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JUN 10 2002
EDMC

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1671 was composed of one water sample designated under SAF No. B01-114 with a Project Designation of: PFP Well Installation Sampling and Analysis – Water.

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

The LCS and method blank were not scaled to the nominal aliquot of 0.01 L. No problems were encountered during the course of the analyses.

2.3 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.4 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.7 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.8 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.9 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 H1676

SDG 7211
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1676

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B140B3	200 West	WATER		R201182-01	B01-114	B01-114-47	01/23/02 02:45
Method Blank		WATER		R201182-03	B01-114		
Lab Control Sample		WATER		R201182-02	B01-114		
Duplicate (R201182-01)	200 West	WATER		R201182-04	B01-114		01/23/02 02:45
Spike (R201182-01)	200 West	WATER		R201182-05	B01-114		01/23/02 02:45

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 H1676

SDG 7211
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1676

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
7211	B01-114-47	B140B3	WATER		6.375 L		01/24/02	1	R201182-01	7211-001
		Method Blank	WATER						R201182-03	7211-003
		Lab Control Sample	WATER						R201182-02	7211-002
		Duplicate (R201182-01)	WATER		6.375 L		01/24/02	1	R201182-04	7211-004
		Spike (R201182-01)	WATER		6.375 L		01/24/02	1	R201182-05	7211-005

Lab id TMANC
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Form DVD-QS
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1676

SDG 7211
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1676

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	WATER	Americium 241 in Water	7024-012	5.0	1			1	1	1/1		
NP	WATER	Neptunium in Water	7024-012	5.0	1			1	1	1/1		
PU	WATER	Plutonium, Isotopic in Water	7024-012	5.0	1			1	1	1/1		
U	WATER	Uranium, Isotopic in Water	7024-012	5.0	1			1	1	1/1		
Beta Counting												
SR	WATER	Total Strontium in Water	7024-012	10.0	1			1	1	1/1		
TC	WATER	Technetium 99 in Water	7024-012	10.0	1			1	1	1/1		
Gas Proportional Counting												
93A	WATER	Gross Alpha in Water	7024-012	20.0	1			1	1	1/1		
93B	WATER	Gross Beta in Water	7024-012	15.0	1			1	1	1/1		
Gamma Scan												
GAM	WATER	Gamma Emitters	7024-012	15.0	1			1	1	1/1		
Liquid Scintillation Counting												
H	WATER	Tritium in Water	7024-012	10.0	1			1	1	1/1	1/1	X

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
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1676

SDG 7211
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1676

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B140B3			R201182-01	7211-001	93A/93		03/06/02	03/14/02	MCM	Gross Alpha in Water
200 West		WATER	01/23/02	7211-001	93B/93		03/06/02	03/14/02	MCM	Gross Beta in Water
B01-114-47	B01-114		01/24/02	7211-001	AM		03/04/02	03/14/02	MCM	Americium 241 in Water
				7211-001	GAM		03/04/02	03/14/02	MCM	Gamma Emitters
				7211-001	H		03/01/02	03/14/02	MCM	Tritium in Water
				7211-001	NP		03/07/02	03/14/02	MCM	Neptunium in Water
				7211-001	PU		03/05/02	03/14/02	MCM	Plutonium, Isotopic in Water
				7211-001	SR		02/26/02	03/14/02	MCM	Total Strontium in Water
				7211-001	TC		03/13/02	03/14/02	MCM	Technetium 99 in Water
				7211-001	U		02/28/02	03/14/02	MCM	Uranium, Isotopic in Water
Method Blank			R201182-03	7211-003	93A/93		03/06/02	03/14/02	MCM	Gross Alpha in Water
		WATER		7211-003	93B/93		03/06/02	03/14/02	MCM	Gross Beta in Water
	B01-114			7211-003	AM		03/05/02	03/14/02	MCM	Americium 241 in Water
				7211-003	GAM		03/04/02	03/14/02	MCM	Gamma Emitters
				7211-003	H		03/01/02	03/14/02	MCM	Tritium in Water
				7211-003	NP		03/07/02	03/14/02	MCM	Neptunium in Water
				7211-003	PU		03/05/02	03/14/02	MCM	Plutonium, Isotopic in Water
				7211-003	SR		02/26/02	03/14/02	MCM	Total Strontium in Water
				7211-003	TC		03/12/02	03/14/02	MCM	Technetium 99 in Water
				7211-003	U		03/02/02	03/14/02	MCM	Uranium, Isotopic in Water
Lab Control Sample			R201182-02	7211-002	93A/93		03/07/02	03/14/02	MCM	Gross Alpha in Water
		WATER		7211-002	93B/93		03/07/02	03/14/02	MCM	Gross Beta in Water
	B01-114			7211-002	AM		03/04/02	03/14/02	MCM	Americium 241 in Water
				7211-002	GAM		03/06/02	03/14/02	MCM	Gamma Emitters
				7211-002	H		03/01/02	03/14/02	MCM	Tritium in Water
				7211-002	NP		03/07/02	03/14/02	MCM	Neptunium in Water
				7211-002	PU		03/05/02	03/14/02	MCM	Plutonium, Isotopic in Water
				7211-002	SR		02/26/02	03/14/02	MCM	Total Strontium in Water
				7211-002	TC		03/12/02	03/14/02	MCM	Technetium 99 in Water
				7211-002	U		02/28/02	03/14/02	MCM	Uranium, Isotopic in Water

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 H1676

SDG 7211
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1676

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (R201182-01)			R201182-04	7211-004	93A/93		03/06/02	03/14/02	MCM	Gross Alpha in Water
200 West		WATER	01/23/02	7211-004	93B/93		03/06/02	03/14/02	MCM	Gross Beta in Water
	B01-114		01/24/02	7211-004	AM		03/04/02	03/14/02	MCM	Americium 241 in Water
				7211-004	GAM		03/06/02	03/14/02	MCM	Gamma Emitters
				7211-004	H		03/02/02	03/14/02	MCM	Tritium in Water
				7211-004	NP		03/07/02	03/14/02	MCM	Neptunium in Water
				7211-004	PU		03/05/02	03/14/02	MCM	Plutonium, Isotopic in Water
				7211-004	SR		02/26/02	03/14/02	MCM	Total Strontium in Water
				7211-004	TC		03/13/02	03/14/02	MCM	Technetium 99 in Water
				7211-004	U		02/28/02	03/14/02	MCM	Uranium, Isotopic in Water
Spike (R201182-01)			R201182-05	7211-005	H		03/02/02	03/14/02	MCM	Tritium in Water
200 West		WATER	01/23/02							
	B01-114		01/24/02							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
93A/93	B01-114	Gross Alpha in Water	900.0_ALPHABETA_GPC	1			1	1	1		4
93B/93	B01-114	Gross Beta in Water	900.0_ALPHABETA_GPC	1			1	1	1		4
AM	B01-114	Americium 241 in Water	AMCMISO_IE_PLATE_AEA	1			1	1	1		4
GAM	B01-114	Gamma Emitters	GAMMA_GS	1			1	1	1		4
H	B01-114	Tritium in Water	906.0_H3_LSC	1			1	1	1	1	5
NP	B01-114	Neptunium in Water	NP237_LLE_PLATE_AEA	1			1	1	1		4
PU	B01-114	Plutonium, Isotopic in Water	PUISO_PLATE_AEA	1			1	1	1		4
SR	B01-114	Total Strontium in Water	SRTOT_SEP_PRECIP_GPC	1			1	1	1		4
TC	B01-114	Technetium 99 in Water	TC99_TR_SEP_LSC	1			1	1	1		4
U	B01-114	Uranium, Isotopic in Water	UISO_PLATE_AEA	1			1	1	1		4
TOTALS				10			10	10	10	1	41

Lab id TMANC
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Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1676

R201182-03 Method Blank

METHOD BLANK

SDG	7211	Client/Case no	Hanford	SDG H1676	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R201182-03	Client sample id	Method Blank		
Dept sample id	7211-003	Material/Matrix		WATER	
		SAF No	B01-114		

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.057	0.98	1.8	3.0	U	93A
Gross Beta	12587-47-2	-0.820	2.2	3.8	4.0	U	93B
Tritium	10028-17-8	0.799	12	21	400	U	H
Total Strontium	SR-RAD	0.164	0.28	0.54	2.0	U	SR
Technetium 99	14133-76-7	0.250	4.2	11	15	U	TC
Uranium 233/234	U-233/234	0	0.043	0.17	1.0	U	U
Uranium 235	15117-96-1	-0.026	0.052	0.20	1.0	U	U
Uranium 238	U-238	0.043	0.043	0.17	1.0	U	U
Neptunium 237	13994-20-2	0.015	0.058	0.11	1.0	U	NP
Plutonium 238	13981-16-3	0	0.079	0.30	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.079	0.30	1.0	U	PU
Americium 241	14596-10-2	0.035	0.071	0.27	1.0	U	AM
Potassium 40	13966-00-2	U		130		U	GAM
Cobalt 60	10198-40-0	U		8.4	25	U	GAM
Ruthenium 106	13967-48-1	U		71		U	GAM
Antimony 125	14234-35-6	U		19		U	GAM
Cesium 137	10045-97-3	U		8.7	15	U	GAM
Radium 226	13982-63-3	U		16		U	GAM
Radium 228	15262-20-1	U		34		U	GAM
Europium 152	14683-23-9	U		22	50	U	GAM
Europium 154	15585-10-1	U		25	50	U	GAM
Europium 155	14391-16-3	U		20	50	U	GAM
Thorium 228	14274-82-9	U		12		U	GAM
Thorium 232	TH-232	U		34		U	GAM
Uranium 235	15117-96-1	U		31		U	GAM
Uranium 238	U-238	U		950		U	GAM
Americium 241	14596-10-2	U		30		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

B L A N K , c o n t .

