H1173

0055062

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1173 was composed of three water samples designated under SAF No. B99-037 with a Project Designation of: ERDF Leachate Delisting Analysis.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

The RPD difference between sample B110B3 and its sample duplicate for gross alpha analysis was 86%, greater than the 3σ limit of 65%. No other problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

The LCS percent recovery (81%) was below the 3σ limits (86 to 114%), but within the laboratory protocol limits (80 to 120%). The MS percent recovery (83%) was also below the 3σ limits (86 to 114%), but within the laboratory protocol limits (80 to 120%). No other problems were encountered during the course of the analyses.

2.3 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

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2.4 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.5 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

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

1/20/01
Date

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1173

SAMPLE SUMMARY

SDG 7588
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1173

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B110B2	ERDF	WATER		R012038-01	B99-037	B99-037-11	12/04/00 09:45
B110B3	ERDF	WATER		R012038-02	B99-037	B99-037-11	12/04/00 10:15
B11266	ERDF	WATER		R012038-03	B99-037	B99-037-11	12/04/00 10:15
Method Blank		WATER		R012038-05	B99-037		
Lab Control Sample		WATER		R012038-04	B99-037		
Duplicate (R012038-02)	ERDF	WATER		R012038-06	B99-037		12/04/00 10:15
Duplicate (R012038-03)	ERDF	WATER		R012038-07	B99-037		12/04/00 10:15
Spike (R012038-03)	ERDF	WATER		R012038-08	B99-037		12/04/00 10:15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 01/20/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1173

QC SUMMARY

SDG 7588
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1173

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
7588	B99-037-11	B110B2	WATER				12/06/00	2	R012038-01	7588-001
		B110B3	WATER				12/06/00	2	R012038-02	7588-002
		B11266	WATER				12/06/00	2	R012038-03	7588-003
		Method Blank	WATER						R012038-05	7588-005
		Lab Control Sample	WATER						R012038-04	7588-004
		Duplicate (R012038-02)	WATER				12/06/00	2	R012038-06	7588-006
		Duplicate (R012038-03)	WATER				12/06/00	2	R012038-07	7588-007
		Spike (R012038-03)	WATER				12/06/00	2	R012038-08	7588-008

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 01/20/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1173

PREP BATCH SUMMARY

SDG 7588
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1173

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Beta Counting												
TC	WATER	Technetium 99 in Water	6962-189	10.0	2			1	1	1/1		
Gas Proportional Counting												
93A	WATER	Gross Alpha in Water	6962-189	20.0	2			1	1	1/1		
93B	WATER	Gross Beta in Water	6962-189	15.0	2			1	1	1/1		
Gamma Scan												
GAM	WATER	Gamma Emitters	6962-189	15.0	2			1	1	1/1		
Kinetic Phosphorimetry												
U_T	WATER	Uranium, Total in Water	6962-189	9.0	2			1	1	1/1		
Liquid Scintillation Counting												
C	WATER	Carbon 14 in Water	6962-189	10.0	2			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
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 01/20/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1173

WORK SUMMARY

SDG 7588
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1173

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B110B2			R012038-01	7588-001	93A/93		01/17/01	01/20/01	MCM	Gross Alpha in Water
ERDF		WATER	12/04/00	7588-001	93B/93		01/17/01	01/20/01	MCM	Gross Beta in Water
B99-037-11	B99-037		12/06/00	7588-001	C		12/29/00	01/20/01	MCM	Carbon 14 in Water
				7588-001	GAM		12/20/00	01/20/01	MCM	Gamma Emitters
				7588-001	TC		01/04/01	01/20/01	MCM	Technetium 99 in Water
				7588-001	U_T		01/16/01	01/20/01	MCM	Uranium, Total in Water
B110B3			R012038-02	7588-002	93A/93		01/19/01	01/20/01	MCM	Gross Alpha in Water
ERDF		WATER	12/04/00	7588-002	93B/93		01/19/01	01/20/01	MCM	Gross Beta in Water
B99-037-11	B99-037		12/06/00	7588-002	GAM		12/20/00	01/20/01	MCM	Gamma Emitters
B11266			R012038-03	7588-003	C		12/29/00	01/20/01	MCM	Carbon 14 in Water
ERDF		WATER	12/04/00	7588-003	TC		01/02/01	01/20/01	MCM	Technetium 99 in Water
B99-037-11	B99-037		12/06/00	7588-003	U_T		01/16/01	01/20/01	MCM	Uranium, Total in Water
Method Blank			R012038-05	7588-005	93A/93		01/19/01	01/20/01	MCM	Gross Alpha in Water
		WATER		7588-005	93B/93		01/19/01	01/20/01	MCM	Gross Beta in Water
	B99-037			7588-005	C		12/29/00	01/20/01	MCM	Carbon 14 in Water
				7588-005	GAM		12/20/00	01/20/01	MCM	Gamma Emitters
				7588-005	TC		01/02/01	01/20/01	MCM	Technetium 99 in Water
				7588-005	U_T		01/16/01	01/20/01	MCM	Uranium, Total in Water
Lab Control Sample			R012038-04	7588-004	93A/93		01/19/01	01/20/01	MCM	Gross Alpha in Water
		WATER		7588-004	93B/93		01/19/01	01/20/01	MCM	Gross Beta in Water
	B99-037			7588-004	C		12/29/00	01/20/01	MCM	Carbon 14 in Water
				7588-004	GAM		12/20/00	01/20/01	MCM	Gamma Emitters
				7588-004	TC		01/09/01	01/20/01	MCM	Technetium 99 in Water
				7588-004	U_T		01/16/01	01/20/01	MCM	Uranium, Total in Water
Duplicate (R012038-02)			R012038-06	7588-006	93A/93		01/19/01	01/20/01	MCM	Gross Alpha in Water
ERDF		WATER	12/04/00	7588-006	93B/93		01/19/01	01/20/01	MCM	Gross Beta in Water
	B99-037		12/06/00	7588-006	GAM		12/21/00	01/20/01	MCM	Gamma Emitters
Duplicate (R012038-03)			R012038-07	7588-007	C		12/29/00	01/20/01	MCM	Carbon 14 in Water
ERDF		WATER	12/04/00	7588-007	TC		01/05/01	01/20/01	MCM	Technetium 99 in Water
	B99-037		12/06/00	7588-007	U_T		01/16/01	01/20/01	MCM	Uranium, Total in Water

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/20/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1173

SDG 7588
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1173

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Spike (R012038-03)			R012038-08	7588-008	C		12/29/00	01/20/01	MCM	Carbon 14 in Water
ERDF		WATER	12/04/00							
	B99-037		12/06/00							

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
93A/93	B99-037	Gross Alpha in Water	900.0_ALPHABETA_GPC	2			1	1	1		5
93B/93	B99-037	Gross Beta in Water	900.0_ALPHABETA_GPC	2			1	1	1		5
C	B99-037	Carbon 14 in Water	C14_CHEM_LSC	2			1	1	1	1	6
GAM	B99-037	Gamma Emitters	GAMMA_GS	2			1	1	1		5
TC	B99-037	Technetium 99 in Water	TC99_TR_SEP_LSC	2			1	1	1		5
U_T	B99-037	Uranium, Total in Water	UTOT_KPA	2			1	1	1		5
TOTALS				12			6	6	6	1	31

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/20/01

TMA / RICHMOND
SAMPLE DELIVERY GROUP H1173

R012038-05 **Method Blank**

METHOD BLANK

SDG	7588	Client/Case no	Hanford	SDG_H1173	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R012038-05	Client sample id	Method Blank		
Dept sample id	7588-005	Material/Matrix		WATER	
		SAF No	B99-037		

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.294	0.58	1.2	3.0	U	93A
Gross Beta	12587-47-2	-0.261	1.0	1.8	4.0	U	93B
Carbon 14	14762-75-5	-10.2	27	46	200	U	C
Technetium 99	14133-76-7	-2.83	4.0	11	15	U	TC
Total Uranium (ug/L)	7440-61-1	0	0.007	0.016	0.10	U	U_T
Potassium 40	13966-00-2	U		140		U	GAM
Cobalt 60	10198-40-0	U		17	25	U	GAM
Cesium 137	10045-97-3	U		13	15	U	GAM
Radium 226	13982-63-3	U		23		U	GAM
Radium 228	15262-20-1	U		51		U	GAM
Europium 152	14683-23-9	U		26	50	U	GAM
Europium 154	15585-10-1	U		42	50	U	GAM
Europium 155	14391-16-3	U		17	50	U	GAM
Thorium 228	14274-82-9	U		12		U	GAM
Thorium 232	TH-232	U		51		U	GAM
Uranium 235	15117-96-1	U		35		U	GAM
Uranium 238	U-238	U		1600		U	GAM
Americium 241	14596-10-2	U		11		U	GAM

ERDF Leachate Delisting Analysis

QC-BLANK 37010

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/20/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1173

R012038-04

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7588
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1173
Case no TRC-SBB-207925

Lab sample id R012038-04
Dept sample id 7588-004

Client sample id Lab Control Sample
Material/Matrix WATER
SAF No B99-037

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	67.6	5.2	1.3	3.0		93A	71.7	2.9	94	69-131	70-130
Gross Beta	76.8	3.8	2.4	4.0		93B	80.7	3.2	95	77-123	70-130
Carbon 14	17300	180	62	200		C	21300	850	81	86-114	80-120
Technetium 99	2630	88	9.2	15		TC	2620	100	100	83-117	80-120
Total Uranium (ug/L)	84.5	9.6	0.16	0.10		U_T	82.5	3.3	102	77-123	80-120
Cobalt 60	442	43	22	25		GAM	468	19	94	74-126	80-120
Cesium 137	510	41	35	15		GAM	554	22	92	76-124	80-120

ERDF Leachate Delisting Analysis

QC-LCS 37009

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/20/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1173

R012038-06 B110B3

DUPLICATE

SDG	7588	Client/Case no	Hanford SDG H1173
Contact	Melissa C. Mannion	Case no	TRC-SBB-207925
DUPLICATE		ORIGINAL	
Lab sample id	R012038-06	Lab sample id	R012038-02
Dept sample id	7588-006	Dept sample id	7588-002
		Received	12/06/00
Client sample id	B110B3		
Location/Matrix	ERDF WATER		
Collected	12/04/00 10:15		
Custody/SAF No	B99-037-11 B99-037		

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	24.8	7.5	4.6	3.0		93A	62.2	11	4.8		86	65
Gross Beta	268	7.0	2.2	4.0		93B	281	7.2	2.1		5	32
Potassium 40	U		290		U	GAM	U		440	U	-	
Cobalt 60	U		20	25	U	GAM	U		16	U	-	
Cesium 137	U		17	15	U	GAM	U		15	U	-	
Radium 226	U		28		U	GAM	U		34	U	-	
Radium 228	U		71		U	GAM	U		71	U	-	
Europium 152	U		29	50	U	GAM	U		36	U	-	
Europium 154	U		47	50	U	GAM	U		44	U	-	
Europium 155	U		21	50	U	GAM	U		33	U	-	
Thorium 228	U		16		U	GAM	U		21	U	-	
Thorium 232	U		71		U	GAM	U		71	U	-	
Uranium 235	U		59		U	GAM	U		49	U	-	
Uranium 238	U		2200		U	GAM	U		1700	U	-	
Americium 241	U		14		U	GAM	U		16	U	-	

ERDF Leachate Delisting Analysis

QC-DUP#2 37011

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/20/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1173

R012038-07 B11266

DUPLICATE

SDG	7588	Client/Case no	Hanford SDG H1173
Contact	Melissa C. Mannion	Case no	TRC-SBB-207925
DUPLICATE		ORIGINAL	
Lab sample id	R012038-07	Lab sample id	R012038-03
Dept sample id	7588-007	Dept sample id	7588-003
		Received	12/06/00
Client sample id	B11266		
Location/Matrix	ERDF WATER		
Collected	12/04/00 10:15		
Custody/SAF No	B99-037-11 B99-037		

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 TOT	PROT LIMIT
Carbon 14	4.29	28	46	200	U	C	51.1	32	51	J	169	232	
Technetium 99	791	38	12	15		TC	770	27	11		3	23	
Total Uranium (ug/L)	279	33	1.6	0.10		U_T	288	35	1.6		3	32	

ERDF Leachate Delisting Analysis

QC-DUP#3 37012

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/20/01

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SAMPLE DELIVERY GROUP H1173

R012038-08

B11266

MATRIX SPIKE

SDG	7588	Client/Case no	Hanford SDG H1173
Contact	Melissa C. Mannion	Case no	TRC-SBB-207925
MATRIX SPIKE			
Lab sample id	R012038-08	Client sample id	B11266
Dept sample id	7588-008	Location/Matrix	ERDF WATER
ORIGINAL			
Lab sample id	R012038-03	Collected	12/04/00 10:15
Dept sample id	7588-003	Custody/SAF No	B99-037-11 B99-037
Received	12/06/00		

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
Carbon 14	53000	540	140	200	X	C	63800	2600	51.1	32	83	86-114	60-140

ERDF Leachate Delisting Analysis

QC-MS#3 37013

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	01/20/01

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1173

R012038-01 **B110B2**

DATA SHEET

SDG	7588	Client/Case no	Hanford	SDG H1173	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R012038-01	Client sample id	B110B2		
Dept sample id	7588-001	Location/Matrix	ERDF	WATER	
Received	12/06/00	Collected	12/04/00 09:45		
		Custody/SAF No	B99-037-11	B99-037	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	47.9	9.2	3.4	3.0		93A
Gross Beta	12587-47-2	229	6.5	2.1	4.0		93B
Carbon 14	14762-75-5	-6.76	27	45	200	U	C
Technetium 99	14133-76-7	675	31	11	15		TC
Total Uranium (ug/L)	7440-61-1	224	27	1.6	0.10		U_T
Potassium 40	13966-00-2	U		250		U	GAM
Cobalt 60	10198-40-0	U		12	25	U	GAM
Cesium 137	10045-97-3	U		13	15	U	GAM
Radium 226	13982-63-3	U		23		U	GAM
Radium 228	15262-20-1	U		51		U	GAM
Europium 152	14683-23-9	U		33	50	U	GAM
Europium 154	15585-10-1	U		43	50	U	GAM
Europium 155	14391-16-3	U		46	50	U	GAM
Thorium 228	14274-82-9	U		19		U	GAM
Thorium 232	TH-232	U		51		U	GAM
Uranium 235	15117-96-1	U		51		U	GAM
Uranium 238	U-238	U		1400		U	GAM
Americium 241	14596-10-2	U		94		U	GAM

ERDF Leachate Delisting Analysis

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/20/01

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1173

R012038-02 B110B3

DATA SHEET

SDG	7588	Client/Case no	Hanford	SDG_H1173	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R012038-02	Client sample id	B110B3		
Dept sample id	7588-002	Location/Matrix	ERDF	WATER	
Received	12/06/00	Collected	12/04/00 10:15		
		Custody/SAF No	B99-037-11	B99-037	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	62.2	11	4.8	3.0		93A
Gross Beta	12587-47-2	281	7.2	2.1	4.0		93B
Potassium 40	13966-00-2	U		440		U	GAM
Cobalt 60	10198-40-0	U		16	25	U	GAM
Cesium 137	10045-97-3	U		15	15	U	GAM
Radium 226	13982-63-3	U		34		U	GAM
Radium 228	15262-20-1	U		71		U	GAM
Europium 152	14683-23-9	U		36	50	U	GAM
Europium 154	15585-10-1	U		44	50	U	GAM
Europium 155	14391-16-3	U		33	50	U	GAM
Thorium 228	14274-82-9	U		21		U	GAM
Thorium 232	TH-232	U		71		U	GAM
Uranium 235	15117-96-1	U		49		U	GAM
Uranium 238	U-238	U		1700		U	GAM
Americium 241	14596-10-2	U		16		U	GAM

ERDF Leachate Delisting Analysis

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/20/01

TMA / RICHMOND
SAMPLE DELIVERY GROUP H1173

R012038-03 B11266

DATA SHEET

SDG	7588	Client/Case no	Hanford	SDG H1173	
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925		
Lab sample id	R012038-03	Client sample id	B11266		
Dept sample id	7588-003	Location/Matrix	ERDF	WATER	
Received	12/06/00	Collected	12/04/00 10:15		
		Custody/SAF No	B99-037-11	B99-037	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Carbon 14	14762-75-5	51.1	32	51	200	J	C
Technetium 99	14133-76-7	770	27	11	15		TC
Total Uranium (ug/L)	7440-61-1	288	35	1.6	0.10		U_T

ERDF Leachate Delisting Analysis

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/20/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1173

Test	TC
Matrix	WATER
SDG	7588
Contact	Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN WATER

BETA COUNTING

Client	Hanford
Contract	TRC-SBB-207925
Contract	SDG H1173

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99
Preparation batch 6962-189					
B110B2	R012038-01			7588-001	675
B11266	R012038-03			7588-003	770
BLK (QC ID=37010)	R012038-05			7588-005	U
LCS (QC ID=37009)	R012038-04			7588-004	ok
Duplicate (R012038-03)	R012038-07			7588-007	ok
Nominal values and limits from method				RDLs (pCi/L)	15
ERDF Leachate Delisting Analysis					

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 6962-189	2σ prep error 10.0 %			Reference Lab Notebook 6962 pg. 189												
B110B2	R012038-01			11	0.0500			92		50			31	12/28/00	01/04	GRB-230
B11266	R012038-03			11	0.0500			92		50			29	12/28/00	01/02	GRB-232
BLK (QC ID=37010)	R012038-05			11	0.0500			91		50				12/28/00	01/02	GRB-203
LCS (QC ID=37009)	R012038-04			9.2	0.0500			75		108				12/28/00	01/09	GRB-207
Duplicate (R012038-03) (QC ID=37012)	R012038-07			12	0.0500			85		50			32	12/28/00	01/05	GRB-232
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 0
	CP-002	Q.C. Preparation, rev 2
	CP-003	Tracing, rev 2
	CP-541	Technetium-99 Purification (Water) by Extraction Chromatography, rev 0
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD FOR 5 SAMPLES				
MDA	11	±	2.0
YIELD	87	±	15

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/20/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1173

Test 93A	Matrix WATER
SDG 7588	
Contact Melissa C. Mannion	

METHOD SUMMARY

GROSS ALPHA IN WATER

GAS PROPORTIONAL COUNTING

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1173	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha
Preparation batch 6962-189					
B110B2	R012038-01	93		7588-001	47.9
B110B3	R012038-02	93		7588-002	62.2
BLK (QC ID=37010)	R012038-05	93		7588-005	U
LCS (QC ID=37009)	R012038-04	93		7588-004	ok
Duplicate (R012038-02)	R012038-06	93		7588-006	OUT
Nominal values and limits from method				RDLs (pCi/L)	3.0
ERDF Leachate Delisting Analysis					

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 6962-189	2σ prep error 20.0 % Reference Lab Notebook 6962 pg. 189															
B110B2	R012038-01	93		3.4	0.300			250		100			44	12/23/00	01/17	GRB-105
B110B3	R012038-02	93		4.8	0.300			259		100			46	12/23/00	01/19	GRB-105
BLK (QC ID=37010)	R012038-05	93		1.2	0.300			27		100				12/23/00	01/19	GRB-107
LCS (QC ID=37009)	R012038-04	93		1.3	0.300			26		100				12/23/00	01/19	GRB-106
Duplicate (R012038-02) (QC ID=37011)	R012038-06	93		4.6	0.300			249		100			46	12/23/00	01/19	GRB-107
Nominal values and limits from method				3.0	0.300			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-060	Soil Preparation, rev 2
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 3
	CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 2

AVERAGES ± 2 SD	MDA	3.1	±	3.5
FOR 5 SAMPLES	RESIDUE	162	±	248

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/20/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1173

Test 93B Matrix WATER
SDG 7588
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1173

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta
Preparation batch 6962-189					
B110B2	R012038-01	93		7588-001	229
B110B3	R012038-02	93		7588-002	281
BLK (QC ID=37010)	R012038-05	93		7588-005	U
LCS (QC ID=37009)	R012038-04	93		7588-004	ok
Duplicate (R012038-02)	R012038-06	93		7588-006	ok
Nominal values and limits from method				RDLs (pCi/L)	4.0

ERDF Leachate Delisting Analysis

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 6962-189	2σ prep error 15.0 % Reference Lab Notebook 6962 pg. 189															
B110B2	R012038-01	93		2.1	0.300			250		100			44	12/23/00	01/17	GRB-105
B110B3	R012038-02	93		2.1	0.300			259		100			46	12/23/00	01/19	GRB-105
BLK (QC ID=37010)	R012038-05	93		1.8	0.300			27		100				12/23/00	01/19	GRB-107
LCS (QC ID=37009)	R012038-04	93		2.4	0.300			26		100				12/23/00	01/19	GRB-106
Duplicate (R012038-02) (QC ID=37011)	R012038-06	93		2.2	0.300			249		100			46	12/23/00	01/19	GRB-107
Nominal values and limits from method				4.0	0.300			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-060	Soil Preparation, rev 2
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 3
	CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 2

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	2.1	±	0.43
	RESIDUE	162	±	248

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/20/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1173

Test	GAM
Matrix	WATER
SDG	7588
Contact	Melissa C. Mannion

METHOD SUMMARY

GAMMA EMITTERS

GAMMA SCAN

Client	Hanford
Contract	TRC-SBB-207925
Contract	SDG H1173

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6962-189								
B110B2	R012038-01			7588-001	U		U	
B110B3	R012038-02			7588-002	U		U	
BLK (QC ID=37010)	R012038-05			7588-005	U		U	
LCS (QC ID=37009)	R012038-04			7588-004	ok		ok	
Duplicate (R012038-02)	R012038-06			7588-006	-	U	-	U
Nominal values and limits from method				RDLs (pCi/L)	25		15	
ERDF Leachate Delisting Analysis								

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 6962-189	2σ prep error 15.0 %				Reference Lab Notebook 6962 pg. 189											
B110B2	R012038-01			13	0.500					337			16	12/19/00	12/20	MB,05,00
B110B3	R012038-02			15	0.500					337			16	12/19/00	12/20	MB,07,00
BLK (QC ID=37010)	R012038-05			13	0.500					511				12/19/00	12/20	01,01,00
LCS (QC ID=37009)	R012038-04			35	0.500					335				12/19/00	12/20	01,03,00
Duplicate (R012038-02) (QC ID=37011)	R012038-06			17	0.500					313			17	12/19/00	12/21	01,01,00
Nominal values and limits from method				15	0.500					100			180			

PROCEDURES	REFERENCE	GAMMA_GS
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 2

AVERAGES ± 2 SD	MDA	19	± 19
FOR 5 SAMPLES	YIELD		±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/20/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1173

Test U T Matrix WATER
SDG 7588
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN WATER
KINETIC PHOSPHORIMETRY

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1173

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium (ug/L)
Preparation batch 6962-189					
B110B2	R012038-01			7588-001	224
B11266	R012038-03			7588-003	288
BLK (QC ID=37010)	R012038-05			7588-005	U
LCS (QC ID=37009)	R012038-04			7588-004	ok
Duplicate (R012038-03)	R012038-07			7588-007	ok
Nominal values and limits from method				RDLs (ug/L)	0.10
ERDF Leachate Delisting Analysis					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6962-189	2σ prep error 9.0 %				Reference Lab Notebook 6962 pg. 189											
B110B2	R012038-01			1.6	0.0200								43	01/16/01	01/16	KPA-001
B11266	R012038-03			1.6	0.0200								43	01/16/01	01/16	KPA-001
BLK (QC ID=37010)	R012038-05			0.016	0.0200									01/16/01	01/16	KPA-001
LCS (QC ID=37009)	R012038-04			0.16	0.0200									01/16/01	01/16	KPA-001
Duplicate (R012038-03) (QC ID=37012)	R012038-07			1.6	0.0200								43	01/16/01	01/16	KPA-001
Nominal values and limits from method				0.10	0.0200								180			

PROCEDURES	REFERENCE	UTOT_KPA
	CP-040	Environmental Water Dissolution, rev 3
	CP-044	Sample Preparation for Total Uranium by Kinetic Phosphorimetry, rev 2
	CP-928	Total Uranium by Kinetic Phosphorimetry, rev 2

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 1.0 ± 1.7
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/20/01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1173

Test C Matrix WATER
SDG 7588
Contact Melissa C. Mannion

METHOD SUMMARY

CARBON 14 IN WATER
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1173

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 6962-189						
B110B2	R012038-01			7588-001	U	
B11266	R012038-03			7588-003	51.1	J
BLK (QC ID=37010)	R012038-05			7588-005	U	
LCS (QC ID=37009)	R012038-04			7588-004	LOW	
Duplicate (R012038-03)	R012038-07			7588-007	ok	U
Spike (R012038-03)	R012038-08			7588-008	LOW	X

Nominal values and limits from method RDLs (pCi/L) 200
ERDF Leachate Delisting Analysis

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 6962-189	2σ prep error 10.0 %				Reference Lab Notebook 6962 pg. 189											
B110B2	R012038-01			45	0.0300			100		100			25	12/28/00	12/29	LSC-004
B11266	R012038-03			51	0.0300			100		100			25	12/28/00	12/29	LSC-004
BLK (QC ID=37010)	R012038-05			46	0.0300			100		100				12/28/00	12/29	LSC-004
LCS (QC ID=37009)	R012038-04			62	0.0300			100		51				12/28/00	12/29	LSC-004
Duplicate (R012038-03) (QC ID=37012)	R012038-07			46	0.0300			100		100			25	12/28/00	12/29	LSC-004
Spike (R012038-03) (QC ID=37013)	R012038-08			140	0.0200			100		26			25	12/28/00	12/29	LSC-004
Nominal values and limits from method				200	0.0300					50			180			

PROCEDURES REFERENCE C14_CHEM_LSC
CP-241 Carbon-14 in Aqueous Samples, rev 2

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 65 ± 75
YIELD 100 ± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/20/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-11	Page ~~3 of 6~~ 2 OF 3 RT 12.4

Collector: Fahlberg/Johansen	Company Contact: F Roeck; Telephone No.: 372-9086	Project Coordinator: WEISS, RL	Price Code: 7N; Data Turnaround: 45 Days
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF H1173 (7588)	SAF No.: B99-037	Air Quality ☐
Ice Chest No.: ERC 99-065 (1of1)	Field Logbook No.: EL 1517-1; COA: RERDF22560		Method of Shipment: Fed EX
Shipped To: TMA/~~REGRA~~ RT 12.4.00	Offsite Property No.: A010015		Bill of Lading/Air Bill No.: 42357953-0990

POSSIBLE SAMPLE HAZARDS/REMARKS: NONE

Special Handling and/or Storage

Preservation	HNO3 to pH <2	ZnAc+NaOH to pH >9 Cool	HCl to pH <2	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C
Type of Container	P	P Delete	P	P	P	P	aG	aG	aG	aG
No. of Container(s)	1	RT 12.4.00	1	1	Delete RT 12.4.00	1	2	2	2	2
Volume	500mL	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL
SAMPLE ANALYSIS	Total Uranium	Sulfides - 9030	Technetium-99	See item (1) in Special Instructions.	Total Cyanide - 9010	Carbon-14	See item (2) in Special Instructions.	~~Chloro-Herbicides - EPA8151~~ Delete RT 12.4.00	Pest/PCBs - 8081	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
~~B110B1~~ RT 12.14.00	WATER	12.4.00	0900									
B110B2	WATER	12.4.00	0945	X	MM 12/7/00	X	X		X			
B110B3	WATER	12.4.00	1015				X					
~~B11265~~	~~WATER~~	~~12.4.00~~	~~0945~~	~~X~~		~~X~~			~~X~~	→ NOT RECEIVED		
B11266	WATER	12.4.00	1015	X		X			X			

MM 12/7/00

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R Fahlberg / R Fahlberg	1130 12.4.00	R. Thoren	1130 12.4.00
R. Thoren	1300 12.4.00	~~Received By~~ Stored in Ref 2B 3728	1300 12.4.00
~~Relinquished By~~ Removed from Ref 2B 3728	0900 12.5.00	R. Thoren	0900 12.5.00
R. Thoren	0900 12.5.00	~~Received By~~ FED EX	12-05-00
FED EXPRESS	12-06-00	E. Segura	12-06-00 10:00 AM
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy(Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

~~(2) 8310 SVOA HPLC (Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz[a,h]anthracene)~~

~~(3) Semi-VOA - 8270A (App IX); Semi-VOA - 8270A (App IX Add-On) (1,2-Diphenylhydrazine, 1,4-Dinotrobenzene, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene, 2-Cyclohexyl-4,6-dinitrophenol).~~ RT 12.4.00

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12.4.00

Matrix *: S=Soil; SE=Sediment; SO=Solid; SL=Sludge; W = Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; Wt=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

B99-037-11 | Page 1 of ~~6~~ 3 RT 12

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS, RL
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF H1173 (7588)		SAF No.: B99-037
Ice Chest No.: ERC 99-065 (1of1)	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: TMA/~~RECRA~~ RR 12.4.00	Offsite Property No.: A#0015		Bill of Lading/Air Bill No.: 4235 7453 - 0990

Price Code: 7N | Data Turnaround: 45 Days | Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS: NONE

Special Handling and/or Storage

Preservation	None	HCl to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	Cool 4C	H2SO4 to pH <2 Cool 4C	~~HNO3 to pH <2~~
Type of Container	P	aG	aG	aG	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	120mL	250mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL
SAMPLE ANALYSIS	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions.	TDS - 160.1	TSS - 160.2	Ammonia - 350.3	See item (2) in Special Instructions.

