	1.0	1.1	1.0
		Sulfate by IC	5.8	7.2	21.7	1.0
		Nitrate Nitrite	1.7	1.8	6.1	1.0
		Total Organic Carbon	139	227	48.1	1.0
		Oil & Grease Gravimetri	264	485	59.1	1.0
		pH	9.0	9.0	0.1	1.0

Lionville Laboratory Use Only

02012862

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

10

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 days

Date Rec'd: 1-25-02 Date Due: 2-24-02

		A	B						C		D	E	F	G		
Refrigerator #		1	3						3		3	3	1	3		
#/Type Container	Liquid															
	Solid	1pg	1pg						1pg		1pg	1pg	1pg	1pg		
Volume	Liquid															
	Solid	250	250						500		60	120	250	500		
Preservatives		—	—						—		—	—	—	—		
ANALYSES REQUESTED →		ORGANIC: TCL VOA	ORGANIC: BNA (1)	ORGANIC: Pest/PCB	ORGANIC: Herb				INORG: Metal (3)	INORG: CN	Oil + Grease	Hex Chrome	TIC, TOC	HCCA Anions		
Lionville Laboratory Use Only		0624X	0625X						METO		IOGGL	ICRL	ITIC IOCT	INORG		

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X						METO		IOGGL	ICRL	ITIC IOCT	INORG		
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	C01	B13F00	X	X	S	1/23/02	2322	X	X						X		X	X	X	X		

Special Instructions: JAF # B01-113

DATE/REVISIONS:

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

INORG (1) 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4 ICSO4,

3. IN3N2, IPH

4.

5.

6.

Relinquished by	Received by	Date	Time
Hess Ex	D. Spiro	1/25/02	0955

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # 4235 7955 0552
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

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

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

Cooler Temp. 4.3 °C

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

NOTES:

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-113-39	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days — Air Quality ☐
Project Designation: PFP Well Installation Sampling and Analysis - Soil	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-113	
Ice Chest No.: ERC-01-014	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A026891	Bill of Lading/Air Bill No.: 42307455-0556	

POSSIBLE SAMPLE HAZARDS/REMARKS
Sampler not available To Sign over to Storage.

Special Handling and/or Storage

Preservation	Cool 4C	None RT 1-24-02	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None RT 1-24-02	
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	
No. of Container(s)	1	1	1	1	1	1	1	1	1	
Volume	60mL	60mL	120mL	250mL	250mL	250mL	500mL	500mL	1000mL	
SAMPLE ANALYSIS	Oil & Grease - 413.1	Gross Alpha; Gross Beta	Chromium Hex - 7196	See item (1) in Special Instructions.	TIC - 415.1M; TOC - 415.1	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	

Sample No.	Matrix *	Sample Date	Sample Time										
B13F00	SOIL	1/23/02	2322	X		X	X	X	X	X	X		

Samples stored in Ref.# 7A at the 3728 Shipping Facility on 1/24/02 Collector not available to relinquish samples on 1/24/02 for shipment. RT 1-24-02

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Sampler not available		Ref 7A 3728 (stored in)	1.24.02 0465
Relinquished By: Removed from Ref 7A 3728	1/24/02	Received By: R Thorer	1.24.02 0800
Relinquished By: R Thorer ERC	1.24.02 0800	Received By: FEDEX	
Relinquished By: Fed Ex	1.25.02 0955	Received By:	1.25.02 0955
Relinquished By		Received By	
Relinquished By		Received By	

SPECIAL INSTRUCTIONS

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

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

RT 1-24-02
Use B13F00 for shipping
312XL3
RT 1.24.02
RN 1/5/01

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

Figure 1. Sample Check-In List

Date/Time Received: 1-25-02 / 0955

SDG#: 02011862

Work Order Number: _____ SAF# B01-113

Shipping Container ID: ERC 01 014 Chain of Custody # B01-113-39

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 4.3°C
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 7
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: _____ Date: _____

Telephoned to: _____ On _____ By _____