SDG	7211	Client/Case no	Hanford	SDG H1676	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R201182-03	Client sample id	Method Blank		
Dept sample id	7211-003	Material/Matrix		WATER	
		SAF No	B01-114		

QC-BLANK 41269

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 H1676

R201182-02

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7211
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1676
Case no No. 630

Lab sample id R201182-02
Dept sample id 7211-002

Client sample id Lab Control Sample
Material/Matrix WATER
SAF No B01-114

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	115	7.7	1.8	3.0		93A	100	4.0	115	63-137	70-130
Gross Beta	105	5.6	4.3	4.0		93B	108	4.3	97	76-124	70-130
Tritium	222	19	20	400	J	H	213	8.5	104	79-121	80-120
Total Strontium	45.3	1.6	0.45	2.0		SR	43.4	1.7	104	82-118	80-120
Technetium 99	2220	39	11	15		TC	2180	87	102	83-117	80-120
Uranium 233/234	24.1	2.4	1.1	1.0		U	23.2	0.93	104	82-118	80-120
Uranium 235	18.3	2.0	0.28	1.0		U	18.9	0.76	97	82-118	80-120
Uranium 238	26.5	2.6	1.1	1.0		U	25.2	1.0	105	82-118	80-120
Neptunium 237	47.8	1.9	0.036	1.0		NP	49.7	2.0	96	89-111	80-120
Plutonium 238	27.8	3.3	0.34	1.0		PU	30.8	1.2	90	82-118	80-120
Plutonium 239/240	33.3	3.7	0.34	1.0		PU	33.0	1.3	101	81-119	80-120
Americium 241	22.9	1.9	0.16	1.0		AM	23.8	0.95	96	85-115	80-120
Cobalt 60	405	34	19	25		GAM	400	16	101	73-127	80-120
Cesium 137	497	32	23	15		GAM	478	19	104	74-126	80-120

PFP Well Installation Smpl. & Analy.

QC-LCS 41268

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 H1676

R201182-04

B140B3

DUPLICATE

SDG 7211		Client/Case no Hanford	SDG H1676
Contact Melissa C. Mannion		Case no No. 630	
DUPLICATE	ORIGINAL		
Lab sample id R201182-04	Lab sample id R201182-01	Client sample id B140B3	
Dept sample id 7211-004	Dept sample id 7211-001	Location/Matrix 200 West	WATER
	Received 01/24/02	Collected/Volume 01/23/02 02:45	6.375 L
		Custody/SAF No B01-114-47	B01-114

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	-0.105	0.72	1.4	3.0	U	93A	-0.409	0.45	1.2	U	-	
Gross Beta	4.69	2.9	4.5	4.0		93B	0.717	1.6	2.7	U	147	188
Tritium	131	120	200	400	U	H	118	120	200	U	-	
Total Strontium	-0.198	0.24	0.54	2.0	U	SR	-0.104	0.27	0.58	U	-	
Technetium 99	-0.802	2.8	8.2	15	U	TC	2.68	3.2	8.0	U	-	
Uranium 233/234	0	0.075	0.29	1.0	U	U	0.033	0.065	0.25	U	-	
Uranium 235	0	0.091	0.35	1.0	U	U	0.039	0.079	0.30	U	-	
Uranium 238	0.037	0.075	0.29	1.0	U	U	0.033	0.065	0.25	U	-	
Neptunium 237	0	0.38	0.58	1.0	U	NP	0.031	0.12	0.30	U	-	
Plutonium 238	0	0.074	0.28	1.0	U	PU	0.023	0.046	0.18	U	-	
Plutonium 239/240	0.111	0.15	0.28	1.0	U	PU	0.023	0.046	0.18	U	-	
Americium 241	-0.046	0.046	0.18	1.0	U	AM	0	0.092	0.18	U	-	
Potassium 40	U		110		U	GAM	U		95	U	-	
Cobalt 60	U		7.1	25	U	GAM	U		9.4	U	-	
Ruthenium 106	U		69		U	GAM	U		72	U	-	
Antimony 125	U		19		U	GAM	U		15	U	-	
Cesium 137	U		8.0	15	U	GAM	U		7.7	U	-	
Radium 226	U		15		U	GAM	U		14	U	-	
Radium 228	U		36		U	GAM	U		33	U	-	
Europium 152	U		18	50	U	GAM	U		17	U	-	
Europium 154	U		24	50	U	GAM	U		25	U	-	
Europium 155	U		17	50	U	GAM	U		9.7	U	-	
Thorium 228	U		11		U	GAM	U		13	U	-	
Thorium 232	U		36		U	GAM	U		33	U	-	
Uranium 235	U		26		U	GAM	U		19	U	-	
Uranium 238	U		860		U	GAM	U		940	U	-	
Americium 241	U		21		U	GAM	U		6.9	U	-	

PFP Well Installation Smpl. & Analy.

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

DUPLICATE, cont.

SDG	7211		Client/Case no	Hanford	SDG H1676
Contact	Melissa C. Mannion		Case no	No. 630	
DUPLICATE		ORIGINAL			
Lab sample id	R201182-04	Lab sample id	R201182-01	Client sample id	B140B3
Dept sample id	7211-004	Dept sample id	7211-001	Location/Matrix	200 West WATER
		Received	01/24/02	Collected/Volume	01/23/02 02:45 6.375 L
				Custody/SAF No	B01-114-47 B01-114

QC-DUP#1 41270

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 H1676

R201182-05 B140B3

MATRIX SPIKE

SDG	7211	Client/Case no	Hanford SDG H1676
Contact	Melissa C. Mannion	Case no	No. 630
MATRIX SPIKE		ORIGINAL	
Lab sample id	R201182-05	Lab sample id	R201182-01
Dept sample id	7211-005	Dept sample id	7211-001
		Received	01/24/02
Client sample id	B140B3		
Location/Matrix	200 West WATER		
Collected/Volume	01/23/02 02:45 6.375 L		
Custody/SAF No	B01-114-47 B01-114		

ANALYTE	SPIKE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	ORIGINAL pCi/L	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	28400	550	200	400	X	H	31100	1200	118	120	91	85-115	60-140

PFP Well Installation Smpl. & Analy.

QC-MS#1 41271

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

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1676

R201182-01 **B140B3**

DATA SHEET

SDG	7211	Client/Case no	Hanford	SDG H1676	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R201182-01	Client sample id	B140B3		
Dept sample id	7211-001	Location/Matrix	200 West	WATER	
Received	01/24/02	Collected/Volume	01/23/02 02:45	6.375 L	
		Custody/SAF No	B01-114-47	B01-114	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.409	0.45	1.2	3.0	U	93A
Gross Beta	12587-47-2	0.717	1.6	2.7	4.0	U	93B
Tritium	10028-17-8	118	120	200	400	U	H
Total Strontium	SR-RAD	-0.104	0.27	0.58	2.0	U	SR
Technetium 99	14133-76-7	2.68	3.2	8.0	15	U	TC
Uranium 233/234	U-233/234	0.033	0.065	0.25	1.0	U	U
Uranium 235	15117-96-1	0.039	0.079	0.30	1.0	U	U
Uranium 238	U-238	0.033	0.065	0.25	1.0	U	U
Neptunium 237	13994-20-2	0.031	0.12	0.30	1.0	U	NP
Plutonium 238	13981-16-3	0.023	0.046	0.18	1.0	U	PU
Plutonium 239/240	PU-239/240	0.023	0.046	0.18	1.0	U	PU
Americium 241	14596-10-2	0	0.092	0.18	1.0	U	AM
Potassium 40	13966-00-2	U		95		U	GAM
Cobalt 60	10198-40-0	U		9.4	25	U	GAM
Ruthenium 106	13967-48-1	U		72		U	GAM
Antimony 125	14234-35-6	U		15		U	GAM
Cesium 137	10045-97-3	U		7.7	15	U	GAM
Radium 226	13982-63-3	U		14		U	GAM
Radium 228	15262-20-1	U		33		U	GAM
Europium 152	14683-23-9	U		17	50	U	GAM
Europium 154	15585-10-1	U		25	50	U	GAM
Europium 155	14391-16-3	U		9.7	50	U	GAM
Thorium 228	14274-82-9	U		13		U	GAM
Thorium 232	TH-232	U		33		U	GAM
Uranium 235	15117-96-1	U		19		U	GAM
Uranium 238	U-238	U		940		U	GAM
Americium 241	14596-10-2	U		6.9		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 H1676

Test AM Matrix WATER
SDG 7211
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN WATER
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1676

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 7024-012						
B140B3	R201182-01			7211-001	U	
BLK (QC ID=41269)	R201182-03			7211-003	U	
LCS (QC ID=41268)	R201182-02			7211-002	ok	
Duplicate (R201182-01)	R201182-04			7211-004	-	U
Nominal values and limits from method				RDLs (pCi/L)	1.0	
PFP Well Installation Smpl. & Analy.						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-012	2σ prep error 5.0 %				Reference Lab Notebook 7024 pg. 012											
B140B3	R201182-01			0.18	0.400			82		154			40	03/04/02	03/04	SS-043
BLK (QC ID=41269)	R201182-03			0.27	0.400			72		114				03/04/02	03/05	SS-055
LCS (QC ID=41268)	R201182-02			0.16	0.400			87		154				03/04/02	03/04	SS-044
Duplicate (R201182-01) (QC ID=41270)	R201182-04			0.18	0.400			80		154			40	03/04/02	03/04	SS-045
Nominal values and limits from method				1.0	0.400			20-105		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-040	Environmental Water Dissolution, 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	0.20	±	0.098
	YIELD	80	±	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 H1676

Test NP Matrix WATER
SDG 7211
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN WATER
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1676

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7024-012						
B14083	R201182-01			7211-001	U	
BLK (QC ID=41269)	R201182-03			7211-003	U	
LCS (QC ID=41268)	R201182-02			7211-002	ok	
Duplicate (R201182-01)	R201182-04			7211-004	-	U
Nominal values and limits from method				RDLs (pCi/L)	1.0	
PFP Well Installation Smpl. & Analy.						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-012	2σ prep error 5.0 %				Reference Lab Notebook 7024 pg. 012											
B14083	R201182-01			0.30	0.200			24		742			43	03/06/02	03/07	SS-050
BLK (QC ID=41269)	R201182-03			0.11	0.200			56		744				03/06/02	03/07	SS-066
LCS (QC ID=41268)	R201182-02			0.036	0.200			65		744				03/06/02	03/07	SS-065
Duplicate (R201182-01) (QC ID=41270)	R201182-04			0.58	0.200			27		112			43	03/06/02	03/07	SS-043
Nominal values and limits from method				1.0	0.200			20-105		100			180			