Deleted RT 12.4.00

Sample No.	Matrix *	Sample Date	Sample Time									
~~B110B1~~ 12.4.00	~~WATER~~	12.4.00	0700									
B110B2	~~WATER~~	12.4.00	0945	RT 12.4.00			NO SAMPLE					
B110B3	~~WATER~~	12.4.00	1015									
B11265	~~WATER~~	12.4.00	0945									
B11266	~~WATER~~	12.4.00	1015									

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R Fahlberg / R Fahlberg	1130 12.4.00	R. Thorer	1130 12.4.00
R. Thorer	1300 12.4.00	Stored in 2B 3728	1300 12.4.00
~~Relinquished By~~ Removed from 2B 3728	0900 12.5.00	R. Thorer	0900 12.5.00
R. Thorer	0900 12.5.00	FED EX	12-05-00
FED-EXPRESS	10 Am 12-06-00	E. Segura	10 Am 12-06-00

RT 12.5.00

SPECIAL INSTRUCTIONS

~~(1) IC Anions - 9056 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)~~
~~(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Silicon, Thallium, Tin)~~

RT 12.4.00

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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	B99-037-11	Page ~~5 of 6~~ 3 of 3 RT 12.4.00

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS, RL
Price Code: 7N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF H1173 (7588)	SAF No.: B99-037	
Ice Chest No.: ERC99-065 (1 of 1)	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: AH0005	Bill of Lading/Air Bill No.: 4235 7953-0990	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	HCl Cool 4C					
Type of Container	aG	P	aGs*	aGs*	aGs*					
No. of Container(s)	2	2	3	3	3					
Volume	~~1000mL~~ Delete RT 12.4.00	1000mL	40mL	40mL	~~40mL~~ Delete RT 12.4.00					
SAMPLE ANALYSIS	~~oil & Grease 1664~~ RT 12.4.00	Gross Alpha; Gross Beta	~~Alcohols, Glycols, & Ketones - 8015~~ RT 12.1.00	Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Methanol)	~~See item (1) in Special Instructions.~~					

Sample No.	Matrix *	Sample Date	Sample Time									
~~B110B1~~ 12.04.00 RT	~~WATER~~	~~12-4-00~~	0700									
B110B2 ✓	WATER ✓	12.4.00 ✓	0945		X ✓							
B110B3 ✓	WATER	12.4.00	1015		X ✓							
~~B11265~~	~~WATER~~	~~12-4-00~~	~~0945~~	RT 12.4.00								
~~B11266~~	~~WATER~~	~~12.4.00~~	~~1015~~									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Fahlberg / R. Fahlberg 12.4.00	Date/Time: 1130	Received By: R Thoren R Thoren 12.04.00	Date/Time: 1130
Relinquished By: R Thoren R Thoren 12.4.00	Date/Time: 1300	Received By: Stored in Ref 2B 3728 RT 12.4.00	Date/Time: 1300 12.4.00
Relinquished By: Removed from Ref 2B 3728 12.5.00	Date/Time: 0400	Received By: R. Thoren R Thoren	Date/Time: 0400 12.5.00
Relinquished By: R Thoren R Thoren 12.5.00	Date/Time: 0400	Received By: FED EX	Date/Time: 12-05-00
Relinquished By: FED-EXPRESS	Date/Time: 10 AM 12-05-00	Received By: E. Aguirre	Date/Time: 10 AM 12-06-00
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

~~(1) VOA - 8260A (App IX); VOA - 8260A (App IX Add-On) (1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop~~ RT 12.4.00

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12.4.00

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)

ThermoRetec
Richmond Laboratory

Analytical Services

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: BECHTEL HANFORD INC. Date/Time received 12-06-00 10 AM

CoC No. B99-037-11

Container I.D. No. ERC99-065 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: 3
7. Number of containers per sample: PLEASE (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: 3 BOTTLES ON ID # B11265 WERE NOT RECEIVED.
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by _____ Date: _____ Time: _____

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

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

Form SCP-01.2, 09-25-00
Previous editions of this form may be used.

"50 years of quality nuclear services"

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-037 H1173

DATE RECEIVED: 12/07/00 RFW LOT # :0012L502

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B110B2						
BROMIDE BY IC	002	W	00LIC078	12/04/00	12/08/00	12/08/00
BROMIDE BY IC	002 REP	W	00LIC078	12/04/00	12/08/00	12/08/00
BROMIDE BY IC	002 MS	W	00LIC078	12/04/00	12/08/00	12/08/00
CHLORIDE BY IC	002	W	00LIC078	12/04/00	12/08/00	12/08/00
CHLORIDE BY IC	002 REP	W	00LIC078	12/04/00	12/08/00	12/08/00
CHLORIDE BY IC	002 MS	W	00LIC078	12/04/00	12/08/00	12/08/00
FLUORIDE BY IC	002	W	00LIC078	12/04/00	12/08/00	12/08/00
FLUORIDE BY IC	002 REP	W	00LIC078	12/04/00	12/08/00	12/08/00
FLUORIDE BY IC	002 MS	W	00LIC078	12/04/00	12/08/00	12/08/00
NITRITE BY IC	002	W	00LIC078	12/04/00	12/08/00	12/08/00
NITRITE BY IC	002 REP	W	00LIC078	12/04/00	12/08/00	12/08/00
NITRITE BY IC	002 MS	W	00LIC078	12/04/00	12/08/00	12/08/00
NITRATE BY IC	002	W	00LIC078	12/04/00	12/08/00	12/08/00
NITRATE BY IC	002 REP	W	00LIC078	12/04/00	12/08/00	12/08/00
NITRATE BY IC	002 MS	W	00LIC078	12/04/00	12/08/00	12/08/00
TOTAL CYANIDE	002	W	00LC126	12/04/00	12/14/00	12/14/00
TOTAL CYANIDE	002 MS	W	00LC126	12/04/00	12/14/00	12/14/00
PHOSPHATE BY IC	002	W	00LIC078	12/04/00	12/08/00	12/08/00
PHOSPHATE BY IC	002 REP	W	00LIC078	12/04/00	12/08/00	12/08/00
PHOSPHATE BY IC	002 MS	W	00LIC078	12/04/00	12/08/00	12/08/00
SULFATE BY IC	002	W	00LIC078	12/04/00	12/08/00	12/08/00
SULFATE BY IC	002 REP	W	00LIC078	12/04/00	12/08/00	12/08/00
SULFATE BY IC	002 MS	W	00LIC078	12/04/00	12/08/00	12/08/00
AMMONIA	002	W	00LAM058	12/04/00	12/29/00	12/29/00
TOTAL ORGANIC CARBON	002	W	00LTC039	12/04/00	12/27/00	12/27/00
TOTAL ORGANIC CARBON	002 REP	W	00LTC039	12/04/00	12/27/00	12/27/00
TOTAL ORGANIC CARBON	002 MS	W	00LTC039	12/04/00	12/27/00	12/27/00
OIL & GREASE BY GRAV	002	W	00LOG039	12/04/00	12/16/00	12/17/00
PH	002	W	00LPH100	12/04/00	12/08/00	12/08/00
SULFIDE	002	W	00LSD057	12/04/00	12/08/00	12/08/00
SPECIFIC CONDUCTANCE	002	W	00LSP043	12/04/00	12/11/00	12/11/00
TOTAL DISSOLVED SOLI	002	W	00LSS190	12/04/00	12/08/00	12/11/00
TOTAL DISSOLVED SOLI	002 REP	W	00LSS190	12/04/00	12/08/00	12/11/00
TOTAL SUSPENDED SOLI	002	W	00LSS191	12/04/00	12/11/00	12/11/00
TOTAL SUSPENDED SOLI	002 REP	W	00LSS191	12/04/00	12/11/00	12/11/00

FEB 2001 RECEIVED

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-037 H1173

DATE RECEIVED: 12/07/00 RFW LOT # :0012L502

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B110B3						
BROMIDE BY IC	003	W	00LIC078	12/04/00	12/08/00	12/08/00
CHLORIDE BY IC	003	W	00LIC078	12/04/00	12/08/00	12/08/00
FLUORIDE BY IC	003	W	00LIC078	12/04/00	12/08/00	12/08/00
NITRITE BY IC	003	W	00LIC078	12/04/00	12/08/00	12/08/00
NITRATE BY IC	003	W	00LIC078	12/04/00	12/08/00	12/08/00
TOTAL CYANIDE	003	W	00LC126	12/04/00	12/14/00	12/14/00
TOTAL CYANIDE	003 REP	W	00LC126	12/04/00	12/14/00	12/14/00
PHOSPHATE BY IC	003	W	00LIC078	12/04/00	12/08/00	12/08/00
SULFATE BY IC	003	W	00LIC078	12/04/00	12/08/00	12/08/00
AMMONIA	003	W	00LAM058	12/04/00	12/29/00	12/29/00
AMMONIA	003 REP	W	01LAMB03	12/04/00	01/17/01	01/18/01
AMMONIA	003 MS	W	01LAMB03	12/04/00	01/17/01	01/18/01
TOTAL ORGANIC CARBON	003	W	00LTC039	12/04/00	12/27/00	12/27/00
OIL & GREASE BY GRAV	003	W	00LOG039	12/04/00	12/16/00	12/17/00
OIL AND GREASE BY GR	003 REP	W	00LOG039	12/04/00	12/16/00	12/17/00
PH	003	W	00LPH100	12/04/00	12/08/00	12/08/00
PH	003 REP	W	01LPH004	12/04/00	01/15/01	01/15/01
SULFIDE	003	W	00LSD057	12/04/00	12/08/00	12/08/00
SULFIDE	003 REP	W	00LSD057	12/04/00	12/08/00	12/08/00
SULFIDE	003 MS	W	00LSD057	12/04/00	12/08/00	12/08/00
SPECIFIC CONDUCTANCE	003	W	00LSP043	12/04/00	12/11/00	12/11/00
TOTAL DISSOLVED SOLI	003	W	00LSS190	12/04/00	12/08/00	12/11/00
TOTAL SUSPENDED SOLI	003	W	00LSS191	12/04/00	12/11/00	12/11/00

LAB QC:

BROMIDE BY IC	MB1	W	00LIC078	N/A	12/08/00	12/08/00
BROMIDE BY IC	MB1 BS	W	00LIC078	N/A	12/08/00	12/08/00
BROMIDE BY IC	MB1 BSD	W	00LIC078	N/A	12/08/00	12/08/00
CHLORIDE BY IC	MB1	W	00LIC078	N/A	12/08/00	12/08/00
CHLORIDE BY IC	MB1 BS	W	00LIC078	N/A	12/08/00	12/08/00
CHLORIDE BY IC	MB1 BSD	W	00LIC078	N/A	12/08/00	12/08/00
FLUORIDE BY IC	MB1	W	00LIC078	N/A	12/08/00	12/08/00
FLUORIDE BY IC	MB1 BS	W	00LIC078	N/A	12/08/00	12/08/00
FLUORIDE BY IC	MB1 BSD	W	00LIC078	N/A	12/08/00	12/08/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-037 H1173

DATE RECEIVED: 12/07/00 RFW LOT # :0012L502

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRITE BY IC	MB1	W	00LIC078	N/A	12/08/00	12/08/00
NITRITE BY IC	MB1 BS	W	00LIC078	N/A	12/08/00	12/08/00
NITRITE BY IC	MB1 BSD	W	00LIC078	N/A	12/08/00	12/08/00
NITRATE BY IC	MB1	W	00LIC078	N/A	12/08/00	12/08/00
NITRATE BY IC	MB1 BS	W	00LIC078	N/A	12/08/00	12/08/00
NITRATE BY IC	MB1 BSD	W	00LIC078	N/A	12/08/00	12/08/00
TOTAL CYANIDE	LCS L	W	00LC126	N/A	12/14/00	12/14/00
TOTAL CYANIDE	LCS L	W	00LC126	N/A	12/14/00	12/14/00
TOTAL CYANIDE	MB1	W	00LC126	N/A	12/14/00	12/14/00
PHOSPHATE BY IC	MB1	W	00LIC078	N/A	12/08/00	12/08/00
PHOSPHATE BY IC	MB1 BS	W	00LIC078	N/A	12/08/00	12/08/00
PHOSPHATE BY IC	MB1 BSD	W	00LIC078	N/A	12/08/00	12/08/00
SULFATE BY IC	MB1	W	00LIC078	N/A	12/08/00	12/08/00
SULFATE BY IC	MB1 BS	W	00LIC078	N/A	12/08/00	12/08/00
SULFATE BY IC	MB1 BSD	W	00LIC078	N/A	12/08/00	12/08/00
AMMONIA	MB1	W	00LAM058	N/A	12/29/00	12/29/00
AMMONIA	MB1 BS	W	00LAM058	N/A	12/29/00	12/29/00
AMMONIA	MB1 BSD	W	00LAM058	N/A	12/29/00	12/29/00
TOTAL ORGANIC CARBON	MB1	W	00LTC039	N/A	12/27/00	12/27/00
TOTAL ORGANIC CARBON	MB1 BS	W	00LTC039	N/A	12/27/00	12/27/00
OIL & GREASE BY GRAV	MB1	W	00LOG039	N/A	12/16/00	12/17/00
OIL AND GREASE BY GR	MB1 BS	W	00LOG039	N/A	12/16/00	12/17/00
OIL AND GREASE BY GR	MB1 BSD	W	00LOG039	N/A	12/16/00	12/17/00
SULFIDE	MB1	W	00LSD057	N/A	12/08/00	12/08/00
SULFIDE	MB1 BS	W	00LSD057	N/A	12/08/00	12/08/00
SULFIDE	MB1 BSD	W	00LSD057	N/A	12/08/00	12/08/00
SPECIFIC CONDUCTANCE	MB1	W	00LSP043	N/A	12/11/00	12/11/00
SPECIFIC CONDUCTANCE	MB1 BS	W	00LSP043	N/A	12/11/00	12/11/00
SPECIFIC CONDUCTANCE	MB1 BSD	W	00LSP043	N/A	12/11/00	12/11/00
TOTAL DISSOLVED SOLI	MB1	W	00LSS190	N/A	12/08/00	12/11/00
TOTAL DISSOLVED SOLI	MB1 BS	W	00LSS190	N/A	12/08/00	12/11/00
TOTAL DISSOLVED SOLI	MB1 BSD	W	00LSS190	N/A	12/08/00	12/11/00
TOTAL SUSPENDED SOLI	MB1	W	00LSS191	N/A	12/11/00	12/11/00
TOTAL SUSPENDED SOLI	MB1 BS	W	00LSS191	N/A	12/11/00	12/11/00
AMMONIA	MB1	W	01LAMB03	N/A	01/17/01	01/18/01
AMMONIA	MB1 BS	W	01LAMB03	N/A	01/17/01	01/18/01

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-037 H1173
RFW# : 0012L502

W.O. # : 10985-001-001-9999-00
Date Received: 12-07-00

INORGANIC CASE NARRATIVE

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

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

3. Sample holding times as required by the method and/or contract were met with the exception of Nitrate, Nitrite, Phosphate and pH which were received past hold and replicate and spike analyses for Ammonia sample B110B3.

4. The cooler temperatures were recorded on the chain-of-custody.

5. The method blanks were within method criteria with the exception of 00LSS190-MB1 for Total Dissolved Solids (TDS) which was above the reporting limit and 00LSS191-MB1 for Total Suspended Solids (TSS) which was at the reporting limit. Results for TDS were greater than 10 times the reporting limit and TSS results were less than the reporting limit.

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 with the exception of TDS.

9. For Total Cyanide analysis, the sample was found to be neutral, though the bottle indicated sodium hydroxide (NaOH) preservative which would have fixed it to pH >12. The sample matrix may have buffered the NaOH preservative.

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

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

01-24-01
Date

njp&pef\i12-502

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 19 pages.

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

Recra LabNet Philadelphia **Sample Discrepancy Report (SDR)** SDR #: 00WC07069 JN 12-26-00

Initiator: J Hoffman Batch: 00122502 Parameter: water
Date: 12-26-00 Samples: 002-003 Matrix: CN
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: _____

1. Reason for SDR

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

b. General Discrepancy

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

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

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

Neutral bottles

2. Known or Probable Causes(s)

Sample 12-27-00 indicated NaOH preserved. Sample matrix may have buffered preservative.

3. Discussion and Proposed Action Other Description: Propose to narrate. 12-27-00

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

4. Project Manager Instructions...signature/date: 12/28/00
__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 1-23-01 Other Explanation:
__ Verified re-[log][leach][extract][digest][analysis] (circle)
X Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
	X Initiator J Hoffman		__ Metals: Doughty
	X Lab Manager: M. Taylor		__ Inorganic: Perrone
2	X Project Mgr: Stone/Carey/Schrenker/Johnson		__ GC/LC: Pastor
	X Section Mgr: Wesson/Daniels		__ MS: Durke/Rycklak
	X QA (file): Racioppi		__ Log-in: Keppel
	__ Data Management: Feldman		__ Admin: Soos
	__ Sample Prep: Doughty/Kauffman		__ Other: _____

L-WI-006/E-02/00

Recra LabNet Philadelphia

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	EPA /600	SW846	OTHER
Acidity	___ 305.1		
___Alkalinity ___Bicarbonate ___Carbonate	___ 310.1		
BOD	___ 405.1		___ 5210B (b)
Ion Chormatography:			
✓ Bromide ✓ Chloride ✓ Fluoride	___ 300.0	✓ 9056	
✓ Nitrate ✓ Nitrite ✓ Phosphate	___ 300.0	✓ 9056	
✓ Sulfate ___Formate ___Acetate ___Oxalate	___ 300.0	✓ 9056	
Chloride	___ 325.2	___ 9251	
Chorine, Residual	___ 330.5 (mod)		
Cyanide, Amenable to Chorination	___ 335.2	___ 9010B	
Cyanide, Total	___ 335.2	✓ 9010B ✓ 9014	___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable		___	___ 412 (a) ___ 4500CN-I (b
COD	___ 410.4(mod)		___ 5220C (b)
Color	___ 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	___ 351.4		
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 ___ 376.2	✓ 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:**

Recra LabNet Philadelphia
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.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/23/01

CLIENT: TNUHANFORD B99-037 H1173 RECRA LOT #: 0012L502

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B110B2	Bromide by IC	12.5	u	MG/L	12.5	50.0
		Chloride by IC	303		MG/L	12.5	50.0
		Fluoride by IC	5.0	u	MG/L	5.0	10.0
		Nitrite by IC	12	u	MG/L	12	50
		Nitrate by IC	260		MG/L	12	50
		Cyanide, Total	5.0	u	UG/L	5.0	1.0
		Phosphate by IC	0.50	u	MG/L	0.50	2.0
		Sulfate by IC	369		MG/L	12.5	50.0
		Ammonia, as N	0.10	u	MG/L	0.10	1.0
		Total Organic Carbon	10.8		MG/L	0.50	1.0
		Oil & Grease Gravimetri	4.8		MG/L	1.1	1.0
		pH	7.8		PH UNIT	0.01	1.0
		Sulfide	1.0		MG/L	1.0	1.0
		Specific Conductance	2360		UMHOS/C	1.0	1.0
		Total Dissolved Solids	1500		MG/L	5.0	1.0
		Total Suspended Solids	5.0	u	MG/L	5.0	1.0
-003	B110B3	Bromide by IC	12.5	u	MG/L	12.5	50.0
		Chloride by IC	296		MG/L	12.5	50.0
		Fluoride by IC	5.0	u	MG/L	5.0	10.0
		Nitrite by IC	12	u	MG/L	12	50
		Nitrate by IC	290		MG/L	12	50
		Cyanide, Total	5.0	u	UG/L	5.0	1.0
		Phosphate by IC	0.50	u	MG/L	0.50	2.0
		Sulfate by IC	384		MG/L	12.5	50.0
		Ammonia, as N	0.10	u	MG/L	0.10	1.0
		Total Organic Carbon	8.0		MG/L	0.50	1.0
		Oil & Grease Gravimetri	4.7		MG/L	1.1	1.0
		pH	7.8		PH UNIT	0.01	1.0
		Sulfide	1.0	u	MG/L	1.0	1.0
		Specific Conductance	2430		UMHOS/C	1.0	1.0
		Total Dissolved Solids	2000		MG/L	5.0	1.0
		Total Suspended Solids	5.0	u	MG/L	5.0	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/23/01

CLIENT: TNUHANFORD B99-037 H1173 RECRA LOT #: 0012L502

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LIC078-MB1	Bromide by IC	0.25 u	MG/L	0.25	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
BLANK1	00LC126-MB1	Cyanide, Total	5.0 u	UG/L	5.0	1.0
BLANK10	00LAM058-MB1	Ammonia, as N	0.10 u	MG/L	0.10	1.0
BLANK10	00LTC039-MB1	Total Organic Carbon	0.50 u	MG/L	0.50	1.0
BLANK10	00LOG039-MB1	Oil & Grease Gravimetri	1.0 u	MG/L	1.0	1.0
BLANK10	00LSD057-MB1	Sulfide	1.0 u	MG/L	1.0	1.0
BLANK10	00LSP043-MB1	Specific Conductance	1.0 u	UMHOS/C	1.0	1.0
BLANK10	00LSS190-MB1	Total Dissolved Solids	7.0	MG/L	5.0	1.0
BLANK10	00LSS191-MB1	Total Suspended Solids	5.0	MG/L	5.0	1.0
BLANK10	01LAMB03-MB1	Ammonia, as N	0.10 u	MG/L	0.10	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 01/23/01

CLIENT: TNUHANFORD B99-037 H1173 RECRA LOT #: 0012L502

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	B110B2	Bromide by IC	477	0.00	500	95.4	100
		Chloride by IC	772	303	500	93.7	100
		Fluoride by IC	102	0.40	100	101.9	10.0
		Nitrite by IC	500	12 u	500	100.2	100
		Nitrate by IC	760	260	500	99.1	100
		Cyanide, Total	52	5.0 u	50	103.8	1.0
		Phosphate by IC	9.0	0.50u	10.0	89.5	2.0
		Sulfate by IC	878	369	500	101.9	100
		Total Organic Carbon	15.1	10.8	5.0	86.4	1.0
-003	B110B3	Ammonia, as N	1.8	0.10u	2.0	90.0	1.0
		Sulfide	26.0	0.00	26.7	97.4	1.0
BLANK10	00LIC078-MB1	Bromide by IC	4.9	0.25u	5.0	97.8	1.0
		Bromide by IC MSD	4.9	0.25u	5.0	97.8	1.0
		Chloride by IC	5.0	0.25u	5.0	99.2	1.0
		Chloride by IC MSD	4.7	0.25u	5.0	94.2	1.0
		Fluoride by IC	10.7	0.50u	10.0	107.4	1.0
		Fluoride by IC MSD	10.2	0.50u	10.0	101.7	1.0
		Nitrite by IC	4.9	0.25u	5.0	98.2	1.0
		Nitrite by IC MSD	4.9	0.25u	5.0	98.7	1.0
		Nitrate by IC	4.9	0.25u	5.0	97.1	1.0
		Nitrate by IC MSD	4.9	0.25u	5.0	97.2	1.0
		Phosphate by IC	5.0	0.25u	5.0	100.6	1.0
		Phosphate by IC MSD	5.1	0.25u	5.0	102.4	1.0
		Sulfate by IC	4.8	0.25u	5.0	96.1	1.0
		Sulfate by IC MSD	4.8	0.25u	5.0	95.7	1.0
BLANK10	00LAM058-MB1	Ammonia, as N	1.1	0.10u	1.0	109.0	1.0
		Ammonia, as N MSD	2.1	0.10u	2.0	103.5	1.0
BLANK10	00LTC039-MB1	Total Organic Carbon	5.3	0.50u	5.0	105.6	1.0
BLANK10	00LOG039-MB1	Oil & Grease Gravimetr	50.9	1.0 u	50.1	101.6	1.0
		Oil & Grease - Grav M	39.5	1.0 u	40.9	96.6	1.0
BLANK10	00LSD057-MB1	Sulfide	13.4	1.0 u	13.4	100.4	1.0
		Sulfide MSD	12.0	1.0 u	12.2	98.8	1.0
BLANK10	00LSP043-MB1	Specific Conductance	146	1.0 u	147	99.4	1.0
		Spec Conductance MSD	718	1.0 u	717	100.2	1.0
BLANK10	00LSS190-MB1	Total Dissolved Solids	100	0.00	100	100	1.0
		Total Dissolved Solids	110	0.00	100	112.0	1.0
BLANK10	00LSS191-MB1	Total Suspended Solids	110	0.00	100	106.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 01/23/01

CLIENT: TNUHANFORD B99-037 H1173 RECRA LOT #: 0012L502

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
BLANK10	01LAMB03-MB1	Ammonia, as N	2.1	0.10u	2.0	105.5	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 01/23/01

CLIENT: TNUHANFORD B99-037 H1173 RECRA LOT #: 0012L502

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	00LIC078-MB1	Bromide by IC	97.8	97.8	0.061
		Chloride by IC	99.2	94.2	5.1
		Fluoride by IC	107.4	101.7	5.4
		Nitrite by IC	98.2	98.7	0.47
		Nitrate by IC	97.1	97.2	0.062
		Phosphate by IC	100.6	102.4	1.7
		Sulfate by IC	96.1	95.7	0.40
BLANK10	00LAM058-MB1	Ammonia, as N	109.0	103.5	5.2
BLANK10	00LOG039-MB1	Oil & Grease - Grav	101.6	96.6	5.1
BLANK10	00LSD057-MB1	Sulfide	100.4	98.8	1.6
BLANK10	00LSP043-MB1	Specific Conductance	99.4	100.2	0.74
BLANK10	00LSS190-MB1	Total Dissolved Solids	100	112.0	11.3

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 01/23/01

CLIENT: TNUHANFORD B99-037 H1173 RECRA LOT #: 0012L502

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	B110B2	Bromide by IC	12.5 u	12.5 u	NC	50.0
		Chloride by IC	303	301	0.62	50.0
		Fluoride by IC	5.0 u	5.0 u	NC	10.0
		Nitrite by IC	12 u	12 u	NC	50
		Nitrate by IC	260	260	0.68	50
		Phosphate by IC	0.50u	0.50u	NC	2.0
		Sulfate by IC	369	369	0.097	50.0
		Total Organic Carbon	10.8	10.1	6.6	1.0
		Total Dissolved Solids	1500	1900	23.1	1.0
		Total Suspended Solids	5.0 u	5.0 u	NC	1.0
-003REP	B110B3	Cyanide, Total	5.0 u	5.0 u	NC	1.0
		Ammonia, as N	0.10u	0.10u	NC	1.0
		Oil & Grease Gravimetri	4.7	4.5	4.5	1.0
		pH	7.8	7.9	1.9	1.0
		Sulfide	1.0 u	2.0 u	NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/23/01

CLIENT: TNUHANFORD B99-037 H1173 RECRA LOT #: 0012L502

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	00LC126-LCS1	Cyanide, Total LCS	16	20	UG/L	82.0
LCSS2	00LC126-LCS2	Cyanide, Total LCS	99	100	UG/L	99.0

RECRA LabNet Use Only

00121502

Custody Transfer Record/Lab Work Request

Page 1 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNU HANFord B99-037

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: SPec Del: STD TAT: 30DAY

Date Rec'd: 12-7-00 TC 12-7-00 Date Due: 1-5-01 TC 12-7-00

Account #:

		A-C	D-E	F-G	H-I	J-K	L-N		O	P	Q	R-S	T	U	V	W
Refrigerator #		1	5	5	5	5	1		5	5	5	5	5	5	1	5
#/Type Container	Liquid	3V	2AG	2AG	2AG	2AG	3V		1P	1PL	1P	2AG	1P	1AG	1AG	1AG
	Solid															
Volume	Liquid	40	950	950	950	950	40		500	1L	500	1L	120	500	250	500
	Solid															
Preservatives		HCL	–	–	–	–	–		HNO3	NAOH	ZNAC NAOH	HCL	–	–	HCL	HNO3
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/ PCB	Herb	5VOA HPLC	Alcohol Glycol Ketone		Metal	CN	Sulfide	OT Sulfate		Organic Foam	TOC	
		RECRA LabNet Use Only														
		0624N	0625N	0608H	0HBGK	0830	0GCSC		MET (1)	TCNTO	TSFD	TOGGR	TPH	OLCSC	TOCT	MGHTO

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	5VOA HPLC	Alcohol Glycol Ketone		Metal	CN	Sulfide	OT Sulfate		Organic Foam	TOC	
001	B110B1			W	0700	12-4-00	3					3									
002	1 2			1	0945	1	3	1	2	2	2	3		1	1	1	2	1	1	1	1
003	1 3			1	1015	1	3	2	2	2	2	3		1	1	1	2	1	1	1	1

Special Instructions: SAF B99-037
Run Matrix QC
Rec'd Broken IEA BNA #002

DATE/REVISIONS:
Met (1) 1. AL, AG, BA, BE, CA, CD, CO, CR, CU, FE, K
2. MG, MN, NA, NI, SB, V, ZN, AS, PB,
3. SE, SI, TI, SN
#2 4. Rec'd on 12-7-00
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___ Airbill # See Below
2) Ambient or Chilled
3) Received in Good Condition Y or N 12-7-00
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 3.2 °C 4.3

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	12-6-00	0915
[illegible]	[illegible]	12-7-00	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES: 4235 7954 0989 3.2
4235 7954 0978 4.3
COC 9725 9787 1051

RECRA LabNet Use Only

00121502

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNX HANFORD B99-037

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #: Page 1

RECRA Project Manager:

QC: Del: TAT:

Date Rec'd: Date Due:

Account #:

		X	Y	Z	AA	BB
Refrigerator #		S	S	S	S	S
#/Type Container	Liquid	1PL	1PL	1PL	1PL	1PL
	Solid					
Volume	Liquid	500	500	500	500	500
	Solid					
Preservatives		–	–	–	–	H2SO4
ANALYSES REQUESTED →	ORGANIC: VOA					
	ORGANIC: BNA					
	ORGANIC: Pest/PCB					
	ORGANIC: Herb					
	INORG: Metal					
	INORG: CN					
		Spec Cond.	IC Anions			Ammonia
RECRA LabNet Use Only		TSPCD	IC (1)	TDS	TSS	TKN 3 TT

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	TSPCD	IC (1)	TDS	TSS	TKN 3 TT
001	B110B1			W	12-4-00	0900					
002	1 2			1	1	0945	1	1	1	1	1
003	1 3			1	1	1015	1	1	1	1	1

Special Instructions:

DATE/REVISIONS:
IC (1) 1. Br, Cl, Fl, NO2, NO3, PO4, SO4
2.
3.
4.
5.
6.

RECRA LabNet Use Only

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

COC Tape 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. ____ °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	12/6/00	0915
[signature]	[signature]	12/7/00	0945

Relinquished by	Received by	Date	Time

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-11	Page ~~1 of 6~~ 2 of 3

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS. RL
Price Code: 7N	Data Turnaround: 45 Days	Air Quality	
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF	SAF No.: B99-037	
Ice Chest No.: ERC96-034,039,042 (1 of 3, 2 of 3, 3 of 3)	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA RT 12-4-00	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 42357453-0967,0978,0989

POSSIBLE SAMPLE HAZARDS/REMARKS: NONE

Special Handling and/or Storage

Preservation	HNO3 to pH <2	ZnAc+NaOH to pH >9 Cool	HCl to pH <2	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	None	Cool 4C EF	Cool 4C IJ	Cool 4C GH	Cool 4C
Type of Container	P	P	P	P	P	P	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	2	2	2	2
Volume	500mL Delete RT 12-4-00	500mL	1000mL Delete RT 12-4-00	1000mL Delete RT 12-4-00	1000mL	1000mL Delete RT 12-4-00	1000mL	1000mL	1000mL	1000mL
SAMPLE ANALYSIS	Total Uranium RT 12-4-00	Sulfides - 9030	Technetium-99	See item (1) in Special Instructions	Total Cyanide - 9010	Gross-14 RT 12-4-00	See item (2) in Special Instructions	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time									
~~B110B1~~	~~WATER~~	~~12-4-00~~	~~0700~~ RT 12-4-00									
B110B2	WATER	12-4-00	0945		X			X		X	X	X	X
B110B3	WATER	12-4-00	1015		X			X		X	X	X	X
~~B11265~~	~~WATER~~	~~12-4-00~~	~~0945~~									
~~B11266~~	~~WATER~~	~~12-4-00~~	~~1015~~ RT 12-4-00									

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	1130 12-4-00	R Thoren	1130 12-4-00
~~R Thoren~~	~~1300 12-4-00~~	Stored in RT 12-4-00 / Ref CB 3728	1300 12-4-00
~~Removed from~~ Ref CB 3728	0900 12-6-00	R. Thoren	0900 12-5-00
R Thoren	0900 12-5-00	FEDEX	
Fed Ex	12-6-00 0915		12-6-00 0915
Fed Ex	12-7-00 0945		12-7-00 0945

SPECIAL INSTRUCTIONS

~~(1) Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)~~ RT 12-4-00

(2) 8310_SVOA_HPLC {Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz[a,h]anthracene}

(3) Semi-VOA - 8270A (App IX): Semi-VOA -- 8270A (App IX Add-On) {1,2-Diphenylhydrazine, 1,4-Dinotrobenzene, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene, 2-Cyclohexyl-4,6-dinitrophenol}

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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	B99-037-11	Page 1 of 3

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS. RL
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF		SAF No.: B99-037
Ice Chest No.: ERC 96-034, 039, 042 (1 of 3, 2 of 3, 3 of 3)	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA RT 12.4.00	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 4235 7953 - 0967, 0978, 0989

Price Code: 7N
Air Quality
Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS: NONE

Special Handling and/or Storage

Preservation	None	HCl to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2
Type of Container	P	aG	aG	aG	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	120mL	250mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL
SAMPLE ANALYSIS	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions	TDS - 160.1	TSS - 160.2	Ammonia - 350.3	See item (2) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time										
~~B110B1~~	WATER	12.4.00	0700 RT 12.4.00										
B110B2	WATER	12.4.00	0945	X	X	X	X	X	X	X	X	X	X
B110B3	WATER	12.4.00	1015	X	X	X	X	X	X	X	X	X	X
~~B11265~~	~~WATER~~	~~12.4.00~~	~~0945~~ RT 12.4.00										
~~B11266~~	~~WATER~~	~~12.4.00~~	~~1015~~										

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R Fahlberg	12.4.00 1130	R Thoren	12.4.00 1130
R Thoren	12.4.00 1300	Stored in R.L. 2B 3728	12.4.00 1300
Removed from R.L. 2B 3728	12.5.00 0900	R Thoren	12.6.00 0980
R Thoren	12.5.00 0900	Fed Ex	
Fed Ex	12-6-00 0915	V. Hendy	12-6-00 0915
Fed Ex	12-7-00 0945	V. Hendy	12-7-00 0945

SPECIAL INSTRUCTIONS

(1) IC Anions - 9056 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Lead, Selenium, Silicon, Thallium, Tin}

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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)

WIDL 41J

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-11	Page 3 of 6

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS, RL
Price Code: 7N	Data Turnaround: 45 Days	Air Quality	
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF	SAF No.: B99-037	
Ice Chest No.: ERCA6-034,039,042	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: TMA/RECRA RT 12.4.00	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 42367453-0967,0978,0989

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage

SAMPLE ANALYSIS												
Preservation				HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	HCl Cool 4C				
Type of Container				aG	P	aGs*	aGs*	aGs*				
No. of Container(s)				2	1	3	3	3				
Volume				1000mL	1000mL	40mL	40mL	40mL A-C				
				oil & Grease - 9070	Gross Alpha, Gross Beta	Alcohols, Glycols, & Ketones - 8015	Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Methanol)	See item (1) in Special Instructions				
Sample No.	Matrix *	Sample Date	Sample Time									
1 B110B1	WATER	12·4·00	0700				X	X				
2 B110B2	WATER	12·4·00	0945	X			X	X				
3 B110B3	WATER	12·4·00	1015	X			X	X				
~~B11265~~	~~WATER~~	~~12·4·00~~	~~0945~~	RT 12.4.00								
~~B11266~~	~~WATER~~	~~12·4·00~~	~~1015~~									

R.F 12·1·00

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Fahlberg / R. Fahlberg	Date/Time: 12·4·00 1130	Received By: R Thorer	Date/Time: 12.4.00 1130
Relinquished By: R Thorer	Date/Time: 12.4.00 1300	Received By: Stored in Ref 2B 3728	Date/Time: 12.4.00 1300
Relinquished By: Removed from Ref 2B 3728	Date/Time: 12.5.00 0900	Received By: R Thorer	Date/Time: 12.5.00 0900
Relinquished By: R Thorer	Date/Time: 12.5.00 0900	Received By: FED EX	Date/Time
Relinquished By: Fed Ex	Date/Time: 12-6-00 0915	Received By: V. Hendy	Date/Time: 12-6-00 0915
Relinquished By: Fed Ex	Date/Time: 12-7-00 0945	Received By: V. Hendy	Date/Time: 12-7-00 0945

SPECIAL INSTRUCTIONS

(1) VOA - 8260A (App IX): VOA - 8260A (App IX Add-On) {1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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

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

BHI-EE-011 (10/99)

FEB 2001
RECEIVED

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-037 H1173

DATE RECEIVED: 12/07/00 RFW LOT # :0012L502

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B110B2						
SILVER, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
SILVER, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
SILVER, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
ALUMINUM, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
ALUMINUM, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
ALUMINUM, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
ARSENIC, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
ARSENIC, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
ARSENIC, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
BARIUM, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
BARIUM, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
BARIUM, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
BERYLLIUM, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
BERYLLIUM, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
BERYLLIUM, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
CALCIUM, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
CALCIUM, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
CALCIUM, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
CADMIUM, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
CADMIUM, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
CADMIUM, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
COBALT, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
COBALT, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
COBALT, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
CHROMIUM, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
CHROMIUM, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
CHROMIUM, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
COPPER, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
COPPER, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
COPPER, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
IRON, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
IRON, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
IRON, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
MERCURY, TOTAL	002	W	00C0435	12/04/00	12/15/00	12/18/00
POTASSIUM, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-037 H1173

DATE RECEIVED: 12/07/00 RFW LOT # :0012L502

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
POTASSIUM, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
POTASSIUM, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
MAGNESIUM, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
MAGNESIUM, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
MAGNESIUM, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
MANGANESE, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
MANGANESE, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
MANGANESE, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
SODIUM, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/29/00
SODIUM, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/29/00
SODIUM, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/29/00
NICKEL, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
NICKEL, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
NICKEL, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
LEAD, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
LEAD, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
LEAD, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
ANTIMONY, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
ANTIMONY, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
ANTIMONY, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
SELENIUM, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
SELENIUM, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
SELENIUM, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
SILICON, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
SILICON, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
SILICON, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
TIN, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
TIN, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
TIN, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
THALLIUM, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
THALLIUM, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
THALLIUM, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
VANADIUM, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
VANADIUM, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
VANADIUM, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00
ZINC, TOTAL	002	W	99L1851	12/04/00	12/22/00	12/27/00
ZINC, TOTAL	002 REP	W	99L1851	12/04/00	12/22/00	12/27/00
ZINC, TOTAL	002 MS	W	99L1851	12/04/00	12/22/00	12/27/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-037 H1173

DATE RECEIVED: 12/07/00 RFW LOT # :0012L502

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B110B3						
SILVER, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
ALUMINUM, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
ARSENIC, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
BARIUM, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
BERYLLIUM, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
CALCIUM, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
CADMIUM, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
COBALT, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
CHROMIUM, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
COPPER, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
IRON, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
MERCURY, TOTAL	003	W	00C0435	12/04/00	12/15/00	12/18/00
MERCURY, TOTAL	003 REP	W	00C0435	12/04/00	12/15/00	12/18/00
MERCURY, TOTAL	003 MS	W	00C0435	12/04/00	12/15/00	12/18/00
POTASSIUM, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
MAGNESIUM, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
MANGANESE, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
SODIUM, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/29/00
NICKEL, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
LEAD, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
ANTIMONY, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
SELENIUM, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
SILICON, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
TIN, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
THALLIUM, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
VANADIUM, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00
ZINC, TOTAL	003	W	99L1851	12/04/00	12/22/00	12/27/00

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
SILVER, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
ALUMINUM LABORTORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
ALUMINUM, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
ARSENIC LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-037 H1173

DATE RECEIVED: 12/07/00

RFW LOT # :0012L502

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
BARIUM LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
BARIUM, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
BERYLLIUM LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
BERYLLIUM, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
CALCIUM LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
CALCIUM, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
CADMIUM LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
CADMIUM, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
COBALT LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
COBALT, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
CHROMIUM LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
CHROMIUM, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
COPPER LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
COPPER, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
IRON LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
IRON, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
MERCURY LABORATORY	LC1 BS	W	00C0435	N/A	12/15/00	12/18/00
MERCURY, TOTAL	MB1	W	00C0435	N/A	12/15/00	12/18/00
MERCURY, TCLP LEACHA	MB2	W	00C0435	N/A	12/15/00	12/18/00
POTASSIUM LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
POTASSIUM, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
MAGNESIUM LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
MAGNESIUM, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
MANGANESE LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
MANGANESE, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
SODIUM LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
SODIUM, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
NICKEL LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
NICKEL, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
LEAD LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
LEAD, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
ANTIMONY LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
ANTIMONY, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
SELENIUM LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
SELENIUM, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
SILICON LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
SILICON, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-037 H1173

DATE RECEIVED: 12/07/00 RFW LOT # :0012L502

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TIN LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
TIN, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
THALLIUM LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
THALLIUM, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
VANADIUM LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
VANADIUM, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00
ZINC LABORATORY	LC1 BS	W	99L1851	N/A	12/22/00	12/27/00
ZINC, TOTAL	MB1	W	99L1851	N/A	12/22/00	12/27/00

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-037
RFW#: 0012L502
SDG/SAF#: H1173/B99-037

W.O.#: 10985-001-001-9999-00
Date Received: 12-07-00

METALS CASE NARRATIVE

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

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

   All samples were reported with ten fold dilutions for Sodium due to high concentrations of this analyte.

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

4. All cooler temperatures have been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury) with the exception of the ending CCVs for Beryllium, Calcium, Cadmium, Chromium, Iron, Magnesium, Manganese, Nickle, Potassium, Sodium, and Zinc. There is no impact to the data as the associated samples were surrounded by CCVs that were in control.

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

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

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

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to form 7.

10. The matrix spike (MS) recovery for 1 analyte was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 21 pages.

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

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B110B2	Sodium	250,000	92.3

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

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

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

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

gmb/m12-502

01-09-01
Date

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 0012502

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A __3010A __3015 __3020A __3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	✓6010B		__200.7				__99
Antimony	✓6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	✓6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	✓6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	✓6010B		__200.7				__99
Copper	✓6010B	__7211 [5]	__200.7	__220.2			__99
Iron	✓6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	✓6010B		__200.7				__99
Manganese	✓6010B		__200.7				__99
Mercury	__7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	✓6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	✓6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	✓6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2	__200.9		__99
Tin	✓6010B		__200.7				__99
Titanium	✓6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	✓6010B		__200.7				__99
Zinc	✓6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

L-WI-033/M-11/99

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/09/01

CLIENT: TNUHANFORD B99-037 H1173 RECRA LOT #: 0012L502

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B110B2	Silver, Total	1.1	u	UG/L	1.1	1.0
		Aluminum, Total	22.7	u	UG/L	22.7	1.0
		Arsenic, Total	11.3		UG/L	2.4	1.0
		Barium, Total	97.7		UG/L	0.20	1.0
		Beryllium, Total	0.10	u	UG/L	0.10	1.0
		Calcium, Total	194000		UG/L	19.2	1.0
		Cadmium, Total	0.30	u	UG/L	0.30	1.0
		Cobalt, Total	0.90	u	UG/L	0.90	1.0
		Chromium, Total	40.9		UG/L	0.60	1.0
		Copper, Total	9.0		UG/L	0.90	1.0
		Iron, Total	128		UG/L	21.8	1.0
		Mercury, Total	0.10	u	UG/L	0.10	1.0
		Potassium, Total	23400		UG/L	40.9	1.0
		Magnesium, Total	57700		UG/L	6.7	1.0
		Manganese, Total	0.73		UG/L	0.20	1.0
		Sodium, Total	264000		UG/L	229	10.0
		Nickel, Total	13.6		UG/L	0.90	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Antimony, Total	2.3	u	UG/L	2.3	1.0
		Selenium, Total	3.3	u	UG/L	3.3	1.0
		Silicon, Total	18500		UG/L	6.4	1.0
		Tin, Total	2.6	u	UG/L	2.6	1.0
		Thallium, Total	4.0	u	UG/L	4.0	1.0
		Vanadium, Total	21.7		UG/L	0.80	1.0
		Zinc, Total	2.4		UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/09/01

CLIENT: TNUHANFORD B99-037 H1173 RECRA LOT #: 0012L502

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B110B3	Silver, Total	1.1	u	UG/L	1.1	1.0
		Aluminum, Total	26.0		UG/L	22.7	1.0
		Arsenic, Total	11.0		UG/L	2.4	1.0
		Barium, Total	99.4		UG/L	0.20	1.0
		Beryllium, Total	0.10	u	UG/L	0.10	1.0
		Calcium, Total	197000		UG/L	19.2	1.0
		Cadmium, Total	0.30	u	UG/L	0.30	1.0
		Cobalt, Total	0.90	u	UG/L	0.90	1.0
		Chromium, Total	25.2		UG/L	0.60	1.0
		Copper, Total	9.5		UG/L	0.90	1.0
		Iron, Total	44.9		UG/L	21.8	1.0
		Mercury, Total	0.10	u	UG/L	0.10	1.0
		Potassium, Total	23500		UG/L	40.9	1.0
		Magnesium, Total	58800		UG/L	6.7	1.0
		Manganese, Total	0.20	u	UG/L	0.20	1.0
		Sodium, Total	253000		UG/L	229	10.0
		Nickel, Total	12.1		UG/L	0.90	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Antimony, Total	2.3	u	UG/L	2.3	1.0
		Selenium, Total	3.3	u	UG/L	3.3	1.0
		Silicon, Total	18400		UG/L	6.4	1.0
		Tin, Total	2.6	u	UG/L	2.6	1.0
		Thallium, Total	4.0	u	UG/L	4.0	1.0
		Vanadium, Total	21.5		UG/L	0.80	1.0
		Zinc, Total	2.9		UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/09/01

CLIENT: TNUHANFORD B99-037 H1173 RECRA LOT #: 0012L502

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L1851-MB1	Silver, Total	1.1	u	UG/L	1.1	1.0
		Aluminum, Total	22.7	u	UG/L	22.7	1.0
		Arsenic, Total	2.4	u	UG/L	2.4	1.0
		Barium, Total	0.27		UG/L	0.20	1.0
		Beryllium, Total	0.10	u	UG/L	0.10	1.0
		Calcium, Total	19.2	u	UG/L	19.2	1.0
		Cadmium, Total	0.30	u	UG/L	0.30	1.0
		Cobalt, Total	0.90	u	UG/L	0.90	1.0
		Chromium, Total	0.60	u	UG/L	0.60	1.0
		Copper, Total	0.90	u	UG/L	0.90	1.0
		Iron, Total	21.8	u	UG/L	21.8	1.0
		Potassium, Total	40.9	u	UG/L	40.9	1.0
		Magnesium, Total	8.8		UG/L	6.7	1.0
		Manganese, Total	0.20	u	UG/L	0.20	1.0
		Sodium, Total	22.9	u	UG/L	22.9	1.0
		Nickel, Total	0.90	u	UG/L	0.90	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Antimony, Total	2.3	u	UG/L	2.3	1.0
		Selenium, Total	3.3	u	UG/L	3.3	1.0
		Silicon, Total	6.5		UG/L	6.4	1.0
		Tin, Total	2.6	u	UG/L	2.6	1.0
		Thallium, Total	4.0	u	UG/L	4.0	1.0
		Vanadium, Total	0.80	u	UG/L	0.80	1.0
		Zinc, Total	0.40	u	UG/L	0.40	1.0
BLANK1	00C0435-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	00C0435-MB2	Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 01/09/01

CLIENT: TNUHANFORD B99-037 H1173

RECRA LOT #: 0012L502

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	B110B2	Silver, Total	49.7	1.1 u	50.0	99.4	1.0
		Aluminum, Total	2050	22.7 u	2000	102.5	1.0
		Arsenic, Total	2120	11.3	2000	105.6	1.0
		Barium, Total	2050	97.7	2000	97.7	1.0
		Beryllium, Total	50.4	0.10u	50.0	100.8	1.0
		Calcium, Total	215000	194000	25000	85.0*	1.0
		Cadmium, Total	50.6	0.30u	50.0	101.2	1.0
		Cobalt, Total	487	0.90u	500	97.4	1.0
		Chromium, Total	237	40.9	200	98.2	1.0
		Copper, Total	255	9.0	250	98.3	1.0
		Iron, Total	1110	128	1000	97.9	1.0
		Potassium, Total	53800	23400	25000	121.7	1.0
		Magnesium, Total	82900	57700	25000	100.8	1.0
		Manganese, Total	503	0.73	500	100.4	1.0
		Sodium, Total	281000	264000	25000	66.8*	10.0
		Nickel, Total	486	13.6	500	94.4	1.0
		Lead, Total	498	2.1 u	500	99.5	1.0
		Antimony, Total	515	2.3 u	500	103.1	1.0
		Selenium, Total	2120	3.3 u	2000	105.8	1.0
		Silicon, Total	19300	18500	1000	85.6*	1.0
		Tin, Total	1010	2.6 u	1000	100.6	1.0
		Thallium, Total	2020	4.0 u	2000	101.1	1.0
		Vanadium, Total	522	21.7	500	100	1.0
		Zinc, Total	501	2.4	500	99.7	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 01/09/01

CLIENT: TNUHANFORD B99-037 H1173

RECRA LOT #: 0012L502

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-003	B110B3	Mercury, Total	0.98	0.10u	1.0	98.1	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 01/09/01

CLIENT: TNUHANFORD B99-037 H1173 RECRA LOT #: 0012L502

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	B110B2	Silver, Total	1.1 u	1.1 u	NC	1.0
		Aluminum, Total	22.7 u	24.7	~~NC~~ 200	1.0
		Arsenic, Total	11.3	9.9	13.2	1.0
		Barium, Total	97.7	99.0	1.3	1.0
		Beryllium, Total	0.10u	0.10u	NC	1.0
		Calcium, Total	194000	195000	0.65	1.0
		Cadmium, Total	0.30u	0.30u	NC	1.0
		Cobalt, Total	0.90u	0.90u	NC	1.0
		Chromium, Total	40.9	41.6	1.7	1.0
		Copper, Total	9.0	9.8	8.5	1.0
		Iron, Total	128	130	1.9	1.0
		Potassium, Total	23400	23700	1.3	1.0
		Magnesium, Total	57700	58200	0.84	1.0
		Manganese, Total	0.73	0.72	1.4	1.0
		Sodium, Total	264000	261000	1.2	10.0
		Nickel, Total	13.6	13.3	2.2	1.0
		Lead, Total	2.1 u	2.1 u	NC	1.0
		Antimony, Total	2.3 u	2.3 u	NC	1.0
		Selenium, Total	3.3 u	3.3	~~NC~~ 200	1.0
		Silicon, Total	18500	18600	0.94	1.0
		Tin, Total	2.6 u	2.6 u	NC	1.0
		Thallium, Total	4.0 u	4.0 u	NC	1.0
		Vanadium, Total	21.7	21.9	0.92	1.0
		Zinc, Total	2.4	2.7	11.8	1.0

1/9/01

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 01/09/01

CLIENT: TNUHANFORD B99-037 H1173

RECRA LOT #: 0012L502

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-003REP	B110B3	Mercury, Total	0.10u	0.10u	NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/09/01

CLIENT: TNUHANFORD B99-037 H1173 RECRA LOT #: 0012L502

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L1851-LC1	Silver, LCS	502	500	UG/L	100.4
		Aluminum, LCS	5060	5000	UG/L	101.1
		Arsenic, LCS	9860	10000	UG/L	98.6
		Barium, LCS	4910	5000	UG/L	98.2
		Beryllium, LCS	251	250	UG/L	100.4
		Calcium, LCS	24600	25000	UG/L	98.4
		Cadmium, LCS	251	250	UG/L	100.4
		Cobalt, LCS	2520	2500	UG/L	100.7
		Chromium, LCS	500	500	UG/L	99.9
		Copper, LCS	1230	1250	UG/L	98.6
		Iron, LCS	5010	5000	UG/L	100.3
		Potassium, LCS	25800	25000	UG/L	103.2
		Magnesium, LCS	25600	25000	UG/L	102.5
		Manganese, LCS	765	750	UG/L	102.0
		Sodium, LCS	24700	25000	UG/L	98.8
		Nickel, LCS	1970	2000	UG/L	98.5
		Lead, LCS	2480	2500	UG/L	99.0
		Antimony, LCS	3010	3000	UG/L	100.4
		Selenium, LCS	10000	10000	UG/L	100.5
		Silicon, LCS	5290	5000	UG/L	105.8
		Tin, LCS	4950	5000	UG/L	99.0
		Thallium, LCS	10200	10000	UG/L	101.9
		Vanadium, LCS	2530	2500	UG/L	101.1
		Zinc, LCS	1010	1000	UG/L	100.7
LCS1	00C0435-LC1	Mercury, LCS	5.2	5.0	UG/L	103.3

RECRA LabNet Use Only

00121502

Custody Transfer Record/Lab Work Request

Page 1 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client TNU HANFORD B99-037

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC SPEC Del STD TAT 30 DAY

Date Rec'd 12-7-00 TLC 12-7-00 Date Due 1-5-01 TLC 12-7-00

Account #

		A-C	D-E	F-G	H-I	J-K	L-N		O	P	Q	R-S	T	U	V	W
Refrigerator #		1	5	5	5	5	1		5	5	5	5	5	5	1	5
#/Type Container	Liquid	3V	2AG	2AG	2AG	2AG	3V		1P	1PL	1P	2AG	1P	1AG	1AG	1AG
	Solid															
Volume	Liquid	40	950	950	950	950	40		500	1L	500	1L	125	500	250	500
	Solid															
Preservatives		HCL	—	—	—	—	—		HNO3	NAOH	ZNAC NAOH	HCL	—	—	HCL	HNO3
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	5VOA HPLC	Alcohol Glycol Ketone		Metal	CN	Sulfide	OT Sulfate		Organic Tests	TOC	

RECRA LabNet Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624N	0625N	0608N	0HBGK	0830	0GCSC		MET (1)	ICNTO	ISFD	IOGGR	IPH	OLCSC	IOCT	MGNTO
	001	B110B1			W	0700	1240	3					3									
	002	1 2			1	0945	1	3	1	2	2	2	3		1	1	1	2	1	1	1	1
	003	1 3			1	1015	1	3	2	2	2	2	3		1	1	1	2	1	1	1	1

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

Special Instructions: SAF B99-037

Run Matrix QC

Rec'd Broke IEA BNA #002

DATE/REVISIONS:

Met (1) 1. AL, AG, BA, BE, CA, CD, CO, CR, CU, FE, K

1 2. MG, MN, NA, NI, SB, V, ZN, AS, PB,

3. SE, SI, TI, SN

#2 4. Rec'd on 12-7-00

5.

6.