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 4
	CP-934	Neptunium from Solids and Water by Extraction Chromatography, rev 2

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	0.26	±	0.49
	YIELD	43	±	41

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

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1676

Test PU Matrix WATER
SDG 7211
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN WATER

ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1676

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 7024-012								
B140B3	R201182-01			7211-001	U		U	
BLK (QC ID=41269)	R201182-03			7211-003	U		U	
LCS (QC ID=41268)	R201182-02			7211-002	ok		ok	
Duplicate (R201182-01)	R201182-04			7211-004	-	U	-	U
Nominal values and limits from method				RDLs (pCi/L)	1.0		1.0	
PFP Well Installation Smpl. & Analy.								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-012	2σ prep error 5.0 %			Reference Lab Notebook 7024 pg. 012												
B140B3	R201182-01			0.18	0.400			85		149			41	03/05/02	03/05	SS-055
BLK (QC ID=41269)	R201182-03			0.30	0.400			73		104				03/05/02	03/05	SS-057
LCS (QC ID=41268)	R201182-02			0.34	0.400			63		104				03/05/02	03/05	SS-056
Duplicate (R201182-01) (QC ID=41270)	R201182-04			0.28	0.400			78		104			41	03/05/02	03/05	SS-058
Nominal values and limits from method				1.0	0.400			20-105		100	100		180			

PROCEDURES	REFERENCE	
	PUISO_PLATE_AEA	
	CP-040	Environmental Water Dissolution, rev 4
	CP-940	Plutonium Separation and Purification, rev 3
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 4 SAMPLES				
MDA	0.28	±	0.14
YIELD	75	±	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 H1676

Test U Matrix WATER
SDG 7211
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN WATER
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1676

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234		2: Uranium 235		3: Uranium 238		RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7024-012														
B140B3	R201182-01			7211-001	U		U		U					
BLK (QC ID=41269)	R201182-03			7211-003	U		U		U					
LCS (QC ID=41268)	R201182-02			7211-002	ok		ok		ok					
Duplicate (R201182-01)	R201182-04			7211-004	-	U	-	U	-	U				
Nominal values and limits from method				RDLs (pCi/L)	1.0		1.0		1.0		100		4	
PFP Well Installation Smpl. & Analy.											Averages			

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-012	2σ prep error 5.0 %				Reference Lab Notebook 7024 pg. 012											
B140B3	R201182-01			0.30	0.400			82		110			36	02/28/02	02/28	SS-041
BLK (QC ID=41269)	R201182-03			0.20	0.400			80		164				02/28/02	03/02	SS-050
LCS (QC ID=41268)	R201182-02			1.1	0.400			89		109				02/28/02	02/28	SS-047
Duplicate (R201182-01) (QC ID=41270)	R201182-04			0.35	0.400			77		109			36	02/28/02	02/28	SS-049
Nominal values and limits from method				1.0	0.400			30-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 4
	CP-910	Uranium Purification, rev 2
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.49 ± 0.83
YIELD 82 ± 10

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 H1676

Test SR Matrix WATER
SDG 7211
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN WATER
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1676

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 7024-012						
B140B3	R201182-01			7211-001	U	
BLK (QC ID=41269)	R201182-03			7211-003	U	
LCS (QC ID=41268)	R201182-02			7211-002	ok	
Duplicate (R201182-01)	R201182-04			7211-004	-	U
Nominal values and limits from method PFP Well Installation Smpl. & Analy.				RDLs (pCi/L)	2.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-012	2σ prep error 10.0 % Reference Lab Notebook 7024 pg. 012															
B140B3	R201182-01			0.58	0.500			87		100			34	02/26/02	02/26	GRB-201
BLK (QC ID=41269)	R201182-03			0.54	0.500			86		100				02/26/02	02/26	GRB-203
LCS (QC ID=41268)	R201182-02			0.45	0.500			92		97				02/26/02	02/26	GRB-203
Duplicate (R201182-01) (QC ID=41270)	R201182-04			0.54	0.500			92		100			34	02/26/02	02/26	GRB-204
Nominal values and limits from method				2.0	0.500					100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	CP-501	Strontium in Water Samples, rev 2

AVERAGES ± 2 SD FOR 4 SAMPLES	MDA	0.53	±	0.11
	YIELD	89	±	6

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 H1676

Test TC Matrix WATER
SDG 7211
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN WATER
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1676

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 7024-012						
B140B3	R201182-01			7211-001	U	
BLK (QC ID=41269)	R201182-03			7211-003	U	
LCS (QC ID=41268)	R201182-02			7211-002	ok	
Duplicate (R201182-01)	R201182-04			7211-004	-	U

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

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-012	2σ prep error 10.0 % Reference Lab Notebook 7024 pg. 012															
B140B3	R201182-01			8.0	0.0500			95		86			49	03/08/02	03/13	GRB-203
BLK (QC ID=41269)	R201182-03			11	0.0500			97		50				03/08/02	03/12	GRB-219
LCS (QC ID=41268)	R201182-02			11	0.0500			89		50				03/08/02	03/12	GRB-217
Duplicate (R201182-01) (QC ID=41270)	R201182-04			8.2	0.0500			100		86			49	03/08/02	03/13	GRB-204
Nominal values and limits from method				15	0.0500			20-105		50			180			

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-021	Preparation of Tc-99m Tracer, rev 1
	CP-002	Q.C. Preparation, rev 3
	CP-003	Tracing, rev 3
	CP-541	Technetium-99 Purification (Water) by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 4 SAMPLES				
	MDA	9.6	±	3.4
	YIELD	95	±	9

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 H1676

Test 93A Matrix WATER
SDG 7211
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1676

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 7024-012						
B140B3	R201182-01	93		7211-001	U	
BLK (QC ID=41269)	R201182-03	93		7211-003	U	
LCS (QC ID=41268)	R201182-02	93		7211-002	ok	
Duplicate (R201182-01)	R201182-04	93		7211-004	-	U
Nominal values and limits from method				RDLs (pCi/L)	3.0	
PFP Well Installation Smpl. & Analy.						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-012	2σ prep error 20.0 % Reference Lab Notebook 7024 pg. 012															
B140B3	R201182-01	93		1.2	0.200			7		100			42	03/06/02	03/06	GRB-101
BLK (QC ID=41269)	R201182-03	93		1.8	0.200			21		100				03/06/02	03/06	GRB-105
LCS (QC ID=41268)	R201182-02	93		1.8	0.200			21		100				03/06/02	03/07	GRB-114
Duplicate (R201182-01) (QC ID=41270)	R201182-04	93		1.4	0.200			8		100			42	03/06/02	03/06	GRB-106
Nominal values and limits from method				3.0	0.200			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	1.6	±	0.60
	RESIDUE	14	±	16

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 H1676

Test 93B Matrix WATER
SDG 7211
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1676

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta
Preparation batch 7024-012					
B140B3	R201182-01	93		7211-001	U
BLK (QC ID=41269)	R201182-03	93		7211-003	U
LCS (QC ID=41268)	R201182-02	93		7211-002	ok
Duplicate (R201182-01)	R201182-04	93		7211-004	ok

Nominal values and limits from method RDLs (pCi/L) 4.0
PFP Well Installation Smpl. & Analy.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-012 2σ prep error 15.0 % Reference Lab Notebook 7024 pg. 012																
B140B3	R201182-01	93		2.7	0.200			7		100			42	03/06/02	03/06	GRB-101
BLK (QC ID=41269)	R201182-03	93		3.8	0.200			21		100				03/06/02	03/06	GRB-105
LCS (QC ID=41268)	R201182-02	93		4.3	0.200			21		100				03/06/02	03/07	GRB-114
Duplicate (R201182-01) (QC ID=41270)	R201182-04	93		4.5	0.200			8		100			42	03/06/02	03/06	GRB-106
Nominal values and limits from method				4.0	0.200			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	3.8	±	1.6
	RESIDUE	14	±	16

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 H1676

Test GAM Matrix WATER
SDG 7211
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA EMITTERS
GAMMA SCAN

Client Hanford
Contract No. 630
Contract SDG H1676

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7024-012								
B140B3	R201182-01			7211-001	U		U	
BLK (QC ID=41269)	R201182-03			7211-003	U		U	
LCS (QC ID=41268)	R201182-02			7211-002	ok		ok	
Duplicate (R201182-01)	R201182-04			7211-004	-	U	-	U
Nominal values and limits from method				RDLs (pCi/L)	25		15	
PFP Well Installation Smpl. & Analy.								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-012 2σ prep error 15.0 % Reference Lab Notebook 7024 pg. 012																
B140B3	R201182-01			22	0.500					1250			40	02/22/02	03/04	01,01,00
BLK (QC ID=41269)	R201182-03			35	0.500					1250				02/22/02	03/04	01,03,00
LCS (QC ID=41268)	R201182-02			23	0.500					311				02/22/02	03/06	MB,05,00
Duplicate (R201182-01) (QC ID=41270)	R201182-04			36	0.500					323			42	02/22/02	03/06	01,04,00
Nominal values and limits from method				15	0.500					100			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 29 ± 15
YIELD ____ ± ____

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 H1676

Test H Matrix WATER
SDG 7211
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN WATER
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1676

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 7024-012						
B14083	R201182-01			7211-001	U	
BLK (QC ID=41269)	R201182-03			7211-003	U	
LCS (QC ID=41268)	R201182-02			7211-002	ok	J
Duplicate (R201182-01)	R201182-04			7211-004	-	U
Spike (R201182-01)	R201182-05			7211-005	ok	X