RECRA LabNet Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___
Airbill # See Below
2) Ambient or Chilled
3) Received in Good Condition Y or N 12-7-00
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 3.2 °C 4.3

Relinquished by	Received by	Date	Time
[signature]	[signature]	12-6-00	0915
[signature]	[signature]	12-7-00	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7954 0989 3.2

4235 7954 0978

18

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B99-037-11	Page ~~1~~ 2 of 3 of ~~6~~ 3 RT 12.5.00
Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS, RL	Price Code: 7N — Data Turnaround: 45 Days
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF		SAF No.: B99-037	Air Quality
Ice Chest No.: ERC96-034,039,042 (1 of 3, 2 of 3, 3 of 3)	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX	
Shipped To: ~~TMA~~/RECRA R 12.4.00	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 42357453-0967,0978,0989	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	HNO3 to pH <2	ZnAc+NaOH to pH >9 Cool	HCl to pH <2	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	None	Cool 4C EF	Cool 4C IJ	Cool 4C GH	Cool 4C
Type of Container	P	P	P	P	P	P	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	2	2	2	2
Volume	Delete 500mL RT	500mL	Delete 1000mL RT 12.4.00	Delete 1000mL RT 12.4.00	1000mL	Delete 1000mL RT 12.4.00	1000mL	1000mL	1000mL	1000mL
SAMPLE ANALYSIS	Total Uranium RT 12.4.00	Sulfides - 9030	Technetium-99 Delete RT 12.4.00	See item (1) in Special Instructions	Total Cyanide - 9010	Carbon-14 RT 12.4.00	See item (2) in Special Instructions	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time									
~~B110B1~~	~~WATER~~	~~12.4.00~~	~~0700~~ RT 12.4.00									
B110B2	WATER	12.4.00	0945		X			X		X	X	X	X
B110B3	WATER	12.4.00	1015		X			X		X	X	X	X
~~B11265~~	~~WATER~~	~~12.4.00~~	~~0945~~									
~~B11266~~	~~WATER~~	~~12.4.00~~	~~1015~~ RT 12.4.00									

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

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	1130 12.4.00	R. Thorer	1130 12.4.00
R. Thorer	1300 12.4.00	Stored in Ref 2B 3728	1300 12.4.00
~~Relinquished By~~ Removed from Ref 2B 3728	12.5.00 ~~12.6.00~~ 0900	R. Thorer	0900 12.5.00
R. Thorer	0900 12.5.00	FEDEX	
FedEx	12.6.00 0915	[illegible]	12.6.00 0915
FedEx	12.7.00 0945	[illegible]	12.7.00 0945

SPECIAL INSTRUCTIONS

~~(1) Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)~~ RT 12.4.00

(2) 8310_SVOA_HPLC {Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz[a,h]anthracene}

(3) Semi-VOA - 8270A (App IX): Semi-VOA -- 8270A (App IX Add-On) {1,2-Diphenylhydrazine, 1,4-Dinotrobenzene, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene, 2-Cyclohexyl-4,6-dinitrophenol}

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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	B99-037-11	Page 1 of 3 RT 12.5.5

Collector Fahlberg/Johansen	Company Contact F Roeck	Telephone No. 372-9086	Project Coordinator WEISS, RL
Project Designation ERDF Leachate Delisting Analysis	Sampling Location ERDF		SAF No. B99-037
Ice Chest No. ERL 96-034, 039, 042 (1 of 8, 2 of 3, 3 of 3)	Field Logbook No. EL 1517-1	COA RERDF22560	Method of Shipment Fed EX
Shipped To ~~TMA~~/RECRA RC 12.4.00	Offsite Property No. A010034		Bill of Lading/Air Bill No. 4235 7453 - 0967, 0978, 0989

Price Code 7N — Air Quality

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	None	HCl to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2
Type of Container	P	aG	aG	aG	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	120mL	250mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL
SAMPLE ANALYSIS	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions	TDS - 160.1	TSS - 160.2	Ammonia - 350.3	See item (2) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions	TDS - 160.1	TSS - 160.2	Ammonia - 350.3	See item (2) in Special Instructions
~~B110B1~~	WATER	12.4.00	0700	RT 12.4.00									
B110B2	WATER	12.4.00	0945	X	X	X	X	X	X	X	X	X	X
B110B3	WATER	12.4.00	1015	X	X	X	X	X	X	X	X	X	X
~~B11265~~	~~WATER~~	~~12.4.00~~	~~0945~~	RT 12.4.00									
~~B11266~~	~~WATER~~	~~12.4.00~~	~~1015~~										

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R Fahlberg	12.4.00 1130	R Thoren	12.4.00 1130
R Thoren	12.4.00 1300	Stored in 2B 3728	12.4.00 1300
Removed from 2B 3728	12.5.00 0900	R Thoren	12.5.00 0900
R Thoren	12.5.00 0900		
Fed Ex	12.6.00 0915	V Hendy	12.6.00 0915
Fed Ex	12.7.00 0945	V Hendy	12.7.00 0945

SPECIAL INSTRUCTIONS

(1) IC Anions - 9056 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Silicon, Thallium, Tin)

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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)

WIDL 473

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-11	Page 5 of 6 (3 of 5) RT 12.5

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS, RL
Price Code: 7N	Data Turnaround: 45 Days	Air Quality	
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF	SAF No.: B99-037	
Ice Chest No.: ERCA96-034,039,042	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: TMA/RECRA Rf 12.4.00	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 42357953-0967,0978,0989

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage

Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Coof 4C	Cool 4C	HCl Cool 4C					
Type of Container	aG	P	aGs*	aGs*	aGs*					
No. of Container(s)	2	2	3	3	3					
Volume	1000mL	1000mL	40mL	40mL	40mL A-C					
SAMPLE ANALYSIS	oil & Grease - 9070	Gross Alpha, Gross Beta	Alcohols, Glycols, & Ketones - 8015	Alcohols, Glycols, & Ketones - 8015 [1-Butanol, Methanol]	See item (1) in Special Instructions					

	Sample No.	Matrix *	Sample Date	Sample Time									
1	B110B1	WATER	12.4.00	0700				X	X				
2	B110B2	WATER	12.4.00	0945	X			X	X				
3	B110B3	WATER	12.4.00	1015	X			X	X				
	~~B11265~~	~~WATER~~	~~12.4.00~~	~~0945~~	RT 12.4.00								
	~~B11266~~	~~WATER~~	~~12.4.00~~	~~1015~~									

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	1130 12.4.00	R.T. Thorer	1130 12.4.00
R.T. Thorer	1300 12.4.00	~~Received By~~ Stored in R.L. 2B 3728	1300 12.4.00
~~Relinquished By~~ Removed from Rf 2B 3728	0900 12.5.00	R.T. Thorer	0900 12.5.00
R.T. Thorer	0900 12.5.00	FED EX	
Fed Ex	12.6.00 0915		12.6.00 0915
Fed Ex	12.7.00 0945		12.7.00 0945

SPECIAL INSTRUCTIONS

(1) VOA - 8260A (App IX): VOA - 8260A (App IX Add-On) {1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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)

Recra LabNet - Lionville Laboratory
LCSC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-037 H1173

DATE RECEIVED: 12/07/00 RFW LOT # :0012L502

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B110B2	002	W	00LLC209	12/04/00	12/07/00	12/09/00
B110B2	002 MS	W	00LLC209	12/04/00	12/07/00	12/09/00
B110B2	002 MSD	W	00LLC209	12/04/00	12/07/00	12/09/00
B110B3	003	W	00LLC209	12/04/00	12/07/00	12/09/00

LAB QC:

BLK	MB1	W	00LLC209	N/A	12/07/00	12/09/00
BLK	MB1 BS	W	00LLC209	N/A	12/07/00	12/09/00

12-15-00

FEB 2001
RECEIVED

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-037
RFW #: 0012L502
SDG/SAF#: H1173/B99-037

W.O. #: #: 10985-001-001-9999-00
Date Received: 12-07-00

LC SCAN

The set of samples consisted of two (2) water samples collected on 12-04-00.

The samples and their associated QC samples were prepared on 12-07-00 and analyzed using Recra OP's based on EPA Method 8315 for formaldehyde on 12-09-00.

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

2. All continuing calibration standards analyzed prior to the sample extracts met acceptance criteria.

3. Recra does not use surrogate spikes for this analysis. The method does not provide specific guidance regarding the use of surrogates and performance criteria.

4. The blank spike recovery was outside the laboratory advisory control limits of 50%-150%.

5. The matrix spike recoveries were within the advisory control limits of 50%-150%.

6. The blank contained Formaldehyde above the reporting limit. The sample results have been flagged with a B. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

12-20-00
Date

r:\group\hpls-gcscan\narr\aldehydes\12-502tnu..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 10 pages.

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

Recra Labnet Philadelphia

GLOSSARY OF OLCSC DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

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

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

Recra LabNet - Lionville Laboratory

HPLC scan

Report Date: 12/13/00 09:50

RFW Batch Number: **0012L502** Client: **TNUHANFORD B99-037 H1173** Work Order: **10985-001-001-9999-00**

	Cust ID:	B110B2	B110B2	B110B2	B110B3	BLK	BLK BS
Sample Information	RFW#:	002	002 MS	002 MSD	003	00LLC209-MB1	00LLC209-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Formaldehyde		22 B	110 %	123 %	25 B	17	183 %

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

RECRA LabNet Use Only

00121502

Custody Transfer Record/Lab Work Request

Page 1 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client TWU HANFORD B99-037

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC SPEC Del STD TAT 30DAY

Date Rec'd 12-8-00 TIC 12-7-00 Date Due 1-5-01 TIC 12-7-00

Account #

		A-C	D-E	F-G	H-I	J-K	L-N		O	P	Q	RS	T	U	V	W
Refrigerator #		1	5	5	5	5	1		5	5	5	5	5	5	1	5
#/Type Container	Liquid	3V	2AG	2AG	2AG	2AG	3V		1P	1PL	1P	2AG	1P	1AG	1AG	1AG
	Solid															
Volume	Liquid	40	950	950	950	950	40		500	1L	500	1L	125	500	250	500
	Solid															
Preservatives		HCL	—	—	—	—	—		HNO3	NAOH	ZNAC NAOH	HCL	—	—	HCL	HNO3
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	SVOA HPLC	Alcohol Glycol Ketone		Metal	CN	Sulfide	OT Sulfate		Ortho Phosphate	TOC	
		RECRA LabNet Use Only														
		0624N	0625N	0608H	0HBGK	0810	0GCSC		METO	ICNTO	ISFD	IOGGR	IPH	OLCSC	IOCT	MGHTO

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	0624N	0625N	0608H	0HBGK	0810	0GCSC		METO	ICNTO	ISFD	IOGGR	IPH	OLCSC	IOCT	MGHTO
001	B110B1			W	0700	12-4-00	3					3									
002	1 2			1	0945	1	3	1	2	2	2	3		1	1	1	2	1	1	1	1
003	1 3			1	1015	1	3	2	2	2	2	3		1	1	1	2	1	1	1	1

Special Instructions: SAF B99-037

Run Matrix QC

Rec'd Broke 1EA BNA #002

DATE/REVISIONS:

Met (1) 1. AL, AG, BA, BE, CA, CD, CO, CR, CU, FE, K

2. MG, MN, NA, NI, SB, V, ZN, AS, PB,

1 3. SE, SI, TI, SN

#2 4. Rec'd on 12-7-00

5.

6.

Relinquished by	Received by	Date	Time
[signature]	[signature]	12-6-00	0915
[signature]	[signature]	12-7-00	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___ See Airbill #

2) Ambient or Chilled

3) Received in Good Condition Y or N 12-7-00

4) Labels Indicate Properly Preserved Y or N

5) Received Within Holding Times Y or N

COC Tape was: 1) Present on Outer Package Y or N

2) Unbroken on Outer Package Y or N

3) Present on Sample Y or N

4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 3.2 °C 4.3

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7954 0989 3.2

4235 7954 0978 4.3

RECRA LabNet Use Only

00121502

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNX HANFORD B99-037

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #: Page 1

RECRA Project Manager:

QC: Del: TAT:

Date Rec'd: Date Due:

Account #:

		X	Y	Z	AA	BB
Refrigerator #		S	S	S	S	S
#/Type Container	Liquid	1PL	1PL	1PL	1PL	1PL
	Solid					
Volume	Liquid	500	500	500	500	500
	Solid					
Preservatives		–	–	–	–	H2SO4
ANALYSES REQUESTED →	ORGANIC: VOA					
	ORGANIC: BNA					
	ORGANIC: Pest/PCB					
	ORGANIC: Herb					
	INORG: Metal					
	INORG: CN					
		Spec Cond.	IC Anions			Ammonia

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	ISPCD	IC ①	TDS	TSS	NH3
001	B110B1			W	12-4/00	0700					
002	2					0945	1	1	1	1	1
003	3					1015	1	1	1	1	1

Special Instructions:

DATE/REVISIONS:

IC ① 1. Br, Cl, F1, NO2, NO3, PO4, SO4

2.

3.

4.

5.

6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	12/6/00	0915
[illegible]	[illegible]	12/7/00	0945

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

RECRA LabNet Use Only

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

COC Tape 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. ____ °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-11	Page ~~1 of 6~~ RT 12.5.00

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS. RL
Price Code: 7N	Data Turnaround: 45 Days	Air Quality	
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF	SAF No.: B99-037	
Ice Chest No.: ERC96-034,039,042 (1 of 3, 2 of 3, 3 of 3)	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA R 12.4.00	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 42357453-0967,0978,0989

POSSIBLE SAMPLE HAZARDS/REMARKS: NONE

Special Handling and/or Storage

Preservation	HNO3 to pH <2	ZnAc+NaOH to pH >9 Cool	HCl to pH <2	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	None	Cool 4C EF	Cool 4C II	Cool 4C GH	Cool 4C
Type of Container	P	P	P	P	P	P	aG	aG	aG	aG
No. of Container(s)	1 Delete	1	1	1 Delete	1	Delete	2	2	2	2
Volume	500mL RT	500mL	1000mL Delete RT 12.4.00	1000mL RT 12.4.00	1000mL	1000mL RT 12.4.00	1000mL	1000mL	1000mL	1000mL
SAMPLE ANALYSIS	Total Uranium RT 12.4.00	Sulfides - 9030	Technetium-99 RT 12.4.00	See item (1) in Special Instructions.	Total Cyanide - 9010	Gross Alpha-14 RT 12.4.00	See item (2) in Special Instructions	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time									
~~B110B1~~	~~WATER~~	~~12.4.00~~	~~0900~~ RT 12.4.00									
B110B2	WATER	12.4.00	0945		X			X		X	X	X	X
B110B3	WATER	12.4.00	1015		X			X		X	X	X	X
~~B11265~~	~~WATER~~	~~12.4.00~~	~~0945~~									
~~B11266~~	~~WATER~~	~~12.4.00~~	~~1015~~ RT 12.4.00									

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R Fahlberg	12.4.00 1130	R Thorer	12.4.00 1130
R Thorer	12.4.00 1300	Stored in Ref CB 3728	12.4.00 1300 RT 12.4.00
~~Relinquished By~~ Removed from Ref CB 3728	12.6.00 0900	R. Thorer	12.5.00 0900
R Thorer	12.5.00 0900	FEDEX	
Fed Ex	12-6-00 0915		12-6-00 0915
Fed Ex	12-7-00 0945		12-7-00 0945

SPECIAL INSTRUCTIONS

~~(1) Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)~~ RT 12.4.00

(2) 8310_SVOA_HPLC {Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz[a,h]anthracene}

(3) Semi-VOA - 8270A (App IX); Semi-VOA -- 8270A (App IX Add-On) {1,2-Diphenylhydrazine, 1,4-Dinotrobenzene, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene, 2-Cyclohexyl-4,6-dinitrophenol}

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

Matrix *
S=Soil
SE=Sediment
SO=Solid
S=Sludge
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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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-11	Page 1 of 2 RT 12.5.00

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS. RL
Price Code: 7N	Data Turnaround: 45 Days	Air Quality:	
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF	SAF No.: B99-037	
Ice Chest No.: ERC 96-034, 039, 042 (1 of 3, 2 of 3, 3 of 3)	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA RT 12.4.00	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 4235 7453 - 0967, 0978, 0989

POSSIBLE SAMPLE HAZARDS/REMARKS: NONE

Special Handling and/or Storage

Preservation	None	HCl to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2
Type of Container	P	aG	aG	aG	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	120mL	250mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL
SAMPLE ANALYSIS	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions	TDS - 160.1	TSS - 160.2	Ammonia - 350.3	See item (2) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time										
~~B110B1~~	~~WATER~~	~~12.4.00~~	~~0700~~ RT 12.4.00										
B110B2	WATER	12.4.00	0945	X	X	X	X	X	X	X	X	X	X
B110B3	WATER	12.4.00	1015	X	X	X	X	X	X	X	X	X	X
~~B11265~~	~~WATER~~	~~12.4.00~~	~~0945~~ RT 12.4.00										
~~B11266~~	~~WATER~~	~~12.4.00~~	~~1015~~										

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	R. Fahlberg / R Fahlberg	12.4.00 1130	R Thoren	12.4.00 1130
Relinquished By	R Thoren	12.4.00 1300	Stored in R.L. 2B 3728	12.4.00 1300
Relinquished By	Removed from R.L. 2B 3726	12.5.00 0900	R Thoren	12.6.00 0980
Relinquished By	R Thoren	12.5.00 0900	Fed Ex	
Relinquished By	Fed Ex	12-6-00 0915	V. Hendy	12-6-00 0915
Relinquished By	Fed Ex	12-7-00 0945	V. Hendy	12-7-00 0945

SPECIAL INSTRUCTIONS

(1) IC Anions - 9056 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Lead, Selenium, Silicon, Thallium, Tin}

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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	B99-037-11	Page 5 of 6

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS, RL
Price Code: 7N	Data Turnaround: 45 Days	Air Quality	
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF		SAF No.: B99-037
Ice Chest No.: ERC96-034,039,042	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 42357453-0967,0978,0989

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage

Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	HCl Cool 4C					
Type of Container	aG	P	aGs*	aGs*	aGs*					
No. of Container(s)	2	1	3	3	3					
Volume	1000mL	1000mL	40mL	40mL	40mL A-C					
SAMPLE ANALYSIS	oil & Grease - 9070	Gross Alpha, Gross Beta	Alcohols, Glycols, & Ketones - 8015	Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Methanol)	See item (1) in Special Instructions					

Sample No.	Matrix *	Sample Date	Sample Time										
B110B1	WATER	12·4·00	0700				X	X					
B110B2	WATER	12·4·00	0945	X			X	X					
B110B3	WATER	12·4·00	1015	X			X	X					
~~B11265~~	~~WATER~~	~~12·4·00~~	~~0945~~	RT 12.4.00									
~~B11266~~	~~WATER~~	~~12·4·00~~	~~1015~~										

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By: R. Fahlberg / R. Fahlberg 12.4.00 Date/Time: 1130	Received By: R. Thorem Date/Time: 1130 12.4.00
Relinquished By: R. Thorem 12.4.00 Date/Time: 1300	Received By: Stored in 2B 3728 12.4.00 Date/Time: 1300
Relinquished By: Removed from 2B 3728 12.5.00 Date/Time: 0900	Received By: R. Thorem 12.5.00 Date/Time: 0900
Relinquished By: R. Thorem 12.5.00 Date/Time: 0900	Received By: FED EX Date/Time:
Relinquished By: FedEx 12-6-00 0915 Date/Time:	Received By: [signature] 12-6-00 0915 Date/Time:
Relinquished By: FedEx 12-7-00 0945 Date/Time:	Received By: [signature] 12-7-00 0945 Date/Time:

SPECIAL INSTRUCTIONS

(1) VOA - 8260A (App IX); VOA - 8260A (App IX Add-On) {1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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

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

BHI-EE-011 (10/99)

Figure 1. Sample Check-in List

Date/Time Received: 12-6-00 0915/12-7-00 0945

SDG#: 0012C502

Work Order Number: ERC 96-034,039,042 SAF# B99-037

Shipping Container ID: Chain of Custody #

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 3.2, 4.3, 3.3
5. Vermiculite/packing materials is Wet [✓] Dry [✓]
6. Number of samples in shipping container: 23
7. Sample holding times exceeded? Yes [ ] No [✓]

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

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

10. Were any anomalies identified in sample receipt? Yes [✓] No [ ]

11. Description of anomalies (include sample numbers): #2 BNA 1EA Rec'd Broken Rec'd ID B112265 crossed off on Original COC

Sample Custodian/Laboratory: [illegible] RecRA Date: 12-7-00

Telephoned to: On By

Recra LabNet - Lionville Laboratory
GCSC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-037 H1173

DATE RECEIVED: 12/07/00 RFW LOT # :0012L502

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B110B1	001	W	00LLC210	12/04/00	12/11/00	12/11/00
B110B1	001 MS	W	00LLC210	12/04/00	12/11/00	12/11/00
B110B1	001 MSD	W	00LLC210	12/04/00	12/11/00	12/11/00
B110B2	002	W	00LLC210	12/04/00	12/11/00	12/11/00
B110B3	003	W	00LLC210	12/04/00	12/11/00	12/11/00

LAB QC:

BLK	MB1	W	00LLC210	N/A	12/11/00	12/11/00
BLK	MB1 BS	W	00LLC210	N/A	12/11/00	12/11/00

12-28-00

FEB 2001
RECEIVED

RECRA
ENVIRONMENTAL
INC.
Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B00-037
RFW #: 0012L502
SDG/SAF#: H1173/B00-037

W.O. #: #: 10985-001-001-9999-00
Date Received: 12-07-00

GC SCAN

The set of samples consisted of three (3) water samples collected on 12-04-00.

The samples and their associated QC samples were prepared and analyzed by methodology based on EPA Method 8015B for Methanol and Butanol on 12-11-00.

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

1. The samples were packaged and stored as specified in the method protocol; the cooler temperature upon receipt has been recorded on the chain-of-custody.

2. All required holding times were met for these samples.

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

4. All continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.

5. Recra does not use surrogate spikes for this analysis. The method does not provide specific guidance regarding the use of surrogates and performance criteria. Method performance is monitored through the use of blank spikes and matrix spikes.

6. All blank spike recoveries were within advisory control limits of 50%-150%.

7. All matrix spike recoveries were within the advisory control limits of 50%-150%.

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

for J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

01-02-01
Date

r:\group\hplc-gcsc\narr\\gcvoa-scan\2000\12-502al..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 10 pages.

GLOSSARY OF OGCSC DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

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

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Recra LabNet - Lionville Laboratory

GC SCAN

Report Date: 12/20/00 09:23

RFW Batch Number: **0012L502** Client: **TNUHANFORD B99-037 H1173** Work Order: **10985-001-001-9999-00** Page: 1

	Cust ID:	B110B1	B110B1	B110B1	B110B2	B110B3	BLK
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	00LLC210-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Methanol		5.0 U	96 %	102 %	5.0 U	5.0 U	5.0 U
Butanol		5.0 U	95 %	101 %	5.0 U	5.0 U	5.0 U

	Cust ID:	BLK BS
Sample Information	RFW#:	00LLC210-MB1
	Matrix:	WATER
	D.F.:	1.00
	Units:	mg/L
Methanol		100 %
Butanol		101 %

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

12.28.00

RECRA LabNet Use Only

00121502

Custody Transfer Record/Lab Work Request

Page 1 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client TNU HANFORD B99-037

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC SPEC Del STD TAT 30DAY

Date Rec'd 12-8-00 TIC 12-7-00 Date Due 1-5-01 TIC 12-7-00

Account #

		A-C	D-E	F-G	H-I	J-K	L-N		O	P	Q	R-S	T	U	V	W
Refrigerator #		1	5	5	5	5	1		5	5	5	5	5	5	1	5
#/Type Container	Liquid	3V	2AG	2AG	2AG	2AG	3V		1P	1PL	1P	2AG	1P	1AG	1AG	1AG
	Solid															
Volume	Liquid	40	950	950	950	950	40		500	1L	500	1L	120	500	250	500
	Solid															
Preservatives		HCL	—	—	—	—	—		HNO3	NAOH	ZNAC NAOH	HCL	—	—	HCL	HNO3
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb	5VOA HPLC	Alcohol Glycol Ketone		Metal	CN	Sulfide	OT Phenol		Perchlorate Formate	TOC	

RECRA LabNet Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624N	0625N	0608H	0HBGK	0831O	0GCSC		MET(1)	ICNTO	ISFD	IOGGR	IPH	OLCSC	IOCT	MGHTO
	001	B110B1			W	0700	12-4-00	3					3									
	002	1 2			1	0945	1	3	1	2	2	2	3		1	1	1	2	1	1	1	1
	003	1 3			1	1015	1	3	2	2	2	2	3		1	1	1	2	1	1	1	1

Special Instructions: SAF B99-037
Run Matrix QC
Rec'd Broken IEA BNA #002

DATE/REVISIONS:
Met (1) 1. AL, AG, BA, BE, CA, CD, CO, CR, CU, FE, K
1 2. MG, MN, NA, NI, SB, V, ZN, AS, PB,
1 3. SE, SI, TI, SN
#2 4. Rec'd on 12-7-00
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___ Airbill # See Below
2) Ambient or Chilled
3) Received in Good Condition Y or N 12-7-00
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 3.2 °C 4.3

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	12-6-00	0915
[illegible]	[illegible]	12-7-00	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES: 4235 7954 0989 3.2
4235 7954 0978 4.3
COC 9225 9787 1052

RECRA LabNet Use Only
00121502

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNX HANFORD B99-037
Est. Final Proj. Sampling Date:
Project #:
Project Contact/Phone #: Page 1
RECRA Project Manager:
QC: Del: TAT:

Date Rec'd: Date Due:
Account #:

		X	Y	Z	AA	BB
Refrigerator #		S	S	S	S	S
#/Type Container	Liquid	1PL	1PL	1PL	1PL	1PL
	Solid					
Volume	Liquid	500	500	500	500	500
	Solid					
Preservatives		–	–	–	–	H2SO4
ANALYSES REQUESTED	ORGANIC: VOA					
	ORGANIC: BNA					
	ORGANIC: Pest/PCB					
	ORGANIC: Herb					
	INORG: Metal					
	INORG: CN	Spec Cond.	IC Anions			Ammonia
RECRA LabNet Use Only		TSPCD	IC (1)	TDS	TSS	NH3 III

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	TSPCD	IC (1)	TDS	TSS	NH3 III
S - Soil	001	B110B1			W	12-4/00	0700					
SE - Sediment	002	2					0945	1	1	1	1	1
SO - Solid	003	3					1015	1	1	1	1	1
SL - Sludge												
W - Water												
O - Oil												
A - Air												
DS - Drum Solids												
DL - Drum Liquids												
L - EP/TCLP Leachate												
Wi - Wipe												
X - Other												
F - Fish												

Special Instructions:

DATE/REVISIONS:
IC (1) 1. Br, Cl, Fl, NO2, NO3, PO4, SO4
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[signature]	[signature]	12/6/00	0915
[signature]	[signature]	12/7/00	0945

Relinquished by	Received by	Date	Time

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

RECRA LabNet Use Only

Samples were:
1) Shipped ____ or Hand Delivered ____
Airbill # ____
2) Ambient or Chilled
3) Received In Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape 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. ____ °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B99-037-11	Page ~~3~~ of 6 (2 of 3) RT 12.5.00
Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS, RL	Price Code: 7N; Data Turnaround: 45 Days; Air Quality
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF		SAF No.: B99-037	
Ice Chest No.: ERC96-034,039,042 (1 of 3, 2 of 3, 3 of 3)	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX	
Shipped To: ~~TMA~~/RECRA R S 12-4-00	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 42357453-0967,0978,0989	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	HNO3 to pH <2	ZnAc+NaOH to pH >9 Cool	HCl to pH <2	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	None	Cool 4C EF	Cool 4C IJ	Cool 4C GH	Cool 4C
Type of Container	P	P	P	P	P	P	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	2	2	2	2
Volume	~~500mL~~ Delete RT	500mL	~~1000mL~~ Delete RT 12.4.00	~~1000mL~~ Delete RT 12.4.00	1000mL	~~1000mL~~ Delete RT 12.4.00	1000mL	1000mL	1000mL	1000mL
SAMPLE ANALYSIS	Total Uranium	Sulfides - 9030	Technetium-99 RT 12.4.00	See item (1) in Special Instructions	Total Cyanide - 9010	Carbon-14	See item (2) in Special Instructions	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time									
~~B110B1~~	~~WATER~~	12.4.00	0900 RT 12400									
B110B2	WATER	12.4.00	0945		X		X		X	X	X	X
B110B3	WATER	12.4.00	1015		X		X		X	X	X	X
~~B11266~~	~~WATER~~	12.4.00	0945									
~~B11266~~	~~WATER~~	12.4.00	1015 RT 12400									

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R.Fahlberg	12.4.00 1130	R Thorer	12.4.00 1130
R Thorer	12.4.00 1300	Stored in Ref 2B 3728	12.4.00 1300 RT 12.4.00
Removed from Ref CB 3728	12.6.00 0900 RT 12.5.00	R. Thorer	12.5.00 0900
R Thorer	12.5.00 0900	FEDEX	
FedEx	12-6-00 0915	[illegible]	12-6-00 0915
FedEx	12-7-00 0945	[illegible]	12-7-00 0945

SPECIAL INSTRUCTIONS

~~(1) Gamma Spectroscopy (Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~ RT 12.4.00

(2) 8310_SVOA_HPLC {Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz[a,h]anthracene}

(3) Semi-VOA - 8270A (App IX): Semi-VOA -- 8270A (App IX Add-On) {1,2-Diphenylhydrazine, 1,4-Dinotrobenzene, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene, 2-Cyclohexyl-4,6-dinitrophenol}

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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		B99-037-11	Page 1 of ~~4~~ RT 12.5.6
Collector Fahlberg/Johansen	Company Contact F Roeck	Telephone No. 372-9086	Project Coordinator WEISS. RL	Price Code 7N Data Turnaround 45 Days
Project Designation ERDF Leachate Delisting Analysis	Sampling Location ERDF		SAF No. B99-037	Air Quality
Ice Chest No. ERC 96-034, 039, 042 (1 of 3, 2 of 3, 3 of 3)	Field Logbook No. EL 1517-1	COA RERDF22560	Method of Shipment Fed EX	
Shipped To ~~TMA~~/RECRA RC 12.4.00	Offsite Property No. A010034		Bill of Lading/Air Bill No. 42357953 - 0967, 0978, 0989	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	None	HCl to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2
Type of Container	P	aG	aG	aG	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	120mL	250mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL
SAMPLE ANALYSIS	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions	TDS - 160.1	TSS - 160.2	Ammonia - 350.3	See item (2) in Special Instructions
~~B110B1~~ WATER 12.4.00 0700	RT 12.4.00									
B110B2 WATER 12.4.00 0945	X	X	X	X	X	X	X	X	X	X
B110B3 WATER 12.4.00 1015	X	X	X	X	X	X	X	X	X	X
~~B11265~~ WATER 12.4.00 0945	RT 12.4.00									
~~B11266~~ WATER 12.4.00 1015										

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R Fahlberg	1130 12.4.00	R Thoren	1130 12.4.00
R Thoren	1300 12.4.00	Stored in Rel 2B 3728	1300 12.4.00
Removed from Rel 2B 3728	0900 12.5.00	R Thoren	0900 12.6.00
R Thoren	0900 12.5.00		
Fed Ex	12.6.00 0915	V Hendy	12.6.00 0915
Fed Ex	12.7.00 0945	V Hendy	12.7.00 0945

SPECIAL INSTRUCTIONS

(1) IC Anions - 9056 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Silicon, Thallium, Tin)

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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		B99-037-11	Page 5 of 6 RT 12.5.00
Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS, RL	Price Code: 7N; Data Turnaround: 45 Days
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF		SAF No.: B99-037	Air Quality
Ice Chest No.: ERC96-034,039,042	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX	
Shipped To: ~~TMA~~ RECRA RT 12.4.00	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 42357453-0967,0978,0989	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

SAMPLE ANALYSIS												
Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	HCl Cool 4C							
Type of Container	aG	P	aGs*	aGs*	aGs*							
No. of Container(s)	2	2	3	3	3							
Volume	1000mL	1000mL	40mL	40mL	40mL A-C							
	oil & Grease - 9070	Gross Alpha Gross Beta	Alcohols, Glycols, & Ketones - 8015 RT 12.1.00	Alcohols, Glycols, & Ketones - 8015 [1-Butanol, Methanol]	See item (1) in Special Instructions							
Sample No.	Matrix *	Sample Date	Sample Time									
B110B1	WATER	12.4.00	0700				X	X				
B110B2	WATER	12.4.00	0945	X			X	X				
B110B3	WATER	12.4.00	1015	X			X	X				
~~B11265~~	~~WATER~~	~~12.4.00~~	~~0945~~	RT 12.4.00								
~~B11266~~	~~WATER~~	~~12.4.00~~	~~1015~~									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Fahlberg / R. Fahlberg	Date/Time: 1130 12.4.00	Received By: R Thorem	Date/Time: 1130 12.4.00
Relinquished By: R Thorem	Date/Time: 1300 12.4.00	Received By: Stored in R.L. 2B 3728	Date/Time: 1300 12.4.00
Relinquished By: Removed from R.L. 2B 3728	Date/Time: 0900 12.5.00	Received By: R Thorem	Date/Time: 0900 12.5.00
Relinquished By: R Thorem	Date/Time: 0900 12.5.00	Received By: FED EX	Date/Time:
Relinquished By: FedEx	Date/Time: 12.6.00 0915	Received By: [signature]	Date/Time: 12-6-00 0915
Relinquished By: FedEx	Date/Time: 12.7.00 0945	Received By: [signature]	Date/Time: 12-7-00 0945

SPECIAL INSTRUCTIONS

(1) VOA - 8260A (App IX): VOA - 8260A (App IX Add-On) {1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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)

Figure 1. Sample Check-in List

Date/Time Received: 12-6-00 0915 / 12-7-00 0945

SDG#: 0012L502

Work Order Number: ERC 96-034,039,042 SAF# B99-037

Shipping Container ID: Chain of Custody #

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 3.2, 4.3, 3.3
5. Vermiculite/packing materials is Wet [✓] Dry [✓]
6. Number of samples in shipping container: 23
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): #2 BNA 1EA Rec'd Broken Rec'd ID B112265 crossed off on Original C.O.C

Sample Custodian/Laboratory: L. Henry RECRA Date: 12-7-00

Telephoned to: On By

Recra LabNet - Lionville Laboratory
HBGX ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-037 H1173

DATE RECEIVED: 12/07/00 RFW LOT # :0012L502

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B110B2	002	W	00LE1617	12/04/00	12/08/00	01/11/01
B110B2	002 MS	W	00LE1617	12/04/00	12/08/00	01/11/01
B110B2	002 MSD	W	00LE1617	12/04/00	12/08/00	01/11/01
B110B3	003	W	00LE1617	12/04/00	12/08/00	01/11/01
LAB QC:						
PBLKJY	MB1	W	00LE1617	N/A	12/08/00	01/11/01
PBLKJY	MB1 BS	W	00LE1617	N/A	12/08/00	01/11/01

01-25-01

FEB 2001
RECEIVED

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B99-037
RFW#: 0012L502
SDG/SAF#: H1173/B99-037

W.O.#: 10985-001-001-9999-00
Date Received: 12-07-00

HERBICIDE

The set of samples consisted of two (2) water samples collected on 12-04-00.

The samples and their associated QC samples were extracted on 12-08-00 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 01-11-01. The extraction and analysis procedure was based on method 8151.

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

1. The cooler temperature has been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis have been met.
3. The method blank was below the reporting limits for all target compounds.
4. All surrogate recoveries were within acceptance criteria.
5. All blank spike recoveries were within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. All initial calibrations associated with this data set were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
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
VP, Laboratory General Manager
Lionville Laboratory

01-26-01
Date

pef\r:\group\data\herb\tnu\\12L-502.her

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 10 pages.

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

GLOSSARY OF HERBICIDE DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

E = Indicates that the compound was detected beyond the calibration range.

I = Interference.

SUFFIXES

BS = Indicates blank spike in which reagent grade water is spiked with the matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

ABBREVIATIONS

D = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Reported.

SP = Indicates spiked compound.

Recra LabNet - Lionville Laboratory

Herbicides, Special List

Report Date: 01/18/01 13:59

RFW Batch Number: **0012L502** Client: **TNUHANFORD B99-037 H1173** Work Order: 10985001001 Page: 1

	Cust ID:	B110B2		B110B2		B110B2		B110B3		PBLKJY		PBLKJY BS	
Sample Information	RFW#:	002		002 MS		002 MSD		003		00LE1617-MB1		00LE1617-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate:	DCAA	109	%	114	%	110	%	113	%	105	%	112	%
			fl		fl		fl		fl		fl		fl
Dalapon		5.4	U	85	%	75	%	5.2	U	5.0	U	81	%
Dicamba		2.2	U	123	%	125	%	2.1	U	2.0	U	127	%
Dichloroprop		5.4	U	104	%	96	%	5.2	U	5.0	U	103	%
2,4-D		1.1	U	108	%	96	%	1.0	U	1.0	U	112	%
2,4,5-TP (Silvex)		0.54	U	118	%	118	%	0.52	U	0.50	U	108	%
2,4,5-T		0.54	U	132	%	116	%	0.52	U	0.50	U	130	%
2,4-DB		5.4	U	159	%	150	%	5.2	U	5.0	U	158	%
Dinoseb		0.54	U	119	%	117	%	0.52	U	0.50	U	117	%

01-25-01

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

RECRA LabNet Use Only

00121502

Custody Transfer Record/Lab Work Request

Page 1 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client TNU HANFord B99-037

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC SPec Del STD TAT 30DAY

Date Rec'd 12-8-00 TC 12-7-00 Date Due 1-5-01 TC 12-7-00

Account #

		A-C	D-E	F-G	H-I	J-K	L-N		O	P	Q	R-S	T	U	V	W
Refrigerator #		1	5	5	5	5	1		5	5	5	5	5	5	1	5
#/Type Container	Liquid	3V	2AG	2AG	2AG	2AG	3V		1P	1PL	1P	2AG	1P	1AG	MG	1AG
	Solid															
Volume	Liquid	40	950	950	950	950	40		500	1L	500	1L	125	500	250	500
	Solid															
Preservatives		HCL	—	—	—	—	—		HNO3	NAOH	ZNAC NAOH	HCL	—	—	HCL	HNO3
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/ PCB	Herb	SVOA HPLC	Alcohol Glycol Ketone		Metal	CN	Sulfide	OT Chem		Explosive Reactive	TOC	

RECRA LabNet Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624N	0625N	0608H	8HBGK	8310	8GCSC		MET(1)	ICNTO	ISFD	IOGGR	IPH	OLCSC	IOCT	MGHTO
S - Soil	001	B110B1			W	0700	12-4-00	3					3									
SE - Sediment	002	1 2			1	0945	1	3	1	2	2	2	3		1	1	1	2	1	1	1	1
SO - Solid	003	1 3			1	1015	1	3	2	2	2	2	3		1	1	1	2	1	1	1	1
SL - Sludge																						
W - Water																						
O - Oil																						
A - Air																						
DS - Drum Solids																						
DL - Drum Liquids																						
L - EP/TCLP Leachate																						
WI - Wipe																						
X - Other																						
F - Fish																						

Special Instructions: SAF B99-037
Run Matrix QC
Rec'd Broken IEA BNA #002

DATE/REVISIONS:
Met (1) 1. AL, AG, BA, BE, CA, CD, CO, CR, CU, FE, K
1 2. MG, MN, NA, NI, SB, V, ZN, AS, PB,
3. SE, SI, TI, SN
#2 4. Rec'd on 12-7-00
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___
Airbill # See Below
2) Ambient or ~~Chilled~~
3) Received in Good Condition Y or N 12-7-00
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 3.2 / 4.3 °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	12-6-00	0915
[signature]	[signature]	12-7-00	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES: 4235 7954 0989 3-2
4235 7954 0978

RECRA LabNet Use Only: 00121502

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNX HANFORD B99-037
Est. Final Proj. Sampling Date:
Project #:
Project Contact/Phone #: Page 1
RECRA Project Manager:
QC: Del: TAT:
Date Rec'd: Date Due:
Account #:

		X	Y	Z	AA	BB
Refrigerator #		S	S	S	S	S
#/Type Container	Liquid	1PL	1PL	1PL	1PL	1PL
	Solid					
Volume	Liquid	500	500	500	500	500
	Solid					
Preservatives		—	—	—	—	H2SO4
ANALYSES REQUESTED →	ORGANIC: VOA					
	ORGANIC: BNA					
	ORGANIC: Pest/PCB					
	ORGANIC: Herb					
	INORG: Metal					
	INORG: CN					
		Spec Cond.	IC Anions			Ammonia
RECRA LabNet Use Only		ICP/MS	IC (1)	TDS	TSS	NH3

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	ICP/MS	IC (1)	TDS	TSS	NH3
001	B110B1			W	12-4-00	0700					
002	1 2			1	1	0945	1	1	1	1	1
003	1 3			1	1	1015	1	1	1	1	1

Special Instructions:

DATE/REVISIONS:
IC (1) 1. Br, Cl, F1, NO2, NO3, PO4, SO4
2.
3.
4.
5.
6.

RECRA LabNet Use Only

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

COC Tape 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. ___ °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	12/6/00	0915
[signature]	[signature]	12/7/00	0945

Relinquished by	Received by	Date	Time

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-11	Page ~~3 of 6~~ 2 of 3 RT 12.5.00

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS, RL
Price Code: 7N	Data Turnaround: 45 Days	Air Quality	
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF	SAF No.: B99-037	
Ice Chest No.: ERC96-034,039,042 (1 of 3, 2 of 3, 3 of 3)	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA R S 12-4-00	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 42357953-0967,0978,0989

POSSIBLE SAMPLE HAZARDS/REMARKS: NONE

Special Handling and/or Storage

Preservation	HNO_3 to pH <2	ZnAc+NaOH to pH >9 Cool	HCl to pH <2	HNO_3 to pH <2	NaOH to pH >= 12 Cool 4C	None	Cool 4C EF	Cool 4C II	Cool 4C GH	Cool 4C
Type of Container	P	P	P	P	P	P	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	2	2	2	2
Volume	500mL Delete RT 12.4.00	500mL	1000mL Delete RT 12.4.00	1000mL Delete RT 12.4.00	1000mL	1000mL Delete RT 12.4.00	1000mL	1000mL	1000mL	1000mL
SAMPLE ANALYSIS	Total Uranium	Sulfides - 9030	Fluorine-99	See item (1) in Special Instructions	Total Cyanide - 9010	Gross-14	See item (2) in Special Instructions	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time									
~~B110B1~~	~~WATER~~	~~12.4.00~~	~~0700~~ RT 12.4.00									
B110B2	WATER	12.4.00	0945		X			X		X	X	X	X
B110B3	WATER	12.4.00	1015		X			X		X	X	X	X
~~B11265~~	~~WATER~~	~~12.4.00~~	~~0945~~									
~~B11266~~	~~WATER~~	~~12.4.00~~	~~1015~~ RT 12.4.00									

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	12.4.00 1130	R Thoren	12.4.00 1130
R Thoren	12.4.00 1300	~~Received By~~ STORED IN Ref CB 3728	12.4.00 1300
~~Relinquished By~~ REMOVED FROM Ref CB 3728	12.6.00 0900	R. Thoren	12.5.00 0900
R Thoren	12.5.00 0900	FEDEX	
FedEx	12.6.00 0915		12-6-00 0915
FedEx	12-7-00 0945		12-7-00 0945

SPECIAL INSTRUCTIONS

~~(1) Gamma Spectroscopy (Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~ RT 12.4.00

(2) 8310_SVOA_HPLC {Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz[a,h]anthracene}

(3) Semi-VOA - 8270A (App IX): Semi-VOA -- 8270A (App IX Add-On) {1,2-Diphenylhydrazine, 1,4-Dinotrobenzene, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene, 2-Cyclohexyl-4,6-dinitrophenol}

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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		B99-037-11	Page 1 of ~~2~~ 3 RT 12.5
Collector Fahlberg/Johansen	Company Contact F Roeck	Telephone No. 372-9086	Project Coordinator WEISS, RL	Price Code 7N Data Turnaround 45 Days Air Quality
Project Designation ERDF Leachate Delisting Analysis	Sampling Location ERDF		SAF No. B99-037	
Ice Chest No. ERC96-034, 039, 042 (1 of 3, 2 of 3, 3 of 3)	Field Logbook No. EL 1517-1	COA RERDF22560	Method of Shipment Fed EX	
Shipped To ~~TMA~~/RECRA RT 12.4.00	Offsite Property No. A010034		Bill of Lading/Air Bill No. 4235 7953 - 0967, 0978, 0989	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	None	HCl to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2
Type of Container	P	aG	aG	aG	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	120mL	250mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL
SAMPLE ANALYSIS	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions	TDS - 160.1	TSS - 160.2	Ammonia - 350.3	See item (2) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time										
~~B110B1~~	~~WATER~~	12.4.00	0700	RT 12.4.00									
B110B2	WATER	12.4.00	0945	X	X	X	X	X	X	X	X	X	X
B110B3	WATER	12.4.00	1015	X	X	X	X	X	X	X	X	X	X
~~B11265~~	~~WATER~~	12.4.00	0945	RT 12.4.00									
~~B11266~~	~~WATER~~	12.4.00	1015										

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

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	1130 12.4.00	R Thoren	1130 12.4.00
R Thoren	1300 12.4.00	Stored in R.L. 2B 3728	1300 12.4.00
Removed from R.L. 2B 3728	0900 12.5.00	R Thoren	0900 12.6.00
R. Thoren	0900 12.5.00	FED EX	
Fed Ex	12.6.00 0915	V. Hendy	12.6.00 0915
Fed Ex	12.7.00 0945	V. Hendy	12.7.00 0945

SPECIAL INSTRUCTIONS

(1) IC Anions - 9056 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) {Arsenic, Lead, Selenium, Silicon, Thallium, Tin}

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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)

WIDL 473

3 of 5

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-037-11

 RT 12.5

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS, RL
Price Code: 7N Air Quality	Data Turnaround: 45 Days		
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF		SAF No.: B99-037
Ice Chest No.: ERC96-034,039,042	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: ~~TMA~~ RECRA RT 12.4.00	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 42357453-0967,0978,0989

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	HCl Cool 4C					
Type of Container	aG	P	aGs*	aGs*	aGs*					
No. of Container(s)	2		3	3	3					
Volume	1000mL	1000mL	40mL	40mL	40mL A-C					
SAMPLE ANALYSIS	oil & Grease - 9070	Gross Alpha, Gross Beta	Alcohols, Glycols, & Ketones - 8015	Alcohols, Glycols, & Ketones - 8015 [1-Butanol, Methanol]	See item (1) in Special Instructions					

	Sample No.	Matrix *	Sample Date	Sample Time									
1	B110B1	WATER	12·4·00	0700				X	X				
2	B110B2	WATER	12·4·00	0945	X			X	X				
3	B110B3	WATER	12·4·00	1015	X			X	X				
	~~B11265~~	~~WATER~~	~~12·4·00~~	~~0945~~	RT 12.4.00								
	~~B11266~~	~~WATER~~	~~12·4·00~~	~~1015~~									

RT 12·1·00

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	1130 12.4.00	R. Thorer	1130 12.4.00
R. Thorer	1300 12.4.00	~~Received By~~ Stored in RL 2B 3728	1300 12.4.00
~~Relinquished By~~ Removed from RL 2B 3728	0900 12.5.00	R. Thorer	0900 12.5.00
R. Thorer	0900 12.5.00	FED EX	
Fed Ex	12-6-00 0915	[illegible]	12-6-00 0915
Fed Ex	12-7-00 0945	[illegible]	12-7-00 0945

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) VOA - 8260A (App IX); VOA - 8260A (App IX Add-On) {1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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)

Figure 1. Sample Check-in List

Date/Time Received: 12-6-00 0915/12-7-00 0945

SDG#: 0012L502

Work Order Number: _____ SAF# B99-037

Shipping Container ID: ERC 96-034,039,042 Chain of Custody # _____

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 3.2, 4.3, 3.3
5. Vermiculite/packing materials is Wet [✓] Dry [✓]
6. Number of samples in shipping container: 23
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): #2 BNA 1EA Rec'd Broken Rec'd ID B112265 crossed off on Original COC

Sample Custodian/Laboratory: [signature] RECRA Date: 12-7-00

Telephoned to: _____ On _____ By _____

Recra LabNet - Lionville Laboratory
PEST/PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-037 H1173

DATE RECEIVED: 12/07/00 RFW LOT # :0012L502

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B110B2	002	W	00LE1618	12/04/00	12/10/00	12/28/00
B110B2	002 MS	W	00LE1618	12/04/00	12/10/00	12/24/00
B110B2	002 MSD	W	00LE1618	12/04/00	12/10/00	12/24/00
B110B3	003	W	00LE1618	12/04/00	12/10/00	12/24/00
LAB QC:						
PBLKKC	MB1	W	00LE1618	N/A	12/10/00	12/24/00
PBLKKC	MB1 BS	W	00LE1618	N/A	12/10/00	12/24/00

01-05-01

FEB 2001
RECEIVED

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B99-037
RFW#: 0012L502
SDG/SAF#: H1173/B99-037

W.O.#: 10985-001-001-9999-00
Date Received: 12-07-00

PESTICIDE

The set of samples consisted of two (2) water samples collected on 12-04-00.

The samples and their associated QC samples were extracted on 12-10-00 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 12-24,28-00. The extraction procedure was based on method 3520 and the extracts were analyzed based on method 8081.

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

1. The cooler temperature has been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis have been met.
3. The method blank was below the reporting limits for all target compounds.
4. All surrogate recoveries were within acceptance criteria.
5. All blank spike recoveries were within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. All initial calibrations associated with this data set were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
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
VP, Laboratory General Manager
Lionville Laboratory

01-11-01
Date

pef\r:\group\data\pest\12L-502.pes

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 11 pages.

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

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

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

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".

D = This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C = This flag applies to a compound that has been confirmed by GC/MS.

Recra LabNet - Lionville Laboratory

Pesticide/PCBs by GC, CLP List

Report Date: 01/03/01 09:52

RFW Batch Number: **0012L502** Client: **TNUHANFORD B99-037 H1173** Work Order: 10985001001 Page: 1

	Cust ID:	B110B2		B110B2		B110B2		B110B3		PBLKKC		PBLKKC BS	
Sample Information	RFW#:	002		002 MS		002 MSD		003		00LE1618-MB1		00LE1618-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
Surrogate:	Decachlorobiphenyl	67	%	68	%	75	%	54	%	85	%	61	%
	Tetrachloro-m-xylene	88	%	62	%	68	%	70	%	80	%	85	%
			fl		fl		fl		fl		fl		fl
Alpha-BHC		0.061	U	0.10	U	0.10	U	0.055	U	0.050	U	0.050	U
Beta-BHC		0.061	U	0.10	U	0.10	U	0.055	U	0.050	U	0.050	U
Delta-BHC		0.061	U	0.10	U	0.10	U	0.055	U	0.050	U	0.050	U
gamma-BHC (Lindane)		0.061	U	70	%	70	%	0.055	U	0.050	U	85	%
Heptachlor		0.061	U	75	%	75	%	0.055	U	0.050	U	95	%
Aldrin		0.061	U	70	%	70	%	0.055	U	0.050	U	85	%
Heptachlor epoxide		0.061	U	0.10	U	0.10	U	0.055	U	0.050	U	0.050	U
Endosulfan I		0.061	U	0.10	U	0.10	U	0.055	U	0.050	U	0.050	U
Dieldrin		0.12	U	82	%	80	%	0.11	U	0.10	U	100	%
4,4'-DDE		0.12	U	0.21	U	0.21	U	0.11	U	0.10	U	0.10	U
Endrin		0.12	U	88	%	94	%	0.11	U	0.10	U	118	%
Endosulfan II		0.12	U	0.21	U	0.21	U	0.11	U	0.10	U	0.10	U
4,4'-DDD		0.12	U	0.21	U	0.21	U	0.11	U	0.10	U	0.10	U
Endosulfan sulfate		0.12	U	0.21	U	0.21	U	0.11	U	0.10	U	0.10	U
4,4'-DDT		0.12	U	90	%	88	%	0.11	U	0.10	U	110	%
Methoxychlor		0.61	U	1.0	U	1.0	U	0.55	U	0.50	U	0.50	U
Endrin ketone		0.12	U	0.21	U	0.21	U	0.11	U	0.10	U	0.10	U
Endrin aldehyde		0.12	U	0.21	U	0.21	U	0.11	U	0.10	U	0.10	U
alpha-Chlordane		0.061	U	0.10	U	0.10	U	0.055	U	0.050	U	0.050	U
gamma-Chlordane		0.061	U	0.10	U	0.10	U	0.055	U	0.050	U	0.050	U
Toxaphene		6.1	U	10	U	10	U	5.5	U	5.0	U	5.0	U
Aroclor-1016		1.2	U	2.1	U	2.1	U	1.1	U	1.0	U	1.0	U
Aroclor-1221		2.4	U	4.1	U	4.1	U	2.2	U	2.0	U	2.0	U
Aroclor-1232		1.2	U	2.1	U	2.1	U	1.1	U	1.0	U	1.0	U
Aroclor-1242		1.2	U	2.1	U	2.1	U	1.1	U	1.0	U	1.0	U
Aroclor-1248		1.2	U	2.1	U	2.1	U	1.1	U	1.0	U	1.0	U
Aroclor-1254		1.2	U	2.1	U	2.1	U	1.1	U	1.0	U	1.0	U
Aroclor-1260		1.2	U	2.1	U	2.1	U	1.1	U	1.0	U	1.0	U

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

RECRA LabNet Use Only

00121502

Custody Transfer Record/Lab Work Request

Page 1 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client TNU HANFORD B99-037

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC Spec Del STD TAT 30DAY

Date Rec'd 12-8-00 TC 12-7-00 Date Due 1-5-01 TC 12-7-00

Account #

		A-C	D-E	F-G	H-I	J-K	L-N		O	P	Q	R-S	T	U	V	W
Refrigerator #		1	5	5	5	5	1		5	5	5	5	5	5	1	5
#/Type Container	Liquid	3V	2AG	2AG	2AG	2AG	3V		1P	1PL	1P	2AG	1P	1AG	1AG	1AG
	Solid															
Volume	Liquid	40	950	950	950	950	40		500	1L	500	1L	120	500	250	500
	Solid															
Preservatives		HCL	—	—	—	—	—		HNO3	NAOH	ZNAC NAOH	HCL	—	—	HCL	HNO3
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/ PCB	Herb	5VOA HPLC	Alcohol Glycol Ketone		Metal	CN	Sulfide	O-Phos Pesticide		Organic Formic	TOC	

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	0624N	0625N	0608H	0HBGK	0830	0GC5C		MET (1)	ICNTO	ISFD	IOGGR	IPH	OLCSC	IOCT	MGHTO
001	B110B1			W	0700	12-4-00	3					3									
002	1 2			1	0945	1	3	1	2	2	2	3		1	1	1	2	1	1	1	1
003	1 3			1	1015	1	3	2	2	2	2	3		1	1	1	2	1	1	1	1

Special Instructions: SAF B99-037
Run Matrix QC
Rec'd Broken IEA BNA #002

DATE/REVISIONS:
Met (1) 1. AL, AG, BA, BE, CA, CD, CO, CR, CU, FE, K
1 2. MG, MN, NA, NI, SB, V, ZN, AS, PB,
3. SE, SI, TI, SN
#2 4. Rec'd on 12-7-00
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___
Airbill # See Below
2) Ambient or ~~Chilled~~
3) Received In Good Condition ~~Y~~ or (N) 12-7-00
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times Y or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 3.2 °C 4.3

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	12-6-00	0915
[illegible]	[illegible]	12-7-00	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7954 0989 3-2
4235 7954 0978

RECRA LabNet Use Only

00121502

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client TNX HANFORD B99-037

Est. Final Proj. Sampling Date

Project #

Project Contact/Phone # Page 1

RECRA Project Manager

QC ____ Del ____ TAT ____

Date Rec'd ____ Date Due ____

Account #

		X	Y	Z	AA	BB
Refrigerator #		S	S	S	S	S
#/Type Container	Liquid	1PL	1PL	1PL	1PL	1PL
	Solid					
Volume	Liquid	500	500	500	500	500
	Solid					
Preservatives		—	—	—	—	HNO3
ANALYSES REQUESTED →	ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN	Spec Cond.	IC Anions			Ammonia
RECRA LabNet Use Only		TSP'd	IC (1)	TDS	TSS	TKN 3 ml

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	TSP'd	IC (1)	TDS	TSS	TKN 3 ml
S - Soil	001	B110B1			W	12-4/00	0700					
SE - Sediment	002	1 2			1	1	0945	1	1	1	1	1
SO - Solid	003	1 3			1	1	1015	1	1	1	1	1
SL - Sludge												
W - Water												
O - Oil												
A - Air												
DS - Drum Solids												
DL - Drum Liquids												
L - EP/TCLP Leachate												
WI - Wipe												
X - Other												
F - Fish												

Special Instructions:

DATE/REVISIONS:

IC (1) 1. Br, Cl, Fl, NO2, NO3, PO4, SO4

2.

3.

4.

5.

6.