Nominal values and limits from method RDLs (pCi/L) 400
PFP Well Installation Smpl. & Analy.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-012	2σ prep error 10.0 % Reference Lab Notebook 7024 pg. 012															
B14083	R201182-01			200	0.0100			100		100			37	03/01/02	03/01	LSC-005
BLK (QC ID=41269)	R201182-03			21	1.00			10		100				03/01/02	03/01	LSC-005
LCS (QC ID=41268)	R201182-02			20	1.00			10		100				03/01/02	03/01	LSC-005
Duplicate (R201182-01) (QC ID=41270)	R201182-04			200	0.0100			100		100			38	03/01/02	03/02	LSC-005
Spike (R201182-01) (QC ID=41271)	R201182-05			200	0.0300			33		100			38	03/01/02	03/02	LSC-005
Nominal values and limits from method				400	0.0100					25			180			

PROCEDURES REFERENCE 906.0_H3_LSC
CP-210 Tritium in Water Samples by Distillation, rev 5

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 130 ± 200
YIELD 51 ± 92

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	B01-114-47	Page 1 of 1
Collector: Renee Nielson	Company Contact: Virginia Rohay; Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 7N; Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West H1676 (7211)	SAF No.: B01-114	Air Quality ☐
Ice Chest No.: SML-556	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA TMA	Offsite Property No.: A020067	Bill of Lading/Air Bill No.: 4236795 5-0523	

POSSIBLE SAMPLE HAZARDS/REMARKS
Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT 1-23-02

Special Handling and/or Storage

Preservation	None	None	HCl to pH <2	HCl or H2SO4 to pH <2 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Cool	HNO3 to pH <2
Type of Container	P	P	P	G	P	P	P	G	sGs*	P
No. of Container(s)	1	1	1	1	1	1	1	2	3	6X
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	1L
SAMPLE ANALYSIS	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.
Sample No.	Matrix *	Sample Date	Sample Time							
B140B3	WATER	1/23/02	0245	X		X				X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R Nelson	1/23/02 0455	Storedin ref # 2C	1/23/02 0455
Removed by RJ 2C 3728	1.23.02 0400	RJ R Thoren	1.23.02 0400
RJ R Thoren 3RC	1.23.02 0400	FEDEX	1-23-02
FED EXPRESS	1-24-02 11:00	E.S. Maestas E. MAESTAS	1-24-02 11:00

SPECIAL INSTRUCTIONS

~~(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040~~
(2) ICP Metals - 6010A (TAL) (Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc); ICP Metals - 6010A (Add-on) (Phosphorus)
~~(3) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (Tributyl-phosphate)~~
(4) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125, Ruthenium-106); Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Uranium

RT 1-23-02

SAMPLES STORED IN REF.# 2C AT THE 3728 SHIPPING FACILITY ON 1/23/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/22/02 FOR SHIPMENT.

RT 1-23-02

Matrix *
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 11:00

CoC No. B01-114-47

Container I.D. No. SML-556 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: Check (Or see CoC ✓)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by Elvie S. Maestas Date: 1-24-02 Time: 11:00

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.

Client: TNU-HANFORD B01-114
LVL #: 0201L839
SDG/SAF #: H1676/B01-114

W.O. #: 11343-606-001-9999-00
Date Received: 01-24-2002

GC/MS VOLATILE

Three (3) water samples were collected on 01-22,23-2002.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260A for client specified Volatile target compounds on 01-29-2002.

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

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. The analysis holding time was met.
3. Non-target compounds were not detected in the samples.
4. Sample B12XM0 required a 10-fold dilution due to high levels of target compounds.
5. All surrogate recoveries were within EPA QC limits.
6. All matrix spike recoveries were within EPA QC limits.
7. All blank spike recoveries were within EPA QC limits.
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."

by J. Michael Taylor
President
Lionville Laboratory Incorporated

02-07-02
Date

som\group\data\voa\tnu-hanford\0201-839.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 3 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.

VLI
LIONVILLE LABORATORY INC.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

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

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

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

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

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

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

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

Lionville Laboratory, Inc.

Volatiles By GC/MS, Special List

Report Date: 02/06/02 09:57

RFW Batch Number: 0201L839 Client: TNUHANFORD B01-114 H1676 Work Order: 11343606001 Page: 1a

	Cust ID:	B140B3		B140B3		B140B3		B13Y29		B12XM0		B12XM0	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		003 DL	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		10.0	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	Toluene-d8	98	%	96	%	96	%	97	%	95	%	100	%
	Bromofluorobenzene	104	%	107	%	105	%	104	%	106	%	111	%
	1,2-Dichloroethane-d4	105	%	117	%	116	%	106	%	110	%	114	%
			fl		fl		fl		fl		fl		fl
Chloromethane		10	U	10	U	10	U	10	U	10	U	100	U
Bromomethane		10	U	10	U	10	U	10	U	10	U	100	U
Vinyl Chloride		10	U	10	U	10	U	10	U	10	U	100	U
Chloroethane		10	U	10	U	10	U	10	U	10	U	100	U
Methylene Chloride		5	U	5	U	5	U	5	U	5	U	50	U
Acetone		10	U	10	U	10	U	10	U	54		72	JD
Carbon Disulfide		12		12		12		5	U	5	U	50	U
1,1-Dichloroethene		5	U	78	%	77	%	5	U	5	U	50	U
1,1-Dichloroethane		5	U	5	U	5	U	5	U	5	U	50	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	5	U	5	U	50	U
Chloroform		5	U	5	U	5	U	5	U	850	E	680	D
1,2-Dichloroethane		5	U	5	U	5	U	5	U	5	U	50	U
2-Butanone		10	U	10	U	10	U	10	U	32		89	JD
1,1,1-Trichloroethane		5	U	5	U	5	U	5	U	5	U	50	U
Carbon Tetrachloride		5	U	5	U	5	U	5	U	46		38	JD
Bromodichloromethane		5	U	5	U	5	U	5	U	5	U	50	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	5	U	50	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	50	U
Trichloroethene		5	U	98	%	95	%	5	U	5	U	50	U
Dibromochloromethane		5	U	5	U	5	U	5	U	5	U	50	U
1,1,2-Trichloroethane		5	U	5	U	5	U	5	U	5	U	50	U
Benzene		5	U	100	%	97	%	5	U	5	U	50	U
Trans-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	50	U
Bromoform		5	U	5	U	5	U	5	U	5	U	50	U
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U	10	U	100	U
2-Hexanone		10	U	10	U	10	U	10	U	10	U	100	U
Tetrachloroethene		5	U	5	U	5	U	5	U	5	U	50	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	5	U	5	U	50	U
Toluene		5	U	105	%	101	%	5	U	11		50	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0201L839** Client: **TNUHANFORD B01-114 H1676** Work Order: 11343606001 Page: 1b

Cust ID:	B140B3		B140B3		B140B3		B13Y29		B12XM0		B12XM0	
RFW#:	001		001 MS		001 MSD		002		003		003 DL	
Chlorobenzene	5	U	101	%	97	%	5	U	5	U	50	U
Ethylbenzene	5	U	5	U	5	U	5	U	5	U	50	U
Styrene	5	U	5	U	5	U	5	U	5	U	50	U
Xylene (total)	5	U	5	U	5	U	5	U	5	U	50	U
N-butylbenzene	5	U	5	U	5	U	5	U	5	U	50	U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.

Volatiles By GC/MS, Special List

Report Date: 02/06/02 09:57

RFW Batch Number: **0201L839** Client: **TNUHANFORD B01-114 H1676** Work Order: 11343606001 Page: 2a

	Cust ID:	**VBLKIP**		**VBLKIP BS**		
Sample Information	RFW#:	**02LVG016-MB1**		**02LVG016-MB1**		
	Matrix:	WATER		WATER		
	D.F.:	1.00		1.00		
	Units:	ug/L		ug/L		
	Toluene-d8	100	%	93	%	
Surrogate	Bromofluorobenzene	109	%	106	%	
Recovery	1,2-Dichloroethane-d4	100	%	104	%	
Chloromethane		10	U	10	U	
Bromomethane		10	U	10	U	
Vinyl Chloride		10	U	10	U	
Chloroethane		10	U	10	U	
Methylene Chloride		5	U	5	U	
Acetone		10	U	10	U	
Carbon Disulfide		5	U	5	U	
1,1-Dichloroethene		5	U	77	%	
1,1-Dichloroethane		5	U	5	U	
1,2-Dichloroethene (total)		5	U	5	U	
Chloroform		5	U	5	U	
1,2-Dichloroethane		5	U	5	U	
2-Butanone		10	U	10	U	
1,1,1-Trichloroethane		5	U	5	U	
Carbon Tetrachloride		5	U	5	U	
Bromodichloromethane		5	U	5	U	
1,2-Dichloropropane		5	U	5	U	
cis-1,3-Dichloropropene		5	U	5	U	
Trichloroethene		5	U	98	%	
Dibromochloromethane		5	U	5	U	
1,1,2-Trichloroethane		5	U	5	U	
Benzene		5	U	95	%	
Trans-1,3-Dichloropropene		5	U	5	U	
Bromoform		5	U	5	U	
4-Methyl-2-pentanone		10	U	10	U	
2-Hexanone		10	U	10	U	
Tetrachloroethene		5	U	5	U	
1,1,2,2-Tetrachloroethane		5	U	5	U	
Toluene		5	U	103	%	

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0201L839** Client: **TNUHANFORD B01-114 H1676** Work Order: 11343606001 Page: 2b

Cust ID:	**VBLKIP**		**VBLKIP BS**	
RFW#:	**02LVG016-MB1**		**02LVG016-MB1**	
Chlorobenzene	5	U	97	%
Ethylbenzene	5	U	5	U
Styrene	5	U	5	U
Xylene (total)	5	U	5	U
N-butylbenzene	5	U	5	U

*= Outside of EPA CLP QC limits.

Lionville Laboratory Use Only

0201L839

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B01-114

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: 1-24-02 Date Due: 2-23-02

		A-C	D-E					F	G		H	I	J			
Refrigerator #		1	3					1	3		3	3	3			
#/Type Container	Liquid	3AG	2AG					1AG	1PL		1PL	1PL	1PL			
	Solid															
Volume	Liquid	40	1L					500	500		500	500	250			
	Solid															
Preservatives		HCl	-					H2SO4	HNO3		-	H2SO4	-			
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb			TIC TOC	Metal	CN	TC Anions	NO2 NO3	Alka.			
		Lionville Laboratory Use Only														
		0624X	0625X					ZTIC ZOCT	MET①		INORG①	INANL	IALKL			

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	ZTIC ZOCT	MET①	INORG①	INANL	IALKL
001	B140B3			W	1-23-02	0245	X	X	X	X	X	X	X
002	B13Y29				1-22-02	1700	X						
003	B12XM0					1856	X						

Special Instructions: SAF # B01-114
Run Matrix QC

DATE/REVISIONS:

MET① 1. Cd, Ca, Cr, Fe, Mg, Ni, Na, Zn, P

INORG① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, IPH

3.

4.

5.

6.

Relinquished by	Received by	Date	Time
FEDEX	[illegible]	1-24-02	1300 1000

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES:

4235 7955 0534

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered
Airbill # See below
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N
5m (14d) pH

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. 2 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-47	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ
Price Code: 7N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West	SAF No.: B01-114	
Ice Chest No.: ERC 99.067	Field Logbook No.: EL-1562	COA: T20ZP1D722	Method of Shipment: Federal Express
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A020092	Bill of Lading/Air Bill No.: 42357955-0534	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT 1-23-02

Special Handling and/or Storage

Preservation	None	Cool 4C	HCl or HNO3 pH <2	HCl or H2SO4 to pH <2 Coo	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Coo	HNO3 to pH <2
Type of Container	P	P		G	P	P	P	aG	aGs*	P
No. of Container(s)	1	1		1	1	1	1	2	3	6
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	L
SAMPLE ANALYSIS	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B140B3	WATER	1/23/02	0245		X		X	X	X	X	X	X

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

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	0455 1/23/02	Ritorsd in Ref # 2C	0455 1/23/02
Removed From Ref 2C 3728	0900 1.23.02	RThoren	0900 1.23.02
RThoren ERC	0900 1.23.02	FEDEX	
FEDEX	1-24-02 1:00		1:00

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040
(2) ICP Metals - 6010A (TAL) (Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc); ICP Metals - 6010A (Add-on) (Phosphorus)
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(4) ~~Gross Alpha, Gross Beta, Gamma-Spectroscopy (Cesium-137, Cobalt-60), Gamma-Spec Add-on (Antimony-125, Ruthenium-106), Americium-241, Neptunium-237, Isotopic Plutonium, Strontium-89,90 -- Total Sr, Isotopic Uranium~~ RT 1-23-02

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 1/23/02
Collector not available to relinquish samples on 1/23/02 for shipment.
RT 1.23.02

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

HNF-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-43	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ
Price Code: 7N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West	SAF No.: B01-114	
Ice Chest No.: ERC 99.067	Field Logbook No.: EL-1562	COA: T20ZP1D722	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A020092	Bill of Lading/Air Bill No.: 42387955-0534	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT·123·02

Special Handling and/or Storage

Preservation	HCl or H_2SO_4 to pH <2 Coo	RJN 1/22/02									
Type of Container	aGs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)										

Sample No.	Matrix *	Sample Date	Sample Time										
B13Y29	WATER	1/22/02	1700	X									

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R Nielson / R Nielson	1/22/02 1455	Rec # 2C	1/23/02 1455
Rec'd in ref 2C 3728	1.23.02 0900	R. Thoren	1.23.02 0900
R. Thoren ERC	1.23.02 0900	FEDEX	
FEDEX	1-24-02 1:00		1-24-02 1:00

SPECIAL INSTRUCTIONS

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 1/23/02. Collector not available to relinquish samples on 1/23/02 for shipment.

RT 1.23.02

Matrix *

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-08	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42		SAF No.: B01-114
Ice Chest No.: ERC 99-0607	Field Logbook No.: EL-1562	COA: T20ZP1D722	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A020092		Bill of Lading/Air Bill No.: 4238795 5-0534

Price Code: 7N

Air Quality ☐

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

<2000 pCi/g

Special Handling and/or Storage

Preservation	RJN 1/23/02 HCl or H2SO4 to pH <2 Coo										
Type of Container	aGs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)										

Sample No.	Matrix *	Sample Date	Sample Time										
B12XM0	WATER	1/22/02	1856	X									

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
R Nielson/R Nielson	1/23/02 0455	Stored in Ref #2C	1/23/02 0455
Removed from Ref 2C 3728	1.23.02 0400	R Thorell	1.23.02 0400
R Thorell ERC	1.23.02 0400	FEDEX	
FEDEX	1-24-02 1:00	Collins	1-24-02 1:00

Sign/Print Names

SPECIAL INSTRUCTIONS

USE B12XL3 for Shipping

SAMPLES STORED IN REF.# 2C AT THE 3728 SHIPPING FACILITY ON 1/23/02 COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/23/02 FOR SHIPMENT.

RT 1-23.02

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)

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-114
LVL #: 0201L839
SDG/SAF #: H1676/B01-114

W.O. #: 11343-606-001-9999-00
Date Received: 01-24-2002

SEMIVOLATILE

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

The sample and its associated QC samples were extracted on 01-25-2002 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL and Tributylphosphate Semivolatile target compounds on 01-30,31-2002.

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

4. All surrogate recoveries were within EPA QC limits.

5. One (1) of twenty-two (22) blank spike recoveries was outside EPA QC limits.

6. Two (2) of eleven (11) matrix spike recoveries were outside EPA QC limits.

7. The method blank contained the common laboratory contaminant Bis (2-Ethylhexyl) phthalate 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.

by J. Michael Taylor
President
Lionville Laboratory Incorporated

02-05-02
Date

som\gorup\data\bna\tnu-hanford-0201-829.doc

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

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

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

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.

Semivolatiles by GC/MS, Special List

Report Date: 02/04/02 16:00

RFW Batch Number: 0201L839 Client: TNUHANFORD B01-114 H1676 Work Order: 11343606001 Page: 1a

	Cust ID:	B140B3		B140B3		B140B3		SBLKON		SBLKON BS	
Sample Information	RFW#:	001		001 MS		001 MSD		02LE0086-MB1		02LE0086-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	Nitrobenzene-d5	91	%	105	%	82	%	97	%	98	%
	2-Fluorobiphenyl	92	%	111	%	90	%	97	%	102	%
	p-Terphenyl-d14	103	%	110	%	105	%	99	%	113	%
	Phenol-d5	36	%	45	%	36	%	42	%	49	%
	2-Fluorophenol	58	%	65	%	56	%	67	%	70	%
	2,4,6-Tribromophenol	106	%	117	%	102	%	106	%	115	%
Phenol		11	U	41	%	33	%	10	U	44	%
bis(2-Chloroethyl)ether		11	U	22	U	22	U	10	U	10	U
2-Chlorophenol		11	U	84	%	67	%	10	U	86	%
1,3-Dichlorobenzene		11	U	22	U	22	U	10	U	10	U
1,4-Dichlorobenzene		11	U	82	%	65	%	10	U	82	%
1,2-Dichlorobenzene		11	U	22	U	22	U	10	U	10	U
2-Methylphenol		11	U	22	U	22	U	10	U	10	U
2,2'-oxybis(1-Chloropropane)		11	U	22	U	22	U	10	U	10	U
3- and/or 4-Methylphenol		11	U	22	U	22	U	10	U	10	U
N-Nitroso-Di-n-propylamine		11	U	104	%	70	%	10	U	99	%
Hexachloroethane		11	U	22	U	22	U	10	U	10	U
Nitrobenzene		11	U	22	U	22	U	10	U	10	U
Isophorone		11	U	22	U	22	U	10	U	10	U
2-Nitrophenol		11	U	22	U	22	U	10	U	10	U
2,4-Dimethylphenol		11	U	22	U	22	U	10	U	10	U
bis(2-Chloroethoxy)methane		11	U	22	U	22	U	10	U	10	U
2,4-Dichlorophenol		11	U	22	U	22	U	10	U	10	U
1,2,4-Trichlorobenzene		11	U	95	%	77	%	10	U	91	%
Naphthalene		11	U	22	U	22	U	10	U	10	U
4-Chloroaniline		11	U	22	U	22	U	10	U	10	U
Hexachlorobutadiene		11	U	22	U	22	U	10	U	10	U
4-Chloro-3-methylphenol		11	U	92	%	76	%	10	U	89	%
2-Methylnaphthalene		11	U	22	U	22	U	10	U	10	U
Hexachlorocyclopentadiene		11	U	22	U	22	U	10	U	10	U
2,4,6-Trichlorophenol		11	U	22	U	22	U	10	U	10	U
2,4,5-Trichlorophenol		28	U	56	U	56	U	25	U	25	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0201L839 Client: TNUHANFORD B01-114 H1676 Work Order: 11343606001 Page: 1b