RECRA LabNet Use Only

Samples were:
1) Shipped ____ or Hand Delivered ____
Airbill # ____
2) Ambient or Chilled
3) Received In Good Condition Y or N
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape 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. ____ °C

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

Relinquished by	Received by	Date	Time
[signature]	[signature]	12/6/00	0915
[signature]	[signature]	12/7/00	0945

Relinquished by	Received by	Date	Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-11	Page ~~1 of 6~~ 2 of 3 RT 12.5.00
Collector: Fahlberg/Johansen	Company Contact: F Roeck; Telephone No.: 372-9086	Project Coordinator: WEISS, RL	Price Code: 7N; Data Turnaround: 45 Days; Air Quality
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF	SAF No.: B99-037	
Ice Chest No.: ERC96-034,039,042 (1 of 3, 2 of 3, 3 of 3)	Field Logbook No.: EL 1517-1; COA: RERDF22560	Method of Shipment: Fed EX	
Shipped To: ~~TMA~~/RECRA R S 12.4.00	Offsite Property No.: A010034	Bill of Lading/Air Bill No.: 42357453-0967,0978,0989	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	HNO3 to pH <2	ZnAc+NaOH to pH >9 Cool	HCl to pH <2	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	None	Cool 4C EF	Cool 4C II	Cool 4C GH	Cool 4C
Type of Container	P	P	P	P	P	P	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	2	2	2	2
Volume	Delete 500mL RT	500mL	Delete 1000mL RT 12.4.00	Delete 1000mL RT 12.4.00	1000mL	Delete 1000mL RT 12.4.00	1000mL	1000mL	1000mL	1000mL
SAMPLE ANALYSIS	Total Uranium 12.4.00	Sulfides - 9030	Technetium-99 RT 12.4.00	See item (1) in Special Instructions	Total Cyanide - 9010	Gross-14 RT 12.4.00	See item (2) in Special Instructions	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time									
~~B110B1~~	~~WATER~~	~~12.4.00~~	~~0700~~ RT 12.4.00									
B110B2	WATER	12.4.00	0945		X			X		X	X	X	X
B110B3	WATER	12.4.00	1015		X			X		X	X	X	X
~~B11265~~	~~WATER~~	~~12.4.00~~	~~0945~~									
~~B11266~~	~~WATER~~	~~12.4.00~~	~~1015~~ RT 12.4.00									

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

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	1130 12.4.00	R. Thoren	1130 12.4.00
R. Thoren	1300 12.4.00	~~Stored in~~ RT 12.4.00	1300 Ref 2B 3728 12.4.00
~~Relinquished By~~ Removed from RT 12.5.00	0900 Ref 2B 3728 12.6.00	~~Received By~~ R. Thoren	0900 12.5.00
R. Thoren	0900 12.5.00	FEDEX	
FedEx	12.6.00 0915		12.6.00 0915
FedEx	12.7.00 0945		12.7.00 0945

SPECIAL INSTRUCTIONS

~~(1) Gamma Spectroscopy (Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~ RT 12.4.00

(2) 8310_SVOA_HPLC {Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz[a,h]anthracene}

(3) Semi-VOA - 8270A (App IX): Semi-VOA -- 8270A (App IX Add-On) {1,2-Diphenylhydrazine, 1,4-Dinotrobenzene, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene, 2-Cyclohexyl-4,6-dinitrophenol}

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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	B99-037-11	Page 1 of ~~4~~ 3 RT 12.5

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS. RL
Price Code: 7N	Data Turnaround: 45 Days	Air Quality	
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF	SAF No.: B99-037	
Ice Chest No.: ERC 96-034, 039, 042 (1 of 3, 2 of 3, 3 of 3)	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA RT 12.4.00	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 4235 7453 - 0967, 0978, 0989

POSSIBLE SAMPLE HAZARDS/REMARKS: NONE

Special Handling and/or Storage

Preservation	None	HCl to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2
Type of Container	P	aG	aG	aG	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	120mL	250mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL
SAMPLE ANALYSIS	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions	TDS - 160.1	TSS - 160.2	Ammonia - 350.3	See item (2) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time										
~~B110B1~~	~~WATER~~	~~12.4.00~~	~~0700~~ RT 12.4.00										
B110B2	WATER	12.4.00	0945	X	X	X	X	X	X	X	X	X	X
B110B3	WATER	12.4.00	1015	X	X	X	X	X	X	X	X	X	X
~~B11265~~	~~WATER~~	~~12.4.00~~	~~0945~~	RT 12.4.00									
~~B11266~~	~~WATER~~	~~12.4.00~~	~~1015~~										

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	R. Fahlberg / R Fahlberg	12.4.00 1130	R Thoren	12.4.00 1130
Relinquished By	R Thoren	12.4.00 1300	Storedin / R.L. 2B 3728	12.4.00 1300
Relinquished By	Renouldstron / R.L. 2B 3728	12.5.00 0400	R Thoren	12.6.00 0980
Relinquished By	R. Thoren	12.5.00 0400		
Relinquished By		12.6.00 0915		12.6.00 0915
Relinquished By		12.7.00 0945		12.7.00 0945

SPECIAL INSTRUCTIONS

(1) IC Anions - 9056 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)
(2) ICP Metals - 6010A (TAL): ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Silicon, Thallium, Tin)

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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)

WIRL 473

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-11	Page 5 of 6

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS, RL
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF		SAF No.: B99-037
Ice Chest No.: ERC96-034,039,042	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 42357453-0967,0978,0989

Price Code: 7N — Air Quality

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage

Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	HCl Cool 4C					
Type of Container	aG	P	aGs*	aGs*	aGs*					
No. of Container(s)	2		3	3	3					
Volume	1000mL	1000mL	40mL	40mL	40mL A-C					
SAMPLE ANALYSIS	oil & Grease - 9070	Gross Alpha, Gross Beta	Alcohols, Glycols, & Ketones - 8015	Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Methanol)	See item (1) in Special Instructions					

	Sample No.	Matrix *	Sample Date	Sample Time									
1	B110B1	WATER	12·4·00	0700									
2	B110B2	WATER	12·4·00	0945				X	X				
3	B110B3	WATER	12·4·00	1015	X			X	X				
	~~B11265~~	~~WATER~~	~~12·4·00~~	~~0945~~									
	~~B11266~~	~~WATER~~	~~12·4·00~~	~~1015~~									

RT 12.4.00

RT 12.1.00

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	12.4.00 1130	R. Thorer / R Thorer	12.4.00 1130
R Thorer / R Thorer	12.4.00 1300	Stored in Ref 2B 3728	12.4.00 1300
Removed from Ref 2B 3728	12.5.00 0900	R. Thorer / R Thorer	12.5.00 0900
R. Thorer / R. Thorer	12.5.00 0900	FED EX	
Fed Ex	12-6-00 0915	[illegible]	12-6-00 0915
Fed Ex	12-7-00 0945	[illegible]	12-7-00 0945

SPECIAL INSTRUCTIONS

(1) VOA - 8260A (App IX); VOA - 8260A (App IX Add-On) {1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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)

Figure 1. Sample Check-in List

Date/Time Received: 12-6-00 0915/12-7-00 0945

SDG#: 0012C502

Work Order Number: _____ SAF# B99-037

Shipping Container ID: ERC 96-034,039,042 Chain of Custody # _____

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 3.2, 4.3, 3.3
5. Vermiculite/packing materials is Wet [✓] Dry [✓]
6. Number of samples in shipping container: 23
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): #2 BNA 1EA Rec'd Broken Rec'd ID B112265 crossed off on Original C&C

Sample Custodian/Laboratory: L. Henry RECRA Date: 12-7-00

Telephoned to: _____ On _____ By _____

Lionville Laboratory, Inc.
8310 ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-037 H1173

DATE RECEIVED: 12/07/00 RFW LOT # :0012L502

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B110B2	002	W	00LE1611	12/04/00	12/08/00	02/06/01
B110B3	003	W	00LE1611	12/04/00	12/08/00	02/06/01
LAB QC:						
BLK	MB1	W	00LE1611	N/A	12/08/00	02/06/01
BLK	MB1 BS	W	00LE1611	N/A	12/08/00	02/06/01
BLK	MB1 BSD	W	00LE1611	N/A	12/08/00	02/06/01

FEB 2001
RECEIVED

LIONVILLE LABORATORY INC.

Analytical Report

Client : TNU-HANFORD B99-037
RFW# : 0012L502
SDG/SAF# : H1173/B99-037

W.O #: 10985-001-001-9999-00
Date Received: 12-07-00

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC

The set of samples consisted of two (2) water samples collected on 12-04-00.

The samples and their associated QC samples were extracted on 12-08-00 and analyzed utilizing Lionville Laboratory OP's based on SW-846 Method 8310 for a list of client specified Polynuclear Aromatic Hydrocarbon target compounds on 02-06-01.

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 cooler temperatures have been recorded on the chain-of-custodies.

2. The analytical hold time for these samples was exceeded as the required lamp for the fluorescence detector maintenance was back ordered from the manufacturer. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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

4. All continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.

5. All surrogate recoveries exceeded acceptance criteria. A copy of the SDR has been enclosed.

6. Twelve (12) of fourteen (14) blank spike recoveries were outside the laboratory control limits. A copy of the SDR has been enclosed.

7. No matrix spike recoveries were reported with this data package. A copy of the SDR has been enclosed.

8. As of January 27, 2001, Recra Labnet Philadelphia became Lionville Laboratory Incorporated. Some forms may still reference Recra Labnet Philadelphia.

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

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

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

J. Michael Taylor
President
Lionville Laboratory Incorporated

02-12-01
Date

r:\group\hplc\narr\8310\2001\12-502tmu.doc

LIONVILLE LABORATORY INC.

RECRA **Sample Discrepancy Report (SDR)** SDR #: 01GC013

Initiator: F. Kiger Batch: 00121502 Parameter: 08310
Date: 1/10/01 Samples: 2,3 Matrix: Water
Client: Tri Hanford Method: SW846/MCAWW/CLP/ Prep Batch: 00LE1611

1. Reason for SDR

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

b. General Discrepancy

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

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

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

Samples not run yet - Fluoranthene Comp on back order for at least 2 weeks. Probably can't run within analytical hold.

HT up 1/17/01

2. Known or Probable Causes(s) (To be used for trend analysis)

___ Lack of Organization
___ Lack of Training
___ Lack of Discipline
___ Lack of Resources
___ Lack of Time
___ Lack of Management Support
___ Other (Please explain):

3. Discussion and Proposed Action Other Description:

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

4. Project Manager Instructions...signature/date: 1/22/01

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

5. Final Action...signature/date: 2/12/01 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Hold time exceeded.

When Final Action has been recorded, forward original to QA for distribution and filing.

Route/Distribution of SDR	Route	Distribution of Completed SDR
__ Initiator	__	Metals: Doughty
__ Lab Manager: M. Taylor	__	Inorganic: Perrone
__ Project Mgr: Stone/Carey/Johnson	__	GC/LC: Pastor
__ Section Mgr: Wesson/Daniels	__	MS: Layman/Rycklak
X QA (file): Schrenkel	__	Log-in: Keppel
__ Data Management: Feldman	__	Admin: Soos
__ Sample Prep: Bickel/Kauffman	__	Other: _____

L-WI-006/E-08/00

Lionville Laboratory Sample Discrepancy Report (SDR) SDR #: 01LC020

Initiator: L. Kauffman Batch: 00121502 Parameter: 08310
Date: 2/8/01 Samples: 002, 003 Matrix: Water
Client: TVU Method: SW846/MCAWW/CLP/ Prep Batch: 00LE1611

1. Reason for SDR

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

b. General Discrepancy

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

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

c. Problem (Include all relevant specific results; attach data if necessary) All surrogate recoveries out of range. No spike added to MS/MSD. 12 targets out of 14 in MB1-S & MB1-T out of range.

2. Known or Probable Causes(s)

Interference coeluter w/ triphenylene on fluorene side. 2/8/01

3. Discussion and Proposed Action

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

Other Description: Report w/ data for surrogate recoveries.

4. Project Manager Instructions...signature/date: 2/8/01

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

5. Final Action...signature/date: 2/8/01

__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Other Explanation: Package corrected to reflect w/ surrogate data. Cancelled 003 MS and MSD and reported BSD results.

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Doughty
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: ~~Stone~~/Johnson	__	__ GC/LC: Pastor
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rycklak/Layman
__	X QA (file): Alberts LK 2/8/01	__	__ Log-in: Keppel
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Doughty/Kiger	__	__ Other: _____

L-WI-006/E-01/01

GLOSSARY OF PAH DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

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

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Lionville Laboratory, Inc.

PAH'S by HPLC / Method 8310

Report Date: 02/08/01 16:44

RFW Batch Number: **0012L502** Client: **TNUHANFORD B99-037 H1173** Work Order: 10985001001 Page: 1

	Cust ID:	B110B2	B110B3	BLK	BLK BS	BLK BSD
Sample Information	RFW#:	002	003	00LE1611-MB1	00LE1611-MB1	00LE1611-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
Triphenylene		50 * %	48 * %	62 * %	64 * %	58 * %
Benzo(a)anthracene		0.14 U	0.13 U	0.13 U	68 * %	57 * %
Chrysene		1.56 U	1.53 U	1.50 U	64 * %	58 * %
Benzo(b)fluoranthrene		0.19 U	0.18 U	0.18 U	67 * %	59 * %
Benzo(k)fluoranthrene		0.18 U	0.17 U	0.17 U	67 * %	59 * %
Benzo(a)pyrene		0.24 U	0.23 U	0.23 U	63 * %	54 * %
Dibenzo(a,h)anthracene		0.31 U	0.31 U	0.30 U	66 %	59 * %
Indeno(1,2,3-cd)pyrene		0.45 U	0.44 U	0.43 U	68 %	58 * %

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

RECRA LabNet Use Only

00121502

Custody Transfer Record/Lab Work Request

Page 1 of 2

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMC HANFORD B99-037
Est. Final Proj. Sampling Date:
Project #: 10285 Gen 001 0999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Spec Del: STD TAT: 30 DAY
Date Rec'd: 12-8-00 TC 12-7-00 Date Due: 1-5-01 TC 12-7-00
Account #:

	A-C	D-E	F-G	H-I	J-K	L-N		O	P	Q	R-S	T	U	V	W
Refrigerator #	1	5	5	5	5	1		5	5	5	5	5	5	1	5
#/Type Container (Liquid)	3V	2AG	2AG	2AG	2AG	2AG		1P	1PL	1P	2AG	1P	1AG	1AG	1AG
#/Type Container (Solid)															
Volume (Liquid)	40	950	950	950	950	40		500	1L	500	1L	125	500	250	500
Volume (Solid)															
Preservatives	HCL	—	—	—	—	—		HNO3	HNO3	NaOH	HCL	—	—	HCL	HNO3
ANALYSES REQUESTED	ORGANIC							INORG							
	VOA	BNA	Pest/PCB	Herb	Total HPAC	Volatile Organic Acids		Metal	CN	Sulfide	Ot Sulfur		Organic Form	TOC	
RECRA LabNet Use Only	0624N	0625N	8081B	8151B	8310	8015C		MET (1)	TCNTO	ISFD	IOGGR	IPH	OLCSC	IOCT	MGHTO

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 - Flash

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624N	0625N	8081B	8151B	8310	8015C		MET (1)	TCNTO	ISFD	IOGGR	IPH	OLCSC	IOCT	MGHTO
001	B4057			W	12-7-00	1200	3					3		1							
002	1 2			W	12-7-00	0945	3	1	2	2	2	3		1	1	1	2	1	1	1	1
003	1 3			W	12-7-00	1015	3	2	2	2	2	3		1	1	1	2	1	1	1	1

Special Instructions: SAF B99-037
Run Matrix QC
Rec'd Broke IEA BNA #002

DATE/REVISIONS:
Met (1) 1. AL, AG, BA, BE, CA, CD, CO, CR, CU, FE, K
2. MG, MN, NA, NI, SB, V, ZN, AS, PB,
3. SE, SI, TI, SN
#2 4. Rec'd on 12-7-00
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___ Airbill # See Below
2) Ambient or Chilled
3) Received in Good Condition Y or N 12-7-00
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 3.2 °C 4.3

Relinquished by	Received by	Date	Time
[signature]	[signature]	12-6-00	0915
[signature]	[signature]	12-7-00	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES: 4235 7954 0989 3.2
4235 7954 0978 4.3

RECRA LabNet Use Only

00121502

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNX HANFORD B99-037

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #:

RECRA Project Manager:

QC: Del: TAT:

Date Rec'd: Date Due:

Account #:

		X	Y	Z	AA	BB
Refrigerator #		S	S	S	S	S
#/Type Container	Liquid	1PL	1PL	1PL	1PL	1PL
	Solid					
Volume	Liquid	500	500	500	500	500
	Solid					
Preservatives		–	–	–	–	H2SO4
ANALYSES REQUESTED	ORGANIC: VOA					
	ORGANIC: BNA					
	ORGANIC: Pest/PCB					
	ORGANIC: Herb					
	INORG: Metal					
	INORG: CN					
		Spec Cond	IC Anions			Ammonia

RECRA LabNet Use Only

																		ISPCD	IC (1)	ITDS	ITSS	IN H3	
001	B110B1			W	12-4-00	0700												1	1	1	1	1	
002	1 2			1	1	0945												1	1	1	1	1	
003	1 3			1	1	1015																	

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

Special Instructions:

DATE/REVISIONS:
IC (1) 1. BR, Cl, F1, NO2, NO3, PO4, SO4
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	12/6/00	0915
[illegible]	[illegible]	12/7/00	0945

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

RECRA LabNet Use Only

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

COC Tape 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. ____ °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-11	Page ~~1~~ of 6 (2043)

Collector: Fahlberg/Johansen	Company Contact: F Roeck; Telephone No.: 372-9086	Project Coordinator: WEISS, RL	Price Code: 7N; Data Turnaround: 45 Days; Air Quality
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF	SAF No.: B99-037	
Ice Chest No.: ERC96-034,039,042 (1 of 3, 2 of 3, 3 of 3)	Field Logbook No.: EL 1517-1; COA: RERDF22560	Method of Shipment: Fed EX	
Shipped To: ~~TMA~~/RECRA R S 12-4-00	Offsite Property No.: A010034	Bill of Lading/Air Bill No.: 42357453-0967,0978,0989	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	HNO3 to pH <2	ZnAc+NaOH to pH >9 Cool	HCl to pH <2	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	None	Cool 4C EF	Cool 4C IJ	Cool 4C GH	Cool 4C
Type of Container	P	P	P	P	P	P	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	2	2	2	2
Volume	~~500mL~~ Delete RT	500mL	~~1000mL~~ Delete RT 12/4/00	~~1000mL~~ Delete RT 12/4/00	1000mL	~~1000mL~~ Delete RT 12/4/00	1000mL	1000mL	1000mL	1000mL
SAMPLE ANALYSIS	Total Uranium RT 12/4/00	Sulfides - 9030	Technetium-99 RT 12/4/00	See item (1) in Special Instructions.	Total Cyanide - 9010	Carbon-14 RT 12/4/00	See item (2) in Special Instructions	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time	Total Uranium	Sulfides - 9030	Technetium-99	See item (1) in Special Instructions	Total Cyanide - 9010	Carbon-14	See item (2) in Special Instructions	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions
~~B110B1~~	WATER	12-4-00	0900 RT 12/4/00										
B110B2	WATER	12-4-00	0945		X			X		X	X	X	X
B110B3	WATER	12-4-00	1015		X			X		X	X	X	X
~~B11265~~	~~WATER~~	12-4-00	0945										
~~B11266~~	~~WATER~~	12-4-00	1015 RT 12/4/00										

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R Fahlberg	1130 12-4-00	R Thorer	1130 12-4-00
R Thorer	1300 12-4-00	Stored in Bldg 2B 3728 (RT 12/4/00)	1300 12-4-00
~~Relinquished By~~ Removed from Bldg 2B 3728 (RT 12/5/00)	~~Date/Time~~ 0900 12-6-00	R. Thorer	0900 12-5-00
R Thorer	0900 12-5-00	FEDEX	
FedEx	12-6-00 0915		12-6-00 0915
FedEx	12-7-00 0945		12-7-00 0945

SPECIAL INSTRUCTIONS

~~(1) Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)~~ RT 12/4/00

(2) 8310_SVOA_HPLC {Benzo(a)anthracene. Benzo(b)fluoranthene, Dibenz[a,h]anthracene}

(3) Semi-VOA - 8270A (App IX); Semi-VOA -- 8270A (App IX Add-On) {1,2-Diphenylhydrazine. 1,4-Dinotrobenzene, 1-Acetyl-2-thiourea. 2,5-Diaminotoluene. 2-Cyclohexyl-4,6-dinitrophenol}

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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

B99-037-11

RT 12.5.8

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS. RL
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF		SAF No.: B99-037
Ice Chest No.: ERC 96-034, 039, 042 (1 of 8, 2 of 3, 3 of 3)	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA RC 12.4.00	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 4230 7453 - 0967, 0978, 0989

Price Code: 7N

Air Quality

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	None	HCl to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2
Type of Container	P	aG	aG	aG	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	120mL	250mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL
SAMPLE ANALYSIS	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions	TDS - 160.1	TSS - 160.2	Ammonia - 350.3	See item (2) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time										
~~B110B1~~	~~WATER~~	12.4.00	0700 RT 12.4.00										
B110B2	WATER	12.4.00	0945	X	X	X	X	X	X	X	X	X	X
B110B3	WATER	12.4.00	1015	X	X	X	X	X	X	X	X	X	X
~~B11265~~	~~WATER~~	12.4.00	0945	RT 12.4.00									
~~B11266~~	~~WATER~~	12.4.00	1015										

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R Fahlberg	1130 12.4.00	R Thoren	1130 12.4.00
R Thoren	1300 12.4.00	Stored in R.L. 2B 3728	1300 12.4.00
Removed from R.L. 2B 3728	0700 12.5.00	R Thoren	0700 12.6.00
R Thoren	0900 12.5.00	FED EX	
Fed Ex	12-6-00 0915	V. Hendy	12-6-00 0915
Fed Ex	12-7-00 0945	V. Hendy	12-7-00 0945

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) IC Anions - 9056 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Silicon, Thallium, Tin)

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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)

WIDL 410

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-037-11

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS. RL
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF		SAF No.: B99-037
Ice Chest No.: ERCA6-034,039,042	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 42357453-0967,0978,0989

Price Code: 7N — Air Quality

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage

Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	HCl Cool 4C					
Type of Container	aG		aGs*	aGs*	aGs*					
No. of Container(s)	2		3	3	3					
Volume	1000mL	1000mL	40mL	40mL	40mL A-C					
SAMPLE ANALYSIS	oil & Grease - 9070	Gross Alpha, Gross Beta	Alcohols, Glycols, & Ketones - 8015	Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Methanol)	See item (1) in Special Instructions.					

	Sample No.	Matrix *	Sample Date	Sample Time										
1	B110B1	WATER	12·4·00	0700				X	X					
2	B110B2	WATER	12·4·00	0945	X			X	X					
3	B110B3	WATER	12·4·00	1015	X			X	X					
	~~B11265~~	~~WATER~~	~~12·4·00~~	~~0945~~	RT 12.4.00									
	~~B11266~~	~~WATER~~	~~12·4·00~~	~~1015~~										

RT 12·1·00

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	1130 12.4.00	R.T. Thorer	1130 12.4.00
R.T. Thorer	1300 12.4.00	Stored in 2B 3728	1300 12.4.00
Removed from 2B 3728	0900 12.5.00	R.T. Thorer	0900 12.5.00
R.T. Thorer	0900 12.5.00	FED EX	
Fed Ex	12-6-00 0915		12-6-00 0915
Fed Ex	12-7-00 0945		12-7-00 0945

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) VOA - 8260A (App IX); VOA - 8260A (App IX Add-On) {1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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)

Figure 1. Sample Check-in List

Date/Time Received: 12-6-00 0915/12-7-00 0945

SDG#: 00121502

Work Order Number: _____ SAF# B99-037

Shipping Container ID: ERC 96-034,039,042 Chain of Custody # _____

1. Custody Seals on shipping container intact? Yes [✓] No [ ]
2. Custody Seals dated and signed? Yes [✓] No [ ]
3. Chain-of-Custody record present? Yes [✓] No [ ]
4. Cooler temperature 3.2, 4.3, 3.3
5. Vermiculite/packing materials is Wet [✓] Dry [✓]
6. Number of samples in shipping container: 23
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): #2 BNA 1EA Rec'd Broken Rec'd ID B112265 crossed off on Original COC

Sample Custodian/Laboratory: V. Henry RECRA Date: 12-7-00

Telephoned to: _____ On _____ By _____

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-037 H1173

DATE RECEIVED: 12/07/00 RFW LOT # :0012L502

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B110B2	002	W	00LE1613	12/04/00	12/08/00	12/26/00
B110B2	002 MS	W	00LE1613	12/04/00	12/08/00	12/26/00
B110B2	002 MSD	W	00LE1613	12/04/00	12/08/00	12/26/00
B110B3	003	W	00LE1613	12/04/00	12/08/00	12/26/00
B110B3	003 R1	W	01LE0005	12/04/00	01/03/01	01/22/01
B110B3	003 MS R1	W	01LE0005	12/04/00	01/03/01	01/22/01
B110B3	003 MSD R1	W	01LE0005	12/04/00	01/03/01	01/22/01

LAB QC:

SBLKJW	MB1	W	00LE1613	N/A	12/08/00	12/26/00
SBLKJW	MB1 BS	W	00LE1613	N/A	12/08/00	12/26/00
SBLKLV	MB1	W	01LE0005	N/A	01/03/01	01/09/01
SBLKLV	MB1 BS	W	01LE0005	N/A	01/03/01	01/09/01

FEB 2001
RECEIVED

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B99-037
RFW #: 0012L502
SDG/SAF #: H1173/B99-037

W.O. #: 10985-001-001-9999-00
Date Received: 12-07-2000

SEMIVOLATILE

Two (2) water samples were collected on 12-04-2000.

The samples and their associated QC samples were extracted on 12-08-2000, re-extracted on 01-03-2001 and analyzed according to criteria set forth in Lionville laboratory OPs based on SW 846 Method 8270C for client specified Semivolatile target compounds on 12-26-2000 and 01-09,22-2001.

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

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.

2. The samples were initially extracted and analyzed within required holding times; however, sample B110B3 was re-extracted outside of holding time. See item 4.

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

4. Samples in extraction batch 00LE1613-MB1 were spiked with 75ug of base-neutral surrogates and 50ug of acid surrogates. The percent (%) recoveries were adjusted accordingly. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

5. Fifty-two (52) of sixty-six (66) surrogate recoveries were outside acceptance criteria. Sample B110B3 was re-extracted on 01-03-2001, analyzed on 01-22-2001 and reported. The re-extract analyses did not meet criteria; however, no sample volume remained for further analyses. A copy of the Sample Discrepancy Reports (SDR) has been enclosed.

6. Thirty-three (33) of forty-four (44) matrix spike recoveries were outside EPA QC limits. The matrix spike analyses associated with sample B110B3 went to dryness during the extraction process. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

7. Twenty (20) of twenty-two (22) blank spike recoveries were outside EPA QC limits. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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 2 7 pages, including page 2A.

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

RECRA **Sample Discrepancy Report (SDR)** SDR #: 00EX194

Initiator: Bernard Foley Batch: 00122502 Parameter: 0225
Date: 12/8/00 Samples: 23 Matrix: W
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: 00LE1613

1. Reason for SDR

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

b. General Discrepancy

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

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

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

Surrogate Concentrations

2. Known or Probable Causes(s) (To be used for trend analysis)

___ Lack of Organization
___ Lack of Training
___ Lack of Discipline
___ Lack of Resources
___ Lack of Time
___ Lack of Management Support
___ Other (Please explain):

3. Discussion and Proposed Action

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

Other Description: Pending receipt of Dech ordered standards use ESL as prepared w/ a revised analyte list. 12/13/00

4. Project Manager Instructions...signature/date: _____

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

5. Final Action...signature/date: DAC 1/25/01 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA for distribution and filing.

Route/Distribution of SDR	Route	Distribution of Completed SDR
__ Initiator	__	Metals: Doughty
__ Lab Manager: M. Taylor	__	Inorganic: Perrone
__ Project Mgr: Stone/Carey/Johnson	__	GC/LC: Pastor
__ Section Mgr: Wesson/Daniels	__	MS: Layman/Rycklak
X QA (file): Schrenkel	__	Log-in: Keppel
__ Data Management: Feldman	__	Admin: Soos
__ Sample Prep: Bickel/Kauffman	__	Other: _____

L-WI-006/E-08/00

RECRA **Sample Discrepancy Report (SDR)** SDR #: 00MS418

Initiator: Slayman Batch: 00I2L502 Parameter: BNA
Date: 12-28-00 Samples: all Matrix: Water
Client: TNU Hinsdale Method: SW846/MCAWW/CLP/ Prep Batch: 00LE1613

1. Reason for SDR

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

b. General Discrepancy

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

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

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

all spikes & surrogates very low

2. Known or Probable Causes(s) (To be used for trend analysis)

__ Lack of Organization
__ Lack of Training
__ Lack of Discipline
__ Lack of Resources
__ Lack of Time
__ Lack of Management Support
__ Other (Please explain):

3. Discussion and Proposed Action Other Description:

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

Reextract

[signature] 12/28/00

4. Project Manager Instructions...signature/date: [signature] 12/28/00

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

5. Final Action...signature/date: [signature] 1/3/01 RL 1/3/01 Other Explanation: Sample #003 only Batch 00LE0015

X Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

D AL 1/26/01

When Final Action has been recorded, forward original to QA for distribution and filing.

Route/Distribution of SDR	Route	Distribution of Completed SDR
__ Initiator	__	Metals: Doughty
__ Lab Manager: M. Taylor	__	Inorganic: Perrone
1 Project Mgr: Stone/Carey/Johnson	__	GC/LC: Pastor
__ Section Mgr: Wesson/Daniels	2	MS: Layman/Rycklak
X QA (file): Schrenkel	__	Log-in: Keppel
__ Data Management: Feldman	__	Admin: Soos
__ Sample Prep: Bickel/Kauffman	__	Other: _____

RL Log IN RL 1/3/01

L-WI-006/E-08/00

4

RECRA **Sample Discrepancy Report (SDR)** SDR #: 008/003

Initiator: Bernard Fdy Batch: 0012502 Parameter: 0625
Date: 1/8/01 Samples: 3, 3msd Matrix: W
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: 01LE005

1. Reason for SDR

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

b. General Discrepancy

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

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

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

Base fraction 003msd lost during filtration 003 blown down to Dryness on N-EVAP

2. Known or Probable Causes(s) (To be used for trend analysis)

___ Lack of Organization
___ Lack of Training
___ Lack of Discipline
___ Lack of Resources
___ Lack of Time
___ Lack of Management Support
X Other (Please explain): glassware ~~tue~~ breakage (msd) 5/1/01

3. Discussion and Proposed Action Other Description:

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

4. Project Manager Instructions...signature/date: _____

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

5. Final Action...signature/date: DAL 1/24/01 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA for distribution and filing.