Cust ID:	B140B3		B140B3		B140B3		SBLKON		SBLKON BS	
RFW#:	001		001 MS		001 MSD		02LE0086-MB1		02LE0086-MB1	
2-Chloronaphthalene	11	U	22	U	22	U	10	U	10	U
2-Nitroaniline	28	U	56	U	56	U	25	U	25	U
Dimethylphthalate	11	U	22	U	22	U	10	U	10	U
Acenaphthylene	11	U	22	U	22	U	10	U	10	U
2,6-Dinitrotoluene	11	U	22	U	22	U	10	U	10	U
3-Nitroaniline	28	U	56	U	56	U	25	U	25	U
Acenaphthene	11	U	104	%	84	%	10	U	94	%
2,4-Dinitrophenol	28	U	56	U	56	U	25	U	25	U
4-Nitrophenol	28	U	46	%	47	%	25	U	50	%
Dibenzofuran	11	U	22	U	22	U	10	U	10	U
2,4-Dinitrotoluene	11	U	104 *	%	96	%	10	U	101 *	%
Diethylphthalate	11	U	22	U	22	U	10	U	10	U
4-Chlorophenyl-phenylether	11	U	22	U	22	U	10	U	10	U
Fluorene	11	U	22	U	22	U	10	U	10	U
4-Nitroaniline	28	U	56	U	56	U	25	U	25	U
4,6-Dinitro-2-methylphenol	28	U	56	U	56	U	25	U	25	U
N-Nitrosodiphenylamine (1)	11	U	22	U	22	U	10	U	10	U
4-Bromophenyl-phenylether	11	U	22	U	22	U	10	U	10	U
Hexachlorobenzene	11	U	22	U	22	U	10	U	10	U
Pentachlorophenol	28	U	100	%	98	%	25	U	101	%
Phenanthrene	11	U	22	U	22	U	10	U	10	U
Anthracene	11	U	22	U	22	U	10	U	10	U
Carbazole	11	U	22	U	22	U	10	U	10	U
Di-n-Butylphthalate	11	U	22	U	22	U	10	U	10	U
Fluoranthene	11	U	22	U	22	U	10	U	10	U
Pyrene	11	U	113	%	105	%	10	U	114	%
Butylbenzylphthalate	11	U	22	U	22	U	10	U	10	U
3,3'-Dichlorobenzidine	11	U	22	U	22	U	10	U	10	U
Benzo(a)anthracene	11	U	22	U	22	U	10	U	10	U
Chrysene	11	U	22	U	22	U	10	U	10	U
bis(2-Ethylhexyl)phthalate	1	JB	4	JB	2	JB	1	J	1	JB
Di-n-Octyl phthalate	11	U	22	U	22	U	10	U	10	U
Benzo(b)fluoranthene	11	U	22	U	22	U	10	U	10	U
Benzo(k)fluoranthene	11	U	22	U	22	U	10	U	10	U
Benzo(a)pyrene	11	U	22	U	22	U	10	U	10	U
Indeno(1,2,3-cd)pyrene	11	U	22	U	22	U	10	U	10	U
Dibenzo(a,h)anthracene	11	U	22	U	22	U	10	U	10	U
Benzo(g,h,i)perylene	11	U	22	U	22	U	10	U	10	U
Tributylphosphate	11	U	22	U	22	U	10	U	10	U

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

Lionville Laboratory Use Only

0201L839

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI

Client: TNU-HANFORD B01-114

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: 1-24-02 Date Due: 2-23-02

		A-C	D E					F	G		H	I	J			
Refrigerator #		1	3					1	3		3	3	3			
#/Type Container	Liquid	3AG	2AG					1AG	1PL		1PL	1PL	1PL			
	Solid															
Volume	Liquid	40	1L					500	500		500	500	250			
	Solid															
Preservatives		HCL	-					H2SO4	HNO3		-	H2SO4	-			
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb			TIC TDC	Metal	CN	TC AN, DS	NO2 NO3	ALKA.			
		Lionville Laboratory Use Only														
		0624X	0625X					ITIC LOCT	MET①		INORG①	INJNL	IALKL			

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb			TIC TDC	Metal	CN	TC AN, DS	NO2 NO3	ALKA.			
001	B140B3			W	1-23-02	0245	X	X					X	X		X	X	X			
002	B13Y29				1-22-02	1700	X														
003	B12XM0					1856	X														

Special Instructions: SAF # B01-114
Run Matrix QC

DATE/REVISIONS:
MET① 1. Cd, Ca, Cr, Fe, Mg, Ni, Na, Zn, P
INORG① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, IPH
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FEDEX	[illegible]	1-24-02	1300 1000

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7955 8534

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered
Airbill # See below
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N pH 5m [illegible]

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. 2 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-47	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ
Price Code: 7N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West	SAF No.: B01-114	
Ice Chest No.: ERC 99.067	Field Logbook No.: EL-1562	COA: T20ZP1D722	Method of Shipment: Federal Express
Shipped To: TMA/RECRA LERA	Offsite Property No.: A020092	Bill of Lading/Air Bill No.: 42357955-0534	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT 1-23-02

Special Handling and/or Storage

Preservation	None	Cool 4C	HCl to pH <2	HCl or H2SO4 to pH <2 Coo	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Coo	HNO3 to pH <2
Type of Container	P	P	P	G	P	P	P	aG	aGz*	P
No. of Container(s)	1	1		1	1	1	1	2	3	6
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	L
SAMPLE ANALYSIS	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B140B3	WATER	1/23/02	0245		X		X	X	X	X	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	1/23/02 0455	Stored in Ref # 2C	1/23/02 0455
Removed from Ref 2C 3778	1.23.02 0900	RThoren	1.23.02 0900
RThoren ERC	1.23.02 0900	FEDEX	
FEDEX	1-24-02 1:00	Carla Hunt	1.24.02 1:00

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040
(2) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc}; ICP Metals - 6010A (Add-on) {Phosphorus}
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(4) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec -- Add-on (Antimony-125, Ruthenium-106); Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Uranium~~ RT 1-23-02

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 1/23/02
Collector not available to relinquish samples on 1/23/02 for shipment.
RT 1.23.02

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-114-43	Page 1 of 1
Collector Renee Nielson	Company Contact Virginia Rohay	Telephone No. 372-9100	Project Coordinator TRENT, SJ	Price Code 7N Data Turnaround 45 Days
Project Designation PFP Well Installation Sampling and Analysis - Water	Sampling Location 200 West		SAF No. B01-114	Air Quality ☐
Ice Chest No. ERC 99.067	Field Logbook No. EL-1562	COA T20ZP1D722	Method of Shipment Federal Express	
Shipped To TMA/RECRA	Offsite Property No. A020092		Bill of Lading/Air Bill No. 42357955-0534	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT 1.23.02

Special Handling and/or Storage

Preservation	HCl or H_2SO_4 to pH <2 Coo RJN 1/22/02										
Type of Container	aGs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)										
Sample No.	Matrix *	Sample Date	Sample Time								
B13Y29	WATER	1/22/02	1700	X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R Nielson / R Nielson	1/22/02 0155	Rec'd in Ref # ZC	1/23/02 0155
Relinquished By / Removed from Ref ZC 3728	Date/Time 1.23.02 0400	Received By R Thoren	Date/Time 1.23.02 0400
Relinquished By R. Thoren ERC	Date/Time 1.23.02 0400	Received By FEDEX	Date/Time
Relinquished By FEDEX	Date/Time 1-24-02 1:00	Received By Carl Henry	Date/Time 1-24-02 1:00
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

Samples stored in Ref.# ZC at the 3728 Shipping Facility on 1/23/02 Collector not available to relinquish samples on 1/23/02 for shipment.
RT 1.23.02

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-08	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 7N — Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-114	Air Quality ☐
Ice Chest No.: ERC 99-0067	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020092	Bill of Lading/Air Bill No.: 4235795 5-0534	

POSSIBLE SAMPLE HAZARDS/REMARKS

<2000 pCi/g

Special Handling and/or Storage

Preservation	RJN 1/5/02 HCl or H2SO4 to pH <2 Coo										
Type of Container	aGs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)										

Sample No.	Matrix *	Sample Date	Sample Time										
B12XM0	WATER	1/22/02	1856	X									

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R Nielson/R Nielson	1/22/02 0455	Stored in Ref #2C	1/23/02 0455
Removed from Ref 2C 3728	1-23-02 0400	R Thorell	1-23-02 0400
R Thorell ERC	1-23-02 0400		
FEDEX	1-24-02 1:00	Collins	1-24-02 1:00

SPECIAL INSTRUCTIONS

Use B12XL3 for Shipping

SAMPLES STORED IN REF.# 2C AT THE 3728 SHIPPING FACILITY ON 1/23/02 COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/23/02 FOR SHIPMENT.

RT 1-23-02

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

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

BHI-EE-011 (10/99)

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-114
LVL#: 0201L839
SDG/SAF#: H1676/B01-114

W.O.#: 11343-606-001-9999-00
Date Received: 01-24-02

METALS CASE NARRATIVE

1. This narrative covers the analysis of 1 water 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 with the exception of CCV1 for Phosphorous (111.3%). There is no significant impact to the data as the sample result is less than the IDL for Phosphorous.

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

7. The preparation/method blanks for 2 analytes were outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB results for Sodim and Zinc were greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and the sample read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

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

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

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 15 pages.

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

10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

12. 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.

13. 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

02-05-02
Date

gmb/m01-839

LVLI
LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 02011839

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 02/05/02

CLIENT: TNUHANFORD B01-114 H1676

LVL LOT #: 0201L839

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B140B3	Calcium, Total	98.7		UG/L	10.3	1.0
		Cadmium, Total	0.30	u	UG/L	0.30	1.0
		Chromium, Total	0.80	u	UG/L	0.80	1.0
		Iron, Total	73.3		UG/L	15.0	1.0
		Magnesium, Total	21.5		UG/L	9.2	1.0
		Sodium, Total	123		UG/L	5.8	1.0
		Nickel, Total	1.2	u	UG/L	1.2	1.0
		Phosphorus, Total	20.0	u	UG/L	20.0	1.0
		Zinc, Total	4.9		UG/L	0.40	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/05/02

CLIENT: TNUHANFORD B01-114 H1676 LVL LOT #: 0201L839

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	02L0035-MB1	Calcium, Total	27.7	UG/L	10.3	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Chromium, Total	0.80 u	UG/L	0.80	1.0
		Iron, Total	15.0 u	UG/L	15.0	1.0
		Magnesium, Total	17.2	UG/L	9.2	1.0
		Sodium, Total	88.2	UG/L	5.8	1.0
		Nickel, Total	1.2 u	UG/L	1.2	1.0
		Phosphorus, Total	20.0 u	UG/L	20.0	1.0
		Zinc, Total	1.9	UG/L	0.40	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/05/02

CLIENT: TNUHANFORD B01-114 H1676 LVL LOT #: 0201L839

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B140B3	Calcium, Total	26400	98.7	25000	105.2	1.0
		Cadmium, Total	51.1	0.30u	50.0	102.2	1.0
		Chromium, Total	204	0.80u	200	102.0	1.0
		Iron, Total	1090	73.3	1000	101.8	1.0
		Magnesium, Total	25400	21.5	25000	101.4	1.0
		Sodium, Total	23800	123	25000	94.7	1.0
		Nickel, Total	510	1.2 u	500	102.1	1.0
		Phosphorus, Total	5280	20.0 u	5000	105.7	1.0
		Zinc, Total	508	4.9	500	100.7	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/05/02

CLIENT: TNUHANFORD B01-114 H1676 LVL LOT #: 0201L839

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B140B3	Calcium, Total	98.7	92.4	6.6	1.0
		Cadmium, Total	0.30u	0.30u	NC	1.0
		Chromium, Total	0.80u	0.80u	NC	1.0
		Iron, Total	73.3	74.4	1.5	1.0
		Magnesium, Total	21.5	20.7	3.8	1.0
		Sodium, Total	123	189	42.4	1.0
		Nickel, Total	1.2 u	1.2 u	NC	1.0
		Phosphorus, Total	20.0 u	20.0 u	NC	1.0
		Zinc, Total	4.9	6.4	26.5	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 02/05/02

CLIENT: TNUHANFORD B01-114 H1676 LVL LOT #: 0201L839

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	02L0035-LC1	Calcium, LCS	24100	25000	UG/L	96.5
		Cadmium, LCS	245	250	UG/L	98.1
		Chromium, LCS	487	500	UG/L	97.5
		Iron, LCS	4910	5000	UG/L	98.2
		Magnesium, LCS	24600	25000	UG/L	98.3
		Sodium, LCS	23500	25000	UG/L	94.2
		Nickel, LCS	1940	2000	UG/L	97.1
		Phosphorus, LCS	4900	5000	UG/L	98.0
		Zinc, LCS	978	1000	UG/L	97.8

Lionville Laboratory Use Only

0201L839

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLI

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FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-HANFORD B01-114

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: 1-24-02 Date Due: 2-23-02

		A-C	D	E				F	G		H	I	J			
Refrigerator #		1	3					1	3		3	3	3			
#/Type Container	Liquid	3AG	2AG					1AG	1PL		1PL	1PL	1PL			
	Solid															
Volume	Liquid	40	1L					500	500		500	500	250			
	Solid															
Preservatives		HCL	-					H2SO4	HNO3		-	H2SO4	-			
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb			TIC TOC	Metal	CN	TC Anions	NO2 NO3	Alka.			
		Lionville Laboratory Use Only														
		0624X	0625X					TTIC TOCT	MET①		INORG①	INJNL	IALKL			

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	TTIC TOCT	MET①	INORG①	INJNL	IALKL
001	B14083			W	1-23-02	0245	X	X	X	X	X	X	X
002	B13Y29				1-22-02	1700	X						
003	B12XM0					1856	X						

Special Instructions: SAF # B01-114
Run Matrix QC

DATE/REVISIONS:
MET① 1. Cd, Ca, Cr, Fe, Mg, Ni, Na, Zn, P
INORG① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, IPH
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FedEx	[signature]	1-24-02	1300 1000

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7955 8534

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # SEE BELOW
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or (N) pH
5m 1-24-02

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. 2° °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-47	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ
Price Code: 7N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West	SAF No.: B01-114	
Ice Chest No.: ERC 99.067	Field Logbook No.: EL-1562	COA: T20ZP1D722	Method of Shipment: Federal Express
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A020092	Bill of Lading/Air Bill No.: 42357955-0534	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT 1-23-02

Special Handling and/or Storage

Preservation	None	Cool 4C	HCl to pH <2	HCl or H2SO4 to pH <2 Coo	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Coo	HNO3 to pH <2
Type of Container	R	P	P	G	P	P	P	aG	aGs*	P
No. of Container(s)	1	1		1	1	1	1	2	3	6
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	L
SAMPLE ANALYSIS	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B140B3	WATER	1/23/02	0245		X		X	X	X	X	X	X	

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

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	1/23/02 0455	Stored in Ref # 2C	1/23/02 0455
Removed from Ref 2C 3728	1.23.02 0900	RTHoren	1.23.02 0900
RTHoren ERC	1.23.02 0900	FEDEX	
FEDEX	1-24-02 1:00	Carla Hauf	1.24.02 1:00

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040
(2) ICP Metals - 6010A (TAL) (Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc); ICP Metals - 6010A (Add-on) (Phosphorus)
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (Tributyl phosphate)
(4) ~~Gross Alpha, Gross Beta, Gamma Spectroscopy (Cesium-137, Cobalt-60), Gamma Spec - Add-on (Antimony-125, Ruthenium-106), Americium-241, Neptunium-237, Isotopic Plutonium, Strontium-89,90 -- Total Sr, Isotopic Uranium~~ RT 1-23-02

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 1/23/02
Collector not available to relinquish samples on 1/23/02 for shipment.
RT 1.23.02

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

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

BHI-EE-011 (10/99)

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-114-43	Page 1 of 1
Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 7N; Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West		SAF No.: B01-114	Air Quality ☐
Ice Chest No.: ERC 99.067	Field Logbook No.: EL-1562	COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020092		Bill of Lading/Air Bill No.: 42357955-0534	

POSSIBLE SAMPLE HAZARDS/REMARKS
Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT·123·02

Special Handling and/or Storage

Preservation	HCl or H2SO4 to pH <2 Coo	RJN 1/22/02									
Type of Container	aGs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)										

Sample No.	Matrix *	Sample Date	Sample Time										
B13Y29	WATER	1/22/02	1700	X									

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
Removed from R Nielson	1/22/02 0455	Ref # 2C	1/23/02 0455
Relinquished By: Removed from Ref 2C 3728	1·23·02 0400	Received By: R L Thoren	1·23·02 0400
Relinquished By: R Thoren ERC	1·23·02 0400	Received By: FEDEX	Date/Time
Relinquished By: FEDEX	1-24-02 1:00	Received By: Cab Hanf	1-24-02 1:00
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

Sign/Print Names

SPECIAL INSTRUCTIONS

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 1/23/02. Collector not available to relinquish samples on 1/23/02 for shipment.
RT 1·23·02

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-08	Page 1 of 1

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Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 7N — Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-114	Air Quality ☐
Ice Chest No.: ERC 99-0067	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: A020092	Bill of Lading/Air Bill No.: 42387955-0534	

POSSIBLE SAMPLE HAZARDS/REMARKS

<2000 pCi/g

Special Handling and/or Storage

Preservation	RJN 1/5/01 HCl or H2SO4 to pH <2 Coo											
Type of Container	aGs*											
No. of Container(s)	3											
Volume	40mL											
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)											

Sample No.	Matrix *	Sample Date	Sample Time										
B12XM0	WATER	1/22/02	1856	X									

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R Nielson/R Nielson	1/23/02 0455	Stored in Ref #2C	1/23/02 0455
Removed from Ref 2C 3728	1/23/02 0900	R Thorell	1/23/02 0900
R Thorell ERC	1/23/02 0900		
FEDEX	1-24-02 1:00	Collins	1-24-02 1:00

SPECIAL INSTRUCTIONS

USE B12XL3 for Shipping

SAMPLES STORED IN REF.# 2C AT THE 3728 SHIPPING FACILITY ON 1/23/02 COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/23/02 FOR SHIPMENT.

RT 1-23-02

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)

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-114 H1676
LVL#: 0201L839

W.O.#: 11343-606-001-9999-00
Date Received: 01-24-02

INORGANIC NARRATIVE

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

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

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

4. Sample holding times as required by the method and/or contract were met with the exception of those received past hold (see sample chronology summary for analysis times).

5. The method blanks were within the method criteria.

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

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

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

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 package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

02-07-02
Date

njp\i01-839

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 15 pages.

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

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	EPA /600	SW846	OTHER
cidity	✓ 305.1		
✓ Alkalinity ___Bicarbonate ___Carbonate	✓ 310.1		
OD	___ 405.1		___ 5210B (b)
on Chromatography:			
✓ Bromide ✓ Chloride ✓ Fluoride	✓ 300.0	___ 9056	
✓ Nitrate ✓ Nitrite ✓ Phosphate	✓ 300.0	___ 9056	
✓ Sulfate ___Formate ___Acetate ___Oxalate	✓ 300.0	___ 9056	
hloride	___ 325.2	___ 9251	
horine, Residual	___ 330.5 (mod)		
yanide, Amenable to Chlorination	___ 335.2	___ 9010B	
yanide, Total	___ 335.2	___ 9010B ___ 9014	___ ILMO4.0 (e)
yanide, Weak Acid Dissociable		___	___ 412 (a) ___ 4500CN-I (b)
COD	___ 410.4(mod)		___ 5220C (b)
olor	___ 110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	___ 340.2		___ 4500-FC
Hardness, Calcium	___ 215.2		
Hardness, Total	___ 130.2		
Iodide			___ ASTM D19P202 (1)
Surfactant	✓ 425.1		
✓ Nitrate-Nitrite ___Nitrate ___Nitrite	✓ 353.2		
Ammonia	___ 350.3		
Total ✓ Kjeldahl ___ Organic Nitrogen	___ 351.3		
Total ✓ Organic ✓ Inorganic Carbon	___ 415.1	___ 9060	
Oil & Grease	___ 413.1	___ 9070	
✓ pH ____ pH; paper	___ 150.1	✓ 9040B ___ 9041A	
Petroleum Hydrocarbons, Total Recoverable	___ 418.1		
Phenol	___ 420.1 ___ 420.2	___ 9065 ___ 9066	
___Ortho ___Total Phosphate	___ 365.2		___ 4500-P B ___ C
Salinity			___ 210A (a) ___ 2520 (b)
Settleable Solids	___ 160.5		
Sulfide	___ 376.1	___ 9030B/9034 (acid soluble)	
Reactive ___Cyanide ___Sulfide		___ Section 7.3 (___9014___9030B)	
Silica	___ 370.1		
Sulfite	___ 377.1		
Sulfate	___ 375.4	___ 9038	
Specific Conductance	___ 120.1	___ 9050A	
Specific Gravity			___ D5057-90 ___ 213E (a)
Synthetic Precipitation Leach	___ 1312		
Total ___Dissolved ___Suspended ___Solids	160 ___.1 ___.2 ___.3		
Total Organic Halides	___ 450.1	___ 9020B	
Turbidity	___ 180.1		
Volatile Solids:			
___Total ___Dissolved ___Suspended	___ 160.4		