Route/Distribution of SDR		Route	Distribution of Completed SDR
__	Initiator	__	Metals: Doughty
__	Lab Manager: M. Taylor	__	Inorganic: Perrone
I	Project Mgr: Stone/Carey/Johnson	__	GC/LC: Pastor
__	Section Mgr: Wesson/Daniels	Z	MS: Layman/Rycklak
X	QA (file): Schrenkel	__	Log-in: Keppel
__	Data Management: Feldman	__	Admin: Soos
__	Sample Prep: Bickel/Kauffman	__	Other: _____

L-WI-006/E-08/00

5

RECRA **Sample Discrepancy Report (SDR)** SDR #: 01M5051

Initiator: Robert Carden Batch: 0012502 Parameter: 0625H
Date: 1/24/01 Samples: (3, 35, 37) Blk, BS Matrix: W
Client: TNW Hanford Method: ~~SW846~~/MCAWW/CLP/ Prep Batch: 01LE0005
reextracts

1. Reason for SDR

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

b. General Discrepancy

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

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

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

Multiple surrogates and spikes fail in all samples

2. Known or Probable Causes(s) (To be used for trend analysis)

___ Lack of Organization
___ Lack of Training
___ Lack of Discipline
___ Lack of Resources
___ Lack of Time
___ Lack of Management Support
___ Other (Please explain):

3. Discussion and Proposed Action

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

Other Description: Volume depleted
report + narrate

4. Project Manager Instructions...signature/date: [signature] 1/24/01

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

5. Final Action...signature/date: DAC 1/26/01

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative DAC 01/26/01
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Other Explanation:

When Final Action has been recorded, forward original to QA for distribution and filing.

Route/Distribution of SDR	Route	Distribution of Completed SDR
__ Initiator	__	Metals: Doughty
__ Lab Manager: M. Taylor	__	Inorganic: Perrone
i Project Mgr: Stone/Carey/Johnson	__	GC/LC: Pastor
__ Section Mgr: Wesson/Daniels	Z	MS: Layman/Rycklak
X QA (file): Schrenkel	__	Log-In: Keppel
__ Data Management: Feldman	__	Admin: Soos
__ Sample Prep: Bickel/Kauffman	__	Other: _____

L-WI-006/E-08/00

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

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GLOSSARY OF BNA DATA

ABBREVIATIONS

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

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Semivolatiles by GC/MS, Appendix IX List

RFW Batch Number: **0012L502** Client: **TNUHANFORD B99-037 H1173** Work Order: 10985001001 Report Date: 01/25/01 09:44 Page: 1a

	Cust ID:	B110B2	B110B2	B110B2	B110B3	B110B3	B110B3
Sample Information	RFW#:	002	002 MS	002 MSD	003	003	003 MS
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L REPREP	ug/L REPREP
Surrogate Recovery	Nitrobenzene-d5	3 * %	3 * %	18 * %	10 * %	3 * %	1 * %
	2-Fluorobiphenyl	3 * %	4 * %	19 * %	11 * %	6 * %	2 * %
	p-Terphenyl-d14	6 * %	7 * %	33 %	18 * %	11 * %	3 * %
	Phenol-d5	3 * %	4 * %	17 %	10 %	3 * %	19 %
	2-Fluorophenol	3 * %	3 * %	17 * %	10 * %	13 * %	56 %
	2,4,6-Tribromophenol	0 * %	2 * %	13 %	8 * %	40 %	79 %
		fl	fl	fl	fl	fl	fl
Phenol		10 U	4 * %	18 %	10 U	10 U	15 %
bis(2-Chloroethyl)ether		10 U	20 U	22 U	10 U	10 U	10 U
2-Chlorophenol		10 U	4 * %	18 * %	10 U	10 U	27 %
1,3-Dichlorobenzene		10 U	20 U	22 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	3 * %	16 * %	10 U	10 U	1 * %
Benzyl alcohol		10 U	20 U	22 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	20 U	22 U	10 U	10 U	10 U
2-Methylphenol		10 U	20 U	22 U	10 U	10 U	10 U
bis(2-Chloroisopropyl)ether		10 U	20 U	22 U	10 U	10 U	10 U
4-Methylphenol		10 U	20 U	22 U	10 U	10 U	10 U
N-Nitroso-Di-n-propylamine		10 U	4 * %	18 * %	10 U	10 U	0 * %
Hexachloroethane		10 U	20 U	22 U	10 U	10 U	10 U
Nitrobenzene		10 U	20 U	22 U	10 U	10 U	10 U
Isophorone		10 U	20 U	22 U	10 U	10 U	10 U
2-Nitrophenol		10 U	20 U	22 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	20 U	22 U	10 U	10 U	10 U
Benzoic acid		26 U	50 U	54 U	26 U	26 U	26 U
bis(2-Chloroethoxy)methane		10 U	20 U	22 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	20 U	22 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	3 * %	18 * %	10 U	10 U	1 * %
Naphthalene		10 U	20 U	22 U	10 U	10 U	10 U
4-Chloroaniline		10 U	20 U	22 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	20 U	22 U	10 U	10 U	10 U
4-Chloro-3-methylphenol		10 U	3 * %	18 * %	10 U	10 U	0 * %
2-Methylnaphthalene		10 U	20 U	22 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	20 U	22 U	10 U	10 U	10 U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0012L502** Client: **TNUHANFORD B99-037 H1173** Work Order: 10985001001 Page: 1b

Cust ID:	B110B2	B110B2	B110B2	B110B3	B110B3	B110B3
RFW#:	002	002 MS	002 MSD	003	003 REPREP	003 MS REPREP
2,4,6-Trichlorophenol	10 U	20 U	22 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	26 U	50 U	54 U	26 U	26 U	26 U
2-Chloronaphthalene	10 U	20 U	22 U	10 U	10 U	10 U
2-Nitroaniline	26 U	50 U	54 U	26 U	26 U	26 U
Dimethylphthalate	10 U	20 U	22 U	10 U	10 U	10 U
Acenaphthylene	10 U	20 U	22 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10 U	20 U	22 U	10 U	10 U	10 U
3-Nitroaniline	26 U	50 U	54 U	26 U	26 U	26 U
Acenaphthene	10 U	4 * %	20 * %	10 U	10 U	2 * %
2,4-Dinitrophenol	26 U	50 U	54 U	26 U	26 U	26 U
4-Nitrophenol	26 U	0 * %	10 %	26 U	26 U	45 %
Dibenzofuran	10 U	20 U	22 U	10 U	10 U	10 U
2,4-Dinitrotoluene	10 U	2 * %	16 * %	10 U	10 U	0 * %
Diethylphthalate	10 U	20 U	22 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether	10 U	20 U	22 U	10 U	10 U	10 U
Fluorene	10 U	20 U	22 U	10 U	10 U	10 U
4-Nitroaniline	26 U	50 U	54 U	26 U	26 U	26 U
4,6-Dinitro-2-methylphenol	26 U	50 U	54 U	26 U	26 U	26 U
N-Nitrosodiphenylamine (1)	10 U	20 U	22 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	10 U	20 U	22 U	10 U	10 U	10 U
Hexachlorobenzene	10 U	20 U	22 U	10 U	10 U	10 U
Pentachlorophenol	26 U	0 * %	4 * %	26 U	26 U	44 %
Phenanthrene	10 U	20 U	22 U	10 U	10 U	10 U
Anthracene	10 U	20 U	22 U	10 U	10 U	10 U
Di-n-Butylphthalate	10 U	20 U	22 U	10 U	10 U	10 U
Fluoranthene	10 U	20 U	22 U	10 U	10 U	10 U
Pyrene	10 U	5 * %	28 %	10 U	10 U	2 * %
Butylbenzylphthalate	10 U	20 U	22 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	10 U	20 U	22 U	10 U	10 U	10 U
Benzo(a)anthracene	10 U	20 U	22 U	10 U	10 U	10 U
Chrysene	10 U	20 U	22 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	10 U	20 U	22 U	10 U	5 JB	3 JB
Di-n-Octyl phthalate	10 U	20 U	22 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10 U	20 U	22 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10 U	20 U	22 U	10 U	10 U	10 U
Benzo(a)pyrene	10 U	20 U	22 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10 U	20 U	22 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	10 U	20 U	22 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10 U	20 U	22 U	10 U	10 U	10 U
1,4-Dioxane	10 U	20 U	22 U	10 U	10 U	10 U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0012L502** Client: **TNUHANFORD B99-037 H1173** Work Order: 10985001001 Page: 1c

Cust ID:	B110B2		B110B2		B110B2		B110B3		B110B3		B110B3	
RFW#:	002		002 MS		002 MSD		003		003 REPREP		003 MS REPREP	
Methyl methacrylate	10	U	20	U	22	U	10	U	10	U	10	U
Pyridine	10	U	20	U	22	U	10	U	10	U	10	U
N-Nitrosodimethylamine	10	U	20	U	22	U	10	U	10	U	10	U
Ethyl methacrylate	10	U	20	U	22	U	10	U	10	U	10	U
2-Picoline	10	U	20	U	22	U	10	U	10	U	10	U
N-Nitrosomethylethylamine	10	U	20	U	22	U	10	U	10	U	10	U
Methyl methanesulfonate	10	U	20	U	22	U	10	U	10	U	10	U
N-Nitrosodiethylamine	10	U	20	U	22	U	10	U	10	U	10	U
Ethyl methanesulfonate	10	U	20	U	22	U	10	U	10	U	10	U
Aniline	10	U	20	U	22	U	10	U	10	U	10	U
Pentachloroethane	10	U	20	U	22	U	10	U	10	U	10	U
3-Methylphenol	10	U	20	U	22	U	10	U	10	U	10	U
N-Nitrosopyrrolidine	10	U	20	U	22	U	10	U	10	U	10	U
Acetophenone	10	U	20	U	22	U	10	U	10	U	10	U
N-Nitrosomorpholine	10	U	20	U	22	U	10	U	10	U	10	U
o-Toluidine	10	U	20	U	22	U	10	U	10	U	10	U
N-Nitrosopiperidine	52	U	100	U	110	U	51	U	52	U	52	U
a,a-Dimethylphenethylamine	10	U	20	U	22	U	10	U	10	U	10	U
2,6-Dichlorophenol	10	U	20	U	22	U	10	U	10	U	10	U
Hexachloropropene	10	U	20	U	22	U	10	U	10	U	10	U
p-Phenylenediamine	10	U	20	U	22	U	10	U	10	U	10	U
N-Nitroso-di-n-butylamine	10	U	20	U	22	U	10	U	10	U	10	U
Safrole	10	U	20	U	22	U	10	U	10	U	10	U
1,2,4,5-Tetrachlorobenzene	10	U	20	U	22	U	10	U	10	U	10	U
Isosafrole	10	U	20	U	22	U	10	U	10	U	10	U
1,4-Naphthoquinone	10	U	20	U	22	U	10	U	10	U	10	U
1,3-Dinitrobenzene	10	U	20	U	22	U	10	U	10	U	10	U
Pentachlorobenzene	10	U	20	U	22	U	10	U	10	U	10	U
1-Naphthylamine	10	U	20	U	22	U	10	U	10	U	10	U
2-Naphthylamine	10	U	20	U	22	U	10	U	10	U	10	U
2,3,4,6-Tetrachlorophenol	10	U	20	U	22	U	10	U	10	U	10	U
1,3,5-Trinitrobenzene	10	U	20	U	22	U	10	U	10	U	10	U
Diallate	10	U	20	U	22	U	10	U	10	U	10	U
Phenacetin	10	U	20	U	22	U	10	U	10	U	10	U
Diphenylamine	10	U	20	U	22	U	10	U	10	U	10	U
5-Nitro-o-toluidine	10	U	20	U	22	U	10	U	10	U	10	U
4-Aminobiphenyl	10	U	20	U	22	U	10	U	10	U	10	U
Pronamide	10	U	20	U	22	U	10	U	10	U	10	U
2-sec-Butyl-4,6-dinitrophenol	52	U	100	U	110	U	51	U	52	U	52	U
Pentachloronitrobenzene	52	U	100	U	110	U	51	U	52	U	52	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0012L502** Client: **TNUHANFORD B99-037 H1173** Work Order: 10985001001 Page: 1d

Cust ID:	B110B2		B110B2		B110B2		B110B3		B110B3		B110B3	
RFW#:	002		002 MS		002 MSD		003		003 REPREP		003 MS REPREP	
4-Nitroquinoline-1-oxide	21	U	40	U	44	U	20	U	21	U	21	U
Methapyrilene	10	U	20	U	22	U	10	U	10	U	10	U
Aramite	21	U	40	U	44	U	20	U	21	U	21	U
Chlorobenzilate	10	U	20	U	22	U	10	U	10	U	10	U
p-Dimethylaminoazobenzene	10	U	20	U	22	U	10	U	10	U	10	U
3,3'-Dimethylbenzidine	10	U	20	U	22	U	10	U	10	U	10	U
2-Acetylaminofluorene	10	U	20	U	22	U	10	U	10	U	10	U
7,12-Dimethylbenz(a)anthracene	10	U	20	U	22	U	10	U	10	U	10	U
Hexachlorophene	100	U	200	U	220	U	100	U	100	U	100	U
3-Methylcholanthrene	10	U	20	U	22	U	10	U	10	U	10	U
1,2-Diphenylhydrazine	10	U	20	U	22	U	10	U	10	U	10	U

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

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, Appendix IX List

Report Date: 01/25/01 09:44

RFW Batch Number: **0012L502** Client: **TNUHANFORD B99-037 H1173** Work Order: 10985001001 Page: 2a

	Cust ID:	B110B3	SBLKJW	SBLKJW BS	SBLKLV	SBLKLV BS
Sample Information	RFW#:	003 MSD	00LE1613-MB1	00LE1613-MB1	01LE0005-MB1	01LE0005-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	ug/L REPREP	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	Nitrobenzene-d5	11 * %	1 * %	4 * %	8 * %	0 * %
	2-Fluorobiphenyl	13 * %	1 * %	4 * %	11 * %	5 * %
	p-Terphenyl-d14	43 %	2 * %	7 * %	7 * %	12 * %
	Phenol-d5	61 %	0 * %	4 * %	6 * %	9 * %
	2-Fluorophenol	74 %	0 * %	4 * %	8 * %	2 * %
	2,4,6-Tribromophenol	98 %	0 * %	0 * %	17 %	71 %
		fl	fl	fl	fl	fl
Phenol		52 %	10 U	4 * %	10 U	10 * %
bis(2-Chloroethyl)ether		10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		56 %	10 U	4 * %	10 U	3 * %
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		8 * %	10 U	4 * %	10 U	0 * %
Benzyl alcohol		10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	10 U	10 U
bis(2-Chloroisopropyl)ether		10 U	10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U	10 U
N-Nitroso-Di-n-propylamine		10 * %	10 U	3 * %	10 U	2 * %
Hexachloroethane		10 U	10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U	10 U
Benzoic acid		26 U	25 U	25 U	25 U	25 U
bis(2-Chloroethoxy)methane		10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		9 * %	10 U	4 * %	10 U	0 * %
Naphthalene		10 U	10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol		9 * %	10 U	3 * %	10 U	0 * %
2-Methylnaphthalene		10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U	10 U

*= Outside of EPA CLP QC limits.

Cust ID:	B110B3	SBLKJW	SBLKJW BS	SBLKLV	SBLKLV BS
RFW#:	003 MSD REPREP	00LE1613-MB1	00LE1613-MB1	01LE0005-MB1	01LE0005-MB1
2,4,6-Trichlorophenol	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	26 U	25 U	25 U	25 U	25 U
2-Chloronaphthalene	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	26 U	25 U	25 U	25 U	25 U
Dimethylphthalate	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline	26 U	25 U	25 U	25 U	25 U
Acenaphthene	10 * %	10 U	4 * %	10 U	6 * %
2,4-Dinitrophenol	26 U	25 U	25 U	25 U	25 U
4-Nitrophenol	21 %	25 U	0 * %	25 U	23 %
Dibenzofuran	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	0 * %	10 U	2 * %	10 U	2 * %
Diethylphthalate	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether	10 U	10 U	10 U	10 U	10 U
Fluorene	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	26 U	25 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol	26 U	25 U	25 U	25 U	25 U
N-Nitrosodiphenylamine (1)	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	36 %	25 U	0 * %	25 U	11 %
Phenanthrene	10 U	10 U	10 U	10 U	10 U
Anthracene	10 U	10 U	10 U	10 U	10 U
Di-n-Butylphthalate	10 U	10 U	10 U	10 U	10 U
Fluoranthene	10 U	10 U	10 U	10 U	10 U
Pyrene	14 * %	10 U	5 * %	10 U	11 * %
Butylbenzylphthalate	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	10 U	10 U	10 U	10 U	10 U
Chrysene	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	4 JB	1 J	10 U	3 J	3 JB
Di-n-Octyl phthalate	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10 U	10 U	10 U	10 U	10 U
1,4-Dioxane	10 U	10 U	10 U	10 U	10 U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0012L502** Client: **TNUHANFORD B99-037 H1173** Work Order: 10985001001 Page: 2c

Cust ID:	B110B3		SBLKJW		SBLKJW BS		SBLKLV		SBLKLV BS	
RFW#:	003 MSD REPREP		00LE1613-MB1		00LE1613-MB1		01LE0005-MB1		01LE0005-MB1	
Methyl methacrylate	10	U	10	U	10	U	10	U	10	U
Pyridine	10	U	10	U	10	U	10	U	10	U
N-Nitrosodimethylamine	10	U	10	U	10	U	10	U	10	U
Ethyl methacrylate	10	U	10	U	10	U	10	U	10	U
2-Picoline	10	U	10	U	10	U	10	U	10	U
N-Nitrosomethylethylamine	10	U	10	U	10	U	10	U	10	U
Methyl methanesulfonate	10	U	10	U	10	U	10	U	10	U
N-Nitrosodiethylamine	10	U	10	U	10	U	10	U	10	U
Ethyl methanesulfonate	10	U	10	U	10	U	10	U	10	U
Aniline	10	U	10	U	10	U	10	U	10	U
Pentachloroethane	10	U	10	U	10	U	10	U	10	U
3-Methylphenol	10	U	10	U	10	U	10	U	10	U
N-Nitrosopyrrolidine	10	U	10	U	10	U	10	U	10	U
Acetophenone	10	U	10	U	10	U	10	U	10	U
N-Nitrosomorpholine	10	U	10	U	10	U	10	U	10	U
o-Toluidine	10	U	10	U	10	U	10	U	10	U
N-Nitrosopiperidine	52	U	50	U	50	U	50	U	50	U
a,a-Dimethylphenethylamine	10	U	10	U	10	U	10	U	10	U
2,6-Dichlorophenol	10	U	10	U	10	U	10	U	10	U
Hexachloropropene	10	U	10	U	10	U	10	U	10	U
p-Phenylenediamine	10	U	10	U	10	U	10	U	10	U
N-Nitroso-di-n-butylamine	10	U	10	U	10	U	10	U	10	U
Safrole	10	U	10	U	10	U	10	U	10	U
1,2,4,5-Tetrachlorobenzene	10	U	10	U	10	U	10	U	10	U
Isosafrole	10	U	10	U	10	U	10	U	10	U
1,4-Naphthoquinone	10	U	10	U	10	U	10	U	10	U
1,3-Dinitrobenzene	10	U	10	U	10	U	10	U	10	U
Pentachlorobenzene	10	U	10	U	10	U	10	U	10	U
1-Naphthylamine	10	U	10	U	10	U	10	U	10	U
2-Naphthylamine	10	U	10	U	10	U	10	U	10	U
2,3,4,6-Tetrachlorophenol	10	U	10	U	10	U	10	U	10	U
1,3,5-Trinitrobenzene	10	U	10	U	10	U	10	U	10	U
Diallate	10	U	10	U	10	U	10	U	10	U
Phenacetin	10	U	10	U	10	U	10	U	10	U
Diphenylamine	10	U	10	U	10	U	10	U	10	U
5-Nitro-o-toluidine	10	U	10	U	10	U	10	U	10	U
4-Aminobiphenyl	10	U	10	U	10	U	10	U	10	U
Pronamide	10	U	10	U	10	U	10	U	10	U
2-sec-Butyl-4,6-dinitrophenol	52	U	50	U	50	U	50	U	50	U
Pentachloronitrobenzene	52	U	50	U	50	U	50	U	50	U

*= Outside of EPA CLP QC limits.

Cust ID:	B110B3	SBLKJW	SBLKJW BS	SBLKLV	SBLKLV BS
RFW#:	003 MSD REPREP	00LE1613-MB1	00LE1613-MB1	01LE0005-MB1	01LE0005-MB1
4-Nitroquinoline-1-oxide	21 U	20 U	20 U	20 U	20 U
Methapyrilene	10 U	10 U	10 U	10 U	10 U
Aramite	21 U	20 U	20 U	20 U	20 U
Chlorobenzilate	10 U	10 U	10 U	10 U	10 U
p-Dimethylaminoazobenzene	10 U	10 U	10 U	10 U	10 U
3,3'-Dimethylbenzidine	10 U	10 U	10 U	10 U	10 U
2-Acetylaminofluorene	10 U	10 U	10 U	10 U	10 U
7,12-Dimethylbenz(a)anthracene	10 U	10 U	10 U	10 U	10 U
Hexachlorophene	100 U	100 U	100 U	100 U	100 U
3-Methylcholanthrene	10 U	10 U	10 U	10 U	10 U
1,2-Diphenylhydrazine	10 U	10 U	10 U	10 U	10 U

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

1F
SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B110B2

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNUHANFORD B99-037 H1173

Matrix: WATER Lab Sample ID: 0012L502-002

Sample wt/vol: 960 (g/mL) ML Lab File ID: D122610

Level: (low/med) LOW Date Received: 12/07/00

% Moisture: not dec. _____ dec. Date Extracted: 12/08/00

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 12/26/00

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.500

Number TICs found: 0

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

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

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B110B3

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNUHANFORD B99-037 H1173

Matrix: WATER Lab Sample ID: 0012L502-003

Sample wt/vol: 980 (g/mL) ML Lab File ID: D122613

Level: (low/med) LOW Date Received: 12/07/00

% Moisture: not dec. _____ dec. Date Extracted: 12/08/00

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 12/26/00

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.500

Number TICs found: 0

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

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

1F

SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B110B3RE

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNUHANFORD B99-037 H1173

Matrix: WATER Lab Sample ID: 0012L502-003

Sample wt/vol: 970 (g/mL) ML Lab File ID: D012214

Level: (low/med) LOW Date Received: 12/07/00

% Moisture: not dec. _____ dec. Date Extracted: 01/03/01

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed:. 01/22/01

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.500

Number TICs found: 0

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

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

1F
SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKJW

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNUHANFORD B99-037 H1173

Matrix: WATER Lab Sample ID: 00LE1613-MB1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: D122607

Level: (low/med) LOW Date Received: 12/08/00

% Moisture: not dec. _____ dec. Date Extracted: 12/08/00

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 12/26/00

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.500

Number TICs found: 0

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

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

1F
SEMIVOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKLV

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNUHANFORD B99-037 H1173

Matrix: WATER Lab Sample ID: 01LE0005-MB1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: D010904

Level: (low/med) LOW Date Received: 01/03/01

% Moisture: not dec. _____ dec. Date Extracted: 01/03/01

Extraction: (SepF/Cont/Sonc) CONT Date Analyzed: 01/09/01

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 0.500

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	11.648	3	J
2.	UNKNOWN	14.108	2	J

RECRA LabNet Use Only

00121502

Custody Transfer Record/Lab Work Request

Page 1 of 2

FIELD PERSONNel: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client TNU HANFORD B99-037

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC SPEC Del STD TAT 30DAY

Date Rec'd 12-7-00 TIC 12-7-00 Date Due 1-5-01 TIC 12-7-00

Account #

		A-C	D-E	F-G	H-I	J-K	L-N		O	P	Q	R-S	T	U	V	W
Refrigerator #		1	5	5	5	5	1		5	5	5	5	5	5	1	5
#/Type Container	Liquid	3V	2AG	2AG	2AG	2AG	3V		1P	1PL	1P	2AG	1P	1AG	1AG	1AG
	Solid															
Volume	Liquid	40	950	950	950	950	40		500	1L	500	1L	125	500	250	500
	Solid															
Preservatives		HCL	—	—	—	—	—		HNO3	NAOH	ZNAC NAOH	HCL	—	—	HCL	HNO3
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/ PCB	Herb	5VOA HAC	Alcohol Glycol Ketone		Metal	CN	Sulfide	OT Sand		Cyanide Phenol	TOC	
		RECRA LabNet Use Only														
		0624N	0625N	0608H	0HBGK	0831O	0GCSC		MET(1)	ICNTO	ISFD	IOGGR	IPH	OLCSC	IOCT	MGHTO

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	0624N	0625N	0608H	0HBGK	0831O	0GCSC		MET(1)	ICNTO	ISFD	IOGGR	IPH	OLCSC	IOCT	MGHTO
001	B110B1			W	0700	1240	3					3									
002	1 2			1	0945	1	3	1	2	2	2	3		1	1	1	2	1	1	1	1
003	1 3			1	1015	1	3	2	2	2	2	3		1	1	1	2	1	1	1	1

Special Instructions: SAF B99-037
Run Matrix QC
Rec'd Broken IEA BNA #002

DATE/REVISIONS:
Met (1) 1. AL, AG, BA, BE, CA, CD, CO, CR, CU, FE, K
1 2. MG, MN, NA, NI, SB, V, ZN, AS, PB,
3. SE, SI, TI, SN
#2 4. Rec'd on 12-7-00
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___ Airbill # See Below
2) Ambient or Chilled
3) Received in Good Condition Y or N 12-7-00
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 3.2 °C 4.3

Relinquished by	Received by	Date	Time
[signature]	[signature]	12-6-00	0915
[signature]	[signature]	12-7-00	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES: 4235 7954 0989 3-2
4235 7954 0978

RECRA LabNet Use Only
00121502

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNX HANFORD B99-037

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #: Page 1

RECRA Project Manager:

QC: Del: TAT:

Date Rec'd: Date Due:

Account #:

		X	Y	Z	AA	BB
Refrigerator #		S	S	S	S	S
#/Type Container	Liquid	1PL	1PL	1PL	1PL	1PL
	Solid					
Volume	Liquid	500	500	500	500	500
	Solid					
Preservatives		–	–	–	–	H2SO4
ANALYSES REQUESTED →	ORGANIC: VOA					
	ORGANIC: BNA					
	ORGANIC: Pest/PCB					
	ORGANIC: Herb					
	INORG: Metal					
	INORG: CN					
		Spec (Cu/Pb)	IC anions			Ammonia
RECRA LabNet Use Only		TSPCD	IC ①	TDS	TSS	NH3

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	TSPCD	IC ①	TDS	TSS	NH3
001	B110B1			W	12-4-00	0700					
002	1 2			1	1	0945	1	1	1	1	1
003	1 3			1	1	1015	1	1	1	1	1

Special Instructions:

DATE/REVISIONS:
IC ① 1. Br, Cl, Fl, NO2, NO3, PO4, SO4
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	12/6/00	0915
[illegible]	[illegible]	12/7/00	0945

Relinquished by	Received by	Date	Time

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

RECRA LabNet Use Only

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

COC Tape 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. ____ °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-11	Page ~~3 of 6~~ 2 of 3

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS, RL
Price Code: 7N	Data Turnaround: 45 Days	Air Quality	
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF	SAF No.: B99-037	
Ice Chest No.: ERC96-034,039,042 (1of3 2of3 3of3)	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA R S 12-4-00	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 42357453-0967,0978,0989

POSSIBLE SAMPLE HAZARDS/REMARKS: NONE

Special Handling and/or Storage

Preservation	HNO3 to pH <2	ZnAc+NaOH to pH >9 Cool	HCl to pH <2	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	None	Cool 4C EF	Cool 4C IJ	Cool 4C GH	Cool 4C
Type of Container	P	P	P	P	P	P	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	2	2	2	2
Volume	500mL Delete RT	500mL	1000mL Delete RT 12400	1000mL Delete RT 12400	1000mL	1000mL Delete RT 12400	1000mL	1000mL	1000mL	1000mL
SAMPLE ANALYSIS	Total Uranium	Sulfides - 9030	Technetium-99	See item (1) in Special Instructions	Total Cyanide - 9010	Carbon-14	See item (2) in Special Instructions	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time									
~~B110B1~~	~~WATER~~	12-4-00	0700 RT 12400									
B110B2	WATER	12-4-00	0945		X			X	X	X	X	X
B110B3	WATER	12-4-00	1015		X			X	X	X	X	X
~~B11265~~	~~WATER~~	12-4-00	0945									
~~B11266~~	~~WATER~~	12-4-00	1015 RT 12400									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Fahlberg / R Fahlberg	Date/Time: 1130 12-4-00	Received By: R Thoren	Date/Time: 1130 12-4-00
Relinquished By: R Thoren	Date/Time: 1300 12-4-00	Received By: ~~Received By~~ Stored in Ref 2B 3728	Date/Time: 1300 RT 12400 12-4-00
~~Relinquished By~~ Removed from Ref 2B 3728	Date/Time: 0900 12-6-00	Received By: R. Thoren	Date/Time: 0900 12-5-00
Relinquished By: R Thoren	Date/Time: 0900 12-5-00	Received By: FEDEX	Date/Time:
Relinquished By: FedEx	Date/Time: 12-6-00 0915	Received By:	Date/Time: 12-6-00 0915
Relinquished By: FedEx	Date/Time: 12-7-00 0945	Received By:	Date/Time: 12-7-00 0945