Other: **Method:**

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
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 02/06/02

CLIENT: TNUHANFORD B01-114 H1676 LVL LOT #: 0201L839

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B140B3	Alkalinity	1.0 u	MG/L	1.0	1.0
		Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
		Nitrate Nitrite	0.020u	MG/L	0.020	1.0
		Total Organic Carbon	0.58	MG/L	0.50	1.0
		pH	6.9	PH UNIT	0.01	1.0
		Total Inorganic Carbon	0.50 u	MG/L	0.50	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/06/02

CLIENT: TNUHANFORD B01-114 H1676 LVL LOT #: 0201L839

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	02LAKA05-MB1	Alkalinity	0.50 u	MG/L	0.50	1.0
BLANK10	02LIC009-MB1	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	02LN3B08-MB1	Nitrate Nitrite	0.020u	MG/L	0.020	1.0
BLANK10	02LTC008-MB1	Total Organic Carbon	0.50 u	MG/L	0.50	1.0
BLANK10	02LTCA08-MB1	Total Inorganic Carbon	0.50 u	MG/L	0.50	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 02/06/02

CLIENT: TNUHANFORD B01-114 H1676 LVL LOT #: 0201L839

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B140B3	Chloride by IC	5.4	0.10	5.0	105.8	1.0
		Fluoride by IC	10.7	0.00	10.0	107.3	1.0
		Nitrite by IC	5.12	0.25u	5.00	102.5	1.0
		Nitrate by IC	4.98	0.25u	5.00	99.5	1.0
		Phosphate by IC	5.0	0.25u	5.0	100.6	1.0
		Sulfate by IC	5.1	0.25u	5.0	102.5	1.0
		Nitrate Nitrite	0.52	0.02u	0.50	103.4	1.0
		Total Organic Carbon	6.6	0.58	5.0	120.0	1.0
BLANK10	02LAKA05-MB1	Alkalinity	100	0.50u	100	100.5	1.0
		Alkalinity MSD	101	0.50u	100	101.0	1.0
BLANK10	02LIC009-MB1	Chloride by IC	4.5	0.25u	5.0	90.3	1.0
		Fluoride by IC	10.6	0.50u	10.0	105.6	1.0
		Nitrite by IC	4.87	0.25u	5.00	97.4	1.0
		Nitrate by IC	4.70	0.25u	5.00	94.0	1.0
		Phosphate by IC	5.0	0.25u	5.0	99.6	1.0
		Sulfate by IC	4.6	0.25u	5.0	92.7	1.0
BLANK10	02LN3B08-MB1	Nitrate Nitrite	0.50	0.02u	0.50	100.6	1.0
BLANK10	02LTC008-MB1	Total Organic Carbon	5.4	0.50u	5.0	107.9	1.0
		Total Organic Carbon	5.2	0.50u	5.0	104.7	1.0
BLANK10	02LTCA08-MB1	Total Inorganic Carbon	5.4	0.50u	5.0	107.9	1.0
		Total Inorg. Carbon M	5.2	0.50u	5.0	104.7	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 02/06/02

CLIENT: TNUHANFORD B01-114 H1676 LVL LOT #: 0201L839

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	02LAKA05-MB1	Alkalinity	100.5	101.0	0.50
BLANK10	02LTC008-MB1	Total Organic Carbon	107.9	104.7	3.1
BLANK10	02LTCA08-MB1	Total Inorg. Carbon	107.9	104.7	3.1

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 02/06/02

CLIENT: TNUHANFORD B01-114 H1676 LVL LOT #: 0201L839

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B140B3	Alkalinity	1.0 u	1.0 u	NC	1.0
		Chloride by IC	0.25u	0.25u	NC	1.0
		Fluoride by IC	0.50u	0.50u	NC	1.0
		Nitrite by IC	0.25u	0.25u	NC	1.0
		Nitrate by IC	0.25u	0.25u	NC	1.0
		Phosphate by IC	0.25u	0.25u	NC	1.0
		Sulfate by IC	0.25u	0.25u	NC	1.0
		Nitrate Nitrite	0.02u	0.02u	NC	1.0
		Total Organic Carbon	0.58	0.59	2.4	1.0
		pH	6.9	6.9	0.4	1.0

Lionville Laboratory Use Only

0201L839

Custody Transfer Record/Lab Work Request

Page 1 of 1

LVLF LIONVILLE LABORATORIES INC

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B01-114

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: 1-24-02 Date Due: 2-23-02

		A-C	DE					F	G		H	I	J			
Refrigerator #		1	3					1	3		3	3	3			
#/Type Container	Liquid	3AG	2AG					1AG	1PL		1PL	1PL	1PL			
	Solid															
Volume	Liquid	40	1L					500	500		500	500	250			
	Solid															
Preservatives		HCl	-					H2SO4	HNO3		-	H2SO4	-			
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb			TIC TOC	Metal	CN	TC TOC Anions	NO2 NO3	Alka.			
		Lionville Laboratory Use Only														
		0624X	0625X					ZTIC ZOCT	MET ①		INORG ①	IN3N2	IALKL			

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					ZTIC ZOCT	MET ①		INORG ①	IN3N2	IALKL			
001	B140B3			W	1-23-02	0245	X	X					X	X		X	X	X			
002	B13Y29			⊥	1-22-02	1700	X														
003	B12XM0			⊥	⊥	1856	X														

Special Instructions: SAF # B01-114

Run Matrix QC

DATE/REVISIONS:

MET ① 1. Cd, Ca, Cr, Fe, Mg, Ni, Na, Zn, P

INORG ① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4, IPH

3.

4.

5.

6.

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # See below
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N
JM 1-24-02 pH

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. 2° °C

Relinquished by	Received by	Date	Time
FEDEX	[signature]	1-24-02	1300 ~~1000~~

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

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

NOTES:

4235 7955 8534

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-47	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay; Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 7N; Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West	SAF No.: B01-114	Air Quality ☐
Ice Chest No.: ERC 99.067	Field Logbook No.: EL-1562; COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A020092	Bill of Lading/Air Bill No.: 423357955-0534	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT 1-23-02

Special Handling and/or Storage

Preservation	None	Cool 4C	HCl to pH <2	HCl or H2SO4 to pH <2 Coo	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Coo	HNO3 to pH <2
Type of Container	P	P		G	P	P	P	aG	aGs*	P
No. of Container(s)	1	1		1	1	1	1	2	3	6
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	L
SAMPLE ANALYSIS	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B140B3	WATER	1/23/02	0245		X		X	X	X	X	X	X

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

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	1/23/02 0455	Stored in Ref # 2C	1/23/02 0455
Removed from Ref 2C 3728	1.23.02 0900	RThoren	1.23.02 0900
RThoren ERC	1.23.02 0900	FEDEX	
FEDEX	1-24-02 1:00	Carl Hanf	1-24-02 1:00

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; pH (Water) - 9040
(2) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc}; ICP Metals - 6010A (Add-on) {Phosphorus}
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(4) ~~Gross Alpha, Gross Beta, Gamma Spectroscopy {Cesium-137, Cobalt-60}, Gamma Spec Add-on {Antimony-125, Ruthenium-106}, Americium-241, Neptunium-237, Isotopic Plutonium, Strontium-89,90 -- Total Sr, Isotopic Uranium~~ RT 1.23.02

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 1/23/02
Collector not available to relinquish samples on 1/23/02 for shipment.
RT 1.23.02

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-43	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ
Price Code: 7N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West	SAF No.: B01-114	
Ice Chest No.: ERC 99.067	Field Logbook No.: EL-1562	COA: T20ZP1D722	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A020092	Bill of Lading/Air Bill No.: 42357955-0534	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples. RT 1.23.02

Special Handling and/or Storage

Preservation	HCl or ~~H2SO4~~ to pH <2 Coo RJN 1/22/02										
Type of Container	aGs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)										
Sample No.	Matrix *	Sample Date	Sample Time								
B13Y29	WATER	1/22/02	1700	X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R Nielson / R Nielson	1/23/02 0455	Ref # 2C	1/23/02 0455
Removed from Ref 2C 3728	1.23.02 0400	R Thoren	1.23.02 0400
R Thoren ERC	1.23.02 0400	FEDEX	
FEDEX	1-24-02 1:00	Carl Henry	1-24-02 1:00

SPECIAL INSTRUCTIONS

Samples stored in Ref.# 2C at the 3728 Shipping Facility on 1/23/02. Collector not available to relinquish samples on 1/23/02 for shipment.
RT 1.23.02

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

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

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-08	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 7N — Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-114	Air Quality ☐
Ice Chest No.: ERC 99-0067	Field Logbook No.: EL-1562 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/ECRA	Offsite Property No.: A020092	Bill of Lading/Air Bill No.: 4238795 5-0534	

POSSIBLE SAMPLE HAZARDS/REMARKS

<2000 pCi/g

Special Handling and/or Storage

Preservation	RJN 1/15/02 HCl or ~~H2SO4~~ to pH <2 Coo										
Type of Container	aGs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)										

Sample No.	Matrix *	Sample Date	Sample Time									
B12XM0	WATER	1/22/02	1856	X								

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R Nielson/R Nielson	1/22/02 0455	Stored in REF #2C	1/23/02 0455
Removed from REF 2C 3728	1-23-02 0400	R T Thorne	1-23-02 0400
R T Thorne ERC	1-23-02 0400		
FEDEX	1-24-02 1:00	[illegible]	1-24-02 1:00

SPECIAL INSTRUCTIONS

USE B12XL3 for Shipping

SAMPLES STORED IN REF.# 2C AT THE 3728 SHIPPING FACILITY ON 1/23/02 COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 1/23/02 FOR SHIPMENT.

RT 1-23-02

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 1-24-02 1300

SDG#: 02010839

Work Order Number: _____ SAF# B01-114

Shipping Container ID: ERC 99-067 Chain of Custody # B01-114-47

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 2°
5. Vermiculite/packing materials is Wet [ ] Dry [✓]
6. Number of samples in shipping container: 15
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

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

Sample Custodian/Laboratory: Carl Hemp Date: 1-24-02

Telephoned to: _____ On _____ By _____