SPECIAL INSTRUCTIONS

~~(1) Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)~~ RT 12-4-00

(2) 8310_SVOA_HPLC (Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz[a,h]anthracene)

(3) Semi-VOA - 8270A (App IX): Semi-VOA -- 8270A (App IX Add-On) (1,2-Diphenylhydrazine, 1,4-Dinotrobenzene, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene, 2-Cyclohexyl-4,6-dinitrophenol)

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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	B99-037-11	Page 1 of 3

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS. RL
Price Code: 7N	Data Turnaround: 45 Days	Air Quality	
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF	SAF No.: B99-037	
Ice Chest No.: ERC 96-034, 039, 042 (1 of 3, 2 of 3, 3 of 3)	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA RT 12.4.00	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 4235 7453 - 0967, 0978, 0989

POSSIBLE SAMPLE HAZARDS/REMARKS: NONE

Special Handling and/or Storage

Preservation	None	HCl to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2
Type of Container	P	aG	aG	aG	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	120mL	250mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL
SAMPLE ANALYSIS	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions	TDS - 160.1	TSS - 160.2	Ammonia - 350.3	See item (2) in Special Instructions
Sample No. / Matrix * / Sample Date / Sample Time										
~~B110B1~~ WATER ~~12.4.00~~ ~~0700~~ RT 12.4.00										
B110B2 WATER 12.4.00 0945	X	X	X	X	X	X	X	X	X	X
B110B3 WATER 12.4.00 1015	X	X	X	X	X	X	X	X	X	X
~~B11265~~ ~~WATER~~ ~~12.4.00~~ ~~0945~~ RT 12.4.00										
~~B11266~~ ~~WATER~~ ~~12.4.00~~ ~~1015~~										

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: R. Fahlberg / R Fahlberg	Received By: R Thoren	12.4.00 1130
Relinquished By: R Thoren	Received By: Stored in 2B 3728	12.4.00 1300
Relinquished By: Removed from 2B 3728	Received By: R Thoren	12.5.00 0900
Relinquished By: R Thoren	Received By: FED EX	12.5.00 0900
Relinquished By: Fed Ex	Received By: V Hendy	12-6-00 0915
Relinquished By: Fed Ex	Received By: V. Hendy	12-7-00 0945

SPECIAL INSTRUCTIONS

(1) IC Anions - 9056 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)
(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Arsenic, Lead, Selenium, Silicon, Thallium, Tin)

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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)

WIDL 493

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-11	Page 3 of 6

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS, RL
Price Code: 7N	Data Turnaround: 45 Days	Air Quality	
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF	SAF No.: B99-037	
Ice Chest No.: ERC96-034,039,042	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: TMA/RECRA 12.4.00	Offsite Property No.: A010034	Bill of Lading/Air Bill No.: 42357453-0967,0978,0989	

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage

Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	HCl Cool 4C						
Type of Container	aG	P	aGs*	aGs*	aGs*						
No. of Container(s)	2	1	3	3	3						
Volume	1000mL	1000mL	40mL	40mL	40mL A-C						
SAMPLE ANALYSIS	oil & Grease - 9070	Gross Alpha, Gross Beta	Alcohols, Glycols, & Ketones - 8015	Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Methanol)	See item (1) in Special Instructions						

	Sample No.	Matrix *	Sample Date	Sample Time										
1	B110B1	WATER	12.4.00	0700				X	X					
2	B110B2	WATER	12.4.00	0945	X			X	X					
3	B110B3	WATER	12.4.00	1015	X			X	X					
	~~B11265~~	~~WATER~~	~~12.4.00~~	~~0945~~	RT 12.4.00									
	~~B11266~~	~~WATER~~	~~12.4.00~~	~~1015~~										

RT 12.1.00

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Fahlberg / R. Fahlberg	Date/Time: 1130 12.4.00	Received By: R.T. Thorer	Date/Time: 1130 12.4.00
Relinquished By: R.T. Thorer	Date/Time: 1300 12.4.00	Received By: Stored in R.L. 2B 3728	Date/Time: 1300 12.4.00
Relinquished By: Removed from R.L. 2B 3728	Date/Time: 0900 12.5.00	Received By: R.T. Thorer	Date/Time: 0900 12.6.00
Relinquished By: R.T. Thorer	Date/Time: 0900 12.5.00	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 12-6-00 0915	Received By: [illegible]	Date/Time: 12-6-00 0915
Relinquished By: Fed Ex	Date/Time: 12-7-00 0945	Received By: [illegible]	Date/Time: 12-7-00 0945

SPECIAL INSTRUCTIONS

(1) VOA - 8260A (App IX); VOA - 8260A (App IX Add-On) (1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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)

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B99-037 H1173

DATE RECEIVED: 12/07/00 RFW LOT # :0012L502

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B110B1	001	W	00LVN416	12/04/00	N/A	12/15/00
B110B1	001 MS	W	00LVN416	12/04/00	N/A	12/15/00
B110B1	001 MSD	W	00LVN416	12/04/00	N/A	12/15/00
B110B2	002	W	00LVN416	12/04/00	N/A	12/15/00
B110B3	003	W	00LVN416	12/04/00	N/A	12/15/00

LAB QC:

VBLKII	MB1	W	00LVN416	N/A	N/A	12/15/00
VBLKII	MB1 BS	W	00LVN416	N/A	N/A	12/15/00

FEB 2001
RECEIVED

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B99-037
RFW #: 0012L502
SDG/SAF #: H1173/B99-037

W.O. #: 10985-001-001-9999-00
Date Received: 12-07-2000

GC/MS VOLATILE

Three (3) water samples were collected on 12-04-2000.

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 12-15-2000.

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

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. All samples were analyzed within required holding time.
3. Non-target compounds were not detected in the samples.
4. One (1) of twenty-one (21) surrogate recoveries was outside EPA QC limits. The surrogate recovery of 1,2-Dichloroethane-d4 was biased slightly high in sample B110B2; however, there was no significant target compounds detected in the samples. The sample was not reanalyzed because of the holding time constraint. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than 2x the CRQL.
8. Internal standard area and retention time criteria were met.
9. A spectral search was performed for compounds 1,3-Butadiene, Allyl Alcohol, Crotenaldehyde, Dichloropropanol, Isopropyl Benzene, 2,3-Dichloro-1-Propanol, Tetrahydrofuran and 1,3-Dichloro-2-Propanol; however, these compounds were not identified in the samples.
10. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."
11. As of January 27, 2001, Recra LabNet Philadelphia became Lionville Laboratory Incorporated. Some Forms may still reference Recra LabNet Philadelphia.

J. Michael Taylor
President
Lionville laboratory Incorporated

02-12-01
Date

som\group\data\voa\tnu-hanford-12-502.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 4 pages.

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

GLOSSARY OF 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.

mmz\10-94\gloss.voa

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.

mmz\10-94\gloss.voa

RECRA

Sample Discrepancy Report (SDR)

SDR #: 01VT020

Initiator: Deb Kastras Batch: 0012502 Parameter: 0624N
Date: 1/11/01 Samples: -002 Matrix: Water
Client: TNU Hanford Method: SW846/MCAWW/CLP/ Prep Batch: 00LVN416

1. Reason for SDR

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

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

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

c. QC Problem (Include all relevant specific results; attach data if necessary): WCSM + rerun. Sample had one Surrogate high. Past hold (Dec. 18th, 2000). Please advise

2. Known or Probable Causes(s) (To be used for trend analysis)
__ Lack of Organization
__ Lack of Training
__ Lack of Discipline
__ Lack of Resources
__ Lack of Time
__ Lack of Management Support
__ Other (Please explain):

3. Discussion and Proposed Action Other Description:
__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date: [signature] 1/11/01
__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 1/16/01 Other Explanation:
__ Verified re-[log][leach][extract][digest][analysis] (circle)
X Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA for distribution and filing.

Route/Distribution of SDR	Route	Distribution of Completed SDR
__ Initiator	__	Metals: Doughty
__ Lab Manager: M. Taylor	__	Inorganic: Perrone
(1) Project Mgr: Stone/Carey/Johnson	__	GC/LC: Pastor
__ Section Mgr: Wesson/Daniels	__	MS: Layman/Rycklak
X QA (file): Schrenkel	__	Log-in: Keppel
__ Data Management: Feldman	__	Admin: Soos
__ Sample Prep: Bickel/Kauffman	__	Other: _____

L-WI-006/E-08/00

5

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, Appendix IX List

Report Date: 01/11/01 14:25

RFW Batch Number: **0012L502** Client: **TNUHANFORD B99-037 H1173** Work Order: 10985001001 Page: 1a

	Cust ID:	B110B1		B110B1		B110B1		B110B2		B110B3		VBLKII	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		00LVN416-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
Surrogate Recovery	1,2-Dichloroethane-d4	109	%	103	%	108	%	116 *	%	110	%	113	%
	Toluene-d8	95	%	96	%	97	%	108	%	98	%	102	%
	Bromofluorobenzene	89	%	86	%	88	%	98	%	89	%	92	%
Chloromethane		10	U	10	U	10	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U	10	U	10	U	10	U
Methylene Chloride		7	B	13	B	12	B	10	B	7	B	8	
Acetone		3	JB	3	JB	2	JB	3	JB	3	JB	3	J
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	79	%	81	%	5	U	5	U	5	U
1,1-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
trans-1,2-Dichloroethene		5	U	5	U	5	U	5	U	5	U	5	U
cis-1,2-Dichloroethene		5	U	5	U	5	U	5	U	5	U	5	U
Chloroform		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
2-Butanone		10	U	10	U	10	U	10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		5	U	5	U	5	U	5	U	5	U	5	U
Vinyl Acetate		10	U	10	U	10	U	10	U	10	U	10	U
Bromodichloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene		5	U	92	%	99	%	5	U	5	U	5	U
Dibromochloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Benzene		5	U	92	%	97	%	5	U	5	U	5	U
Trans-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Bromoform		5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U	10	U	10	U	10	U
Tetrachloroethene		5	U	5	U	5	U	5	U	5	U	5	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0012L502** Client: **TNUHANFORD B99-037 H1173** Work Order: 10985001001 Page: 1b

Cust ID:	B110B1		B110B1		B110B1		B110B2		B110B3		VBLKII	
RFW#:	001		001 MS		001 MSD		002		003		00LVN416-MB1	
1,1,2,2-Tetrachloroethane	5	U	5	U	5	U	5	U	5	U	5	U
Toluene	5	U	99	%	102	%	5	U	5	U	5	U
Chlorobenzene	5	U	99	%	103	%	5	U	5	U	5	U
Ethylbenzene	5	U	5	U	5	U	5	U	5	U	5	U
Styrene	5	U	5	U	5	U	5	U	5	U	5	U
Xylene (total)	5	U	5	U	5	U	5	U	5	U	5	U
Acrolein	20	U	20	U	20	U	20	U	20	U	20	U
Acrylonitrile	5	U	5	U	5	U	5	U	5	U	5	U
Trichlorofluoromethane	5	U	5	U	5	U	2	J	1	J	5	U
Dichlorodifluoromethane	10	U	10	U	10	U	10	U	10	U	10	U
Acetonitrile	20	U	20	U	20	U	20	U	20	U	20	U
Iodomethane	5	U	5	U	5	U	5	U	5	U	5	U
Propionitrile (Ethyl Cyanide)	50	U	50	U	50	U	50	U	50	U	50	U
3-Chloropropene	10	U	10	U	10	U	10	U	10	U	10	U
Methacrylonitrile	10	U	10	U	10	U	10	U	10	U	10	U
Dibromomethane	10	U	10	U	10	U	10	U	10	U	10	U
Isobutyl alcohol	100	U	100	U	100	U	100	U	100	U	100	U
1,2-Dibromoethane	10	U	10	U	10	U	10	U	10	U	10	U
1,1,1,2-Tetrachloroethane	5	U	5	U	5	U	5	U	5	U	5	U
1,2,3-Trichloropropane	10	U	10	U	10	U	10	U	10	U	10	U
trans-1,4-Dichloro-2-butene	20	U	20	U	20	U	20	U	20	U	20	U
1,2-Dibromo-3-chloropropane	10	U	10	U	10	U	10	U	10	U	10	U
2-Chloro-1,3-Butadiene	5	U	5	U	5	U	5	U	5	U	5	U
2-Chloroethylvinylether	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2-Trichlorotrifluoroethane	10	U	10	U	10	U	10	U	10	U	10	U
Ethyl acetate	10	U	10	U	10	U	10	U	10	U	10	U
Diethylether	10	U	10	U	10	U	10	U	10	U	10	U
N-Butanol	250	U	250	U	250	U	250	U	250	U	250	U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory
Volatiles by GC/MS, Appendix IX List
Report Date: 01/11/01 14:25

RFW Batch Number: **0012L502** Client: **TNUHANFORD B99-037 H1173** Work Order: 10985001001 Page: 2a

Cust ID: **VBLKII BS**

Sample Information

RFW#: **00LVN416-MB1**
Matrix: WATER
D.F.: 1.00
Units: UG/L

Surrogate Recovery	1,2-Dichloroethane-d4	108	%
	Toluene-d8	93	%
	Bromofluorobenzene	86	%

Chloromethane	10	U
Bromomethane	10	U
Vinyl Chloride	10	U
Chloroethane	10	U
Methylene Chloride	11	B
Acetone	3	JB
Carbon Disulfide	5	U
1,1-Dichloroethene	79	%
1,1-Dichloroethane	5	U
trans-1,2-Dichloroethene	5	U
cis-1,2-Dichloroethene	5	U
Chloroform	5	U
1,2-Dichloroethane	5	U
2-Butanone	10	U
1,1,1-Trichloroethane	5	U
Carbon Tetrachloride	5	U
Vinyl Acetate	10	U
Bromodichloromethane	5	U
1,2-Dichloropropane	5	U
cis-1,3-Dichloropropene	5	U
Trichloroethene	97	%
Dibromochloromethane	5	U
1,1,2-Trichloroethane	5	U
Benzene	98	%
Trans-1,3-Dichloropropene	5	U
Bromoform	5	U
4-Methyl-2-pentanone	10	U
2-Hexanone	10	U
Tetrachloroethene	5	U

*= Outside of EPA CLP QC limits.

Cust ID: **VBLKII BS**

RFW#: **00LVN416-MB1**

1,1,2,2-Tetrachloroethane	5	U
Toluene	102	%
Chlorobenzene	104	%
Ethylbenzene	5	U
Styrene	5	U
Xylene (total)	5	U
Acrolein	20	U
Acrylonitrile	5	U
Trichlorofluoromethane	5	U
Dichlorodifluoromethane	10	U
Acetonitrile	20	U
Iodomethane	5	U
Propionitrile (Ethyl Cyanide)	50	U
3-Chloropropene	10	U
Methacrylonitrile	10	U
Dibromomethane	10	U
Isobutyl alcohol	100	U
1,2-Dibromoethane	10	U
1,1,1,2-Tetrachloroethane	5	U
1,2,3-Trichloropropane	10	U
trans-1,4-Dichloro-2-butene	20	U
1,2-Dibromo-3-chloropropane	10	U
2-Chloro-1,3-Butadiene	5	U
2-Chloroethylvinylether	10	U
1,1,2-Trichlorotrifluoroethane	10	U
Ethyl acetate	10	U
Diethylether	10	U
N-Butanol	250	U

*= Outside of EPA CLP QC limits.

RECRA LabNet Use Only

00121502

Custody Transfer Record/Lab Work Request

Page 1 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client TNU HANFORD B99-037

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC SPEC Del STD TAT 30DAY

Date Rec'd 12-8-00 TLC 12-7-00 Date Due 1-5-01 TLC 12-7-00

Account #

		A-C	D-E	F-G	H-I	J-K	L-N		O	P	Q	R-S	T	U	V	W
Refrigerator #		1	5	5	5	5	1		5	5	5	5	5	5	1	5
#/Type Container	Liquid	3V	2AG	2AG	2AG	2AG	3V		1P	1PL	1P	2AG	1P	1AG	1AG	1AG
	Solid															
Volume	Liquid	40	950	950	950	950	40		500	1L	500	1L	120	500	250	500
	Solid															
Preservatives		HCL	—	—	—	—	—		HNO3	NAOH	ZN/NaOH	HCL	—	—	HCL	HNO3

ANALYSES REQUESTED →

ORGANIC								INORG							
VOA	BNA	Pest/PCB	Herb	SVOA HPLC	Alcohol Glycol Ketone			Metal	CN	Sulfide	O-Phosphate	Inorganic Form	TOC		

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624W	0625W	0608H	8HB6K	8310	GC5C		MET(1)	ICNTO	ISFD	IOGGR	IPH	OLC5C	IOCT	MGHTO
001	B110B1			W	12/00	12-4-00	3					3									
002	1 2			1	0945	1	3	1	2	2	2	3		1	1	1	2	1	1	1	1
003	1 3			1	1015	1	3	2	2	2	2	3		1	1	1	2	1	1	1	1

Special Instructions: SAF B99-037
Run Matrix QC
Rec'd Broken IEA BNA #002

DATE/REVISIONS:
Met (1) 1. AL, AG, BA, BE, CA, CD, CO, CR, CU, FE, K
1 2. MG, MN, NA, NI, SB, V, ZN, AS, PB,
1 3. SE, SI, TI, SN
#2 4. Rec'd on 12-7-00
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___ Airbill # 3E Fedex
2) Ambient or Chilled
3) Received in Good Condition Y or N 12-7-00
4) Labels Indicate Properly Preserved Y or N
5) Received Within Holding Times Y or N

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 3.2 °C 4.3

Relinquished by	Received by	Date	Time
[signature]	[signature]	12-6-00	0915
[signature]	[signature]	12-7-00	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE			

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES: 4235 7954 0989 3.2
4235 7954 0978

RECRA LabNet Use Only
00121502

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNX HANFORD B99-037
Est. Final Proj. Sampling Date:
Project #:
Project Contact/Phone #: Page 1
RECRA Project Manager:
QC: Del: TAT:

Date Rec'd: Date Due:
Account #:

		X	Y	Z	AA	BB
Refrigerator #		S	S	S	S	S
#/Type Container	Liquid	1PL	1PL	1PL	1PL	1PL
	Solid					
Volume	Liquid	500	500	500	500	500
	Solid					
Preservatives		–	–	–	–	H2SO4
ANALYSES REQUESTED →	ORGANIC: VOA					
	ORGANIC: BNA					
	ORGANIC: Pest/PCB					
	ORGANIC: Herb					
	INORG: Metal					
	INORG: CN					
		Spec Cond	IC anions			Ammonia
RECRA LabNet Use Only		TSP(D)	IC(D)	TDS	TSS	TKN 3 PH

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected
S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	001	B110B1			W	12-4/00	0900
	002	1 2			1	1	0945
	003	1 3			1	1	1015

Special Instructions:

DATE/REVISIONS:
IC(D) 1. Br, Cl, F1, NO2, NO3, PO4, SO4
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	12/6/00	0915
[illegible]	[illegible]	12/7/00	0945

Relinquished by	Received by	Date	Time

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

RECRA LabNet Use Only

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

COC Tape 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. ___ °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-11	Page ~~1 of 6~~ 2 of 3

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS, RL
Price Code: 7N	Data Turnaround: 45 Days	Air Quality	
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF	SAF No.: B99-037	
Ice Chest No.: ERC96-034,039,042 (1 of 3, 2 of 3, 3 of 3)	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: ~~TMA~~/RECRA R 12.4.00	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 42357453-0967,0978,0989

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	HNO3 to pH <2	ZnAc+NaOH to pH >9 Cool	HCl to pH <2	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	None	Cool 4C EF	Cool 4C II	Cool 4C GH	Cool 4C
Type of Container	P	P	P	P	P	P	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	2	2	2	2
Volume	~~500mL~~ Delete RT	500mL	~~1000mL~~ Delete RT 12.4.00	~~1000mL~~ RT 12.4.00	1000mL	~~1000mL~~ Delete RT 12.4.00	1000mL	1000mL	1000mL	1000mL
SAMPLE ANALYSIS	~~Total Uranium~~ RT 12.4.00	Sulfides - 9030	~~Technetium-99~~ RT 12.4.00	See item (1) in Special Instructions	Total Cyanide - 9010	~~Carbon-14~~ RT 12.4.00	See item (2) in Special Instructions	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time									
~~B110B1~~	~~WATER~~	~~12.4.00~~	~~0900~~ RT 12.4.00									
B110B2	WATER	12.4.00	0945		X			X		X	X	X
B110B3	WATER	12.4.00	1015		X			X		X	X	X
~~B11265~~	~~WATER~~	~~12.4.00~~	~~0945~~									
~~B11266~~	~~WATER~~	~~12.4.00~~	~~1015~~ RT 12.4.00									

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R Fahlberg	12.4.00 1130	R. Thoren	12.4.00 1130
R. Thoren	12.4.00 1300	~~Received By~~ Stored in Ref CB 3728	12.4.00 1300
~~Relinquished By~~ Removed from Ref CB 3728	12.5.00 0900	R. Thoren	12.5.00 0900
R. Thoren	12.5.00 0900	FEDEX	
Fed Ex	12.6.00 0915		12.6.00 0915
Fed Ex	12.7.00 0945		12.7.00 0945

SPECIAL INSTRUCTIONS

~~(1) Gamma Spectroscopy (Water) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)~~ RT 12.4.00

(2) 8310_SVOA_HPLC {Benzo(a)anthracene, Benzo(b)fluoranthene, Dibenz[a,h]anthracene}

(3) Semi-VOA - 8270A (App IX): Semi-VOA -- 8270A (App IX Add-On) {1,2-Diphenylhydrazine, 1,4-Dinotrobenzene, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene, 2-Cyclohexyl-4,6-dinitrophenol}

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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		B99-037-11	Page 1 of ~~2~~ 3 RT 12.5 M1
Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS, RL	Price Code: 7N; Air Quality; Data Turnaround: 45 Days
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF		SAF No.: B99-037	
Ice Chest No.: ERC 96-034, 039, 042 (1 of 3, 2 of 3, 3 of 3)	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX	
Shipped To: ~~TMA~~/RECRA RT 12.4.00	Offsite Property No.: A010034		Bill of Lading/Air Bill No.: 42357953 - 0967, 0978, 0989	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	None	HCl to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2
Type of Container	P	aG	aG	aG	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	120mL	250mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL
SAMPLE ANALYSIS	pH (Water) - 9040	TOC - 9060	Carbonyls - 8315 (Formaldehyde)	Mercury - 7470 - (CV)	Conductivity - 9050	See item (1) in Special Instructions	TDS - 160.1	TSS - 160.2	Ammonia - 350.3	See item (2) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time										
~~B110B1~~	~~WATER~~	~~12.4.00~~	~~0700~~ RT 12.4.00										
B110B2	WATER	12.4.00	0945	X	X	X	X	X	X	X	X	X	X
B110B3	WATER	12.4.00	1015	X	X	X	X	X	X	X	X	X	X
~~B11265~~	~~WATER~~	~~12.4.00~~	~~0945~~	RT 12.4.00									
~~B11266~~	~~WATER~~	~~12.4.00~~	~~1015~~										

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

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R Fahlberg	1130 12.4.00	R Thoren	1130 12.4.00
R Thoren	1300 12.4.00	Stored in R.L. 2B 3728	1300 12.4.00
Removed from R.L. 2B 3728	0900 12.5.00	R Thoren	0900 12.6.00
R Thoren	0900 12.5.00	FED EX	
FED EX	12.6.00 0915	V. Hendy	12.6.00 0915
FED EX	12.7.00 0945	V. Hendy	12.7.00 0945

SPECIAL INSTRUCTIONS

(1) IC Anions - 9056 {Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}
(2) ICP Metals - 6010A (TAL): ICP Metals - 6010A (Add-on) {Arsenic, Lead, Selenium, Silicon, Thallium, Tin}

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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)

WIDL 473

3 of 5

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-11	Page 3 of 5

Collector: Fahlberg/Johansen	Company Contact: F Roeck	Telephone No.: 372-9086	Project Coordinator: WEISS, RL
Price Code: 7N	Data Turnaround: 45 Days	Air Quality	
Project Designation: ERDF Leachate Delisting Analysis	Sampling Location: ERDF	SAF No.: B99-037	
Ice Chest No.: ERC96-034,039,042	Field Logbook No.: EL 1517-1	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: TMA/RECRA RT 12.4.00	Offsite Property No.: A010034	Bill of Lading/Air Bill No.: 42357453-0967,0978,0989	

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage

Preservation	HCL to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	Cool 4C	HCl Cool 4C					
Type of Container	aG	P	aGs*	aGs*	aGs*					
No. of Container(s)	2	2	3	3	3					
Volume	1000mL	1000mL	40mL	40mL	40mL A-C					
SAMPLE ANALYSIS	oil & Grease - 9070	Gross Alpha, Gross Beta	Alcohols, Glycols, & Ketones - 8015	Alcohols, Glycols, & Ketones - 8015 (1-Butanol, Methanol)	See item (1) in Special Instructions					

RT 12.1.00

	Sample No.	Matrix *	Sample Date	Sample Time									
1	B110B1	WATER	12.4.00	0700				X	X				
2	B110B2	WATER	12.4.00	0945	X			X	X				
3	B110B3	WATER	12.4.00	1015	X			X	X				
	~~B11265~~	~~WATER~~	~~12.4.00~~	~~0945~~	RT 12.4.00								
	~~B11266~~	~~WATER~~	~~12.4.00~~	~~1015~~									

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: R. Fahlberg / R. Fahlberg	Received By: R Thorep	12.4.00 1130
Relinquished By: R Thorep	Received By: Stored in R.L. 2B 3728	12.4.00 1300
Relinquished By: Removed from Ref 2B 3728	Received By: R Thorep	12.6.00 0900
Relinquished By: R. Thorep	Received By: FED EX	12.5.00 0900
Relinquished By: Fed Ex	Received By: [signature]	12-6-00 0915
Relinquished By: Fed Ex	Received By: [signature]	12-7-00 0945

SPECIAL INSTRUCTIONS

(1) VOA - 8260A (App IX): VOA - 8260A (App IX Add-On) {1,1,2-Trichloro-1,2,2-trifluoroethane, 1,3-Butadiene, 1-Butanol, 2-Chloroethyl vinyl ether, Allyl alcohol, cis-1,2-Dichloroethylene, Crotonaldehyde, Dichloropropanol, Diethyl ether, Ethyl acetate, Isoprop

SAMPLES DID NOT ORIGINATE IN RADIOLOGICAL CONTROLLED AREA. NO TOTAL ACTIVITY IS ASSOCIATED WITH SAMPLE /SAMPLES.

RT 12/4/00

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)

SDR # B01-024
Revision #: 0
Date Initiated: 12/04/00

SAMPLE DISPOSITION RECORD

SAF: B99-037
OU: N/A
Project ID: ERDF Leachate
Task ID: 2
Sampling Event: ERDF Leachate Delisting Analysis

Laboratory: TMA/RECRA

Task Manager: F.V. Roeck

Sampling Information:
Number of Samples: 1
ID Numbers: B11265
Matrix: WATER
Collection Date: 12/04/00

Issue Background:

Class: ☒ Project Data Use ☐ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Cancellation of Analyses

Description: All Analyses Cancelled Due to Sample Mis-Shipment Problem

Disposition:

Description: All analyses associated with the listed sample were cancelled because of a mis-shipment problem (see SDR B01-023). Analyses to be run on the listed sample were added to sample B110B2 (see SDR B01-025).

Justification: Because the listed sample was sent to the wrong laboratory, the analyses for the sample needed to be cancelled.

Approval Signatures:

S. J. Trent 12/21/00
Project Coordinator (Print/Sign Name) Date

F.V. Roeck
Task Manager (Print/Sign Name) Date

SDR # B01-025
Revision #: 0
Date Initiated: 12/04/00

SAMPLE DISPOSITION RECORD

SAF: B99-037
OU: N/A
Project ID: ERDF Leachate
Task ID: 2
Sampling Event: ERDF Leachate Delisting Analysis

Laboratory: TMA/RECRA

Task Manager: F.V. Roeck

Sampling Information:
Number of Samples: 1
ID Numbers: B110B2
Matrix: WATER
Collection Date: 12/04/00

Issue Background:

Class: ☒ Project Data Use ☐ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Addition of Analyses

Description: Addition of Total Uranium, Tc-99, and C-14 Analyses

Disposition:

Description: Total Uranium, Tc-99, and C-14 analyses were added to the listed sample because of a sample mis-shipment problem (see SDR B01-023 and SDR B01-024).

Justification: These analyses are needed by the RA/WD project to meet regulatory delisting requirements for the ERDF.

Approval Signatures:

S. J. Trent — 12/21/00
Project Coordinator (Print/Sign Name) — Date

F.V. Roeck
Task Manager (Print/Sign Name) — Date