H0997

0054248

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H0997 was composed of two water samples designated under SAF No. B99-037 with a Project Designation of: ERFD Leachate Delisting Analysis.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Thermo Retec Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on October 9, 2000.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

RECEIVED
JAN 0 9 2000
EDMC

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0997

SAMPLE SUMMARY

SDG 7472
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H0997

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B103K7	ERDF	WATER		R008225-01	B99-037	B99-037-10	08/28/00 10:05
B103K8	ERDF	WATER		R008225-02	B99-037	B99-037-10	08/28/00 10:40
Method Blank		WATER		R008225-04	B99-037		
Lab Control Sample		WATER		R008225-03	B99-037		
Duplicate (R008225-01)	ERDF	WATER		R008225-05	B99-037		08/28/00 10:05

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 10/09/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0997

SDG 7472
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract TRC-SBB-207925
Case no SDG H0997

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
7472	B99-037-10	B103K7	WATER				08/30/00	2	R008225-01	7472-001
		B103K8	WATER				08/30/00	2	R008225-02	7472-002
		Method Blank	WATER						R008225-04	7472-004
		Lab Control Sample	WATER						R008225-03	7472-003
		Duplicate (R008225-01)	WATER				08/30/00	2	R008225-05	7472-005

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 10/09/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0997

PREP BATCH SUMMARY

SDG 7472
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H0997

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Gas Proportional Counting												
80A	WATER	Gross Alpha in Water	6929-198	20.0	2			1	1	1/1		
80B	WATER	Gross Beta in Water	6929-198	15.0	2			1	1	1/1		
Gamma Scan												
GAM	WATER	Gamma Emitters	6929-198	15.0	2			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 10/09/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0997

WORK SUMMARY

SDG 7472
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H0997

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B103K7			R008225-01	7472-001	80A/80		10/04/00	10/09/00	MCM	Gross Alpha in Water
ERDF		WATER	08/28/00	7472-001	80B/80		10/04/00	10/09/00	MCM	Gross Beta in Water
B99-037-10	B99-037		08/30/00	7472-001	GAM		09/11/00	10/09/00	MCM	Gamma Emitters
B103K8			R008225-02	7472-002	80A/80		10/04/00	10/09/00	MCM	Gross Alpha in Water
ERDF		WATER	08/28/00	7472-002	80B/80		10/04/00	10/09/00	MCM	Gross Beta in Water
B99-037-10	B99-037		08/30/00	7472-002	GAM		09/12/00	10/09/00	MCM	Gamma Emitters
Method Blank			R008225-04	7472-004	80A/80		10/04/00	10/09/00	MCM	Gross Alpha in Water
		WATER		7472-004	80B/80		10/04/00	10/09/00	MCM	Gross Beta in Water
	B99-037			7472-004	GAM		09/12/00	10/09/00	MCM	Gamma Emitters
Lab Control Sample			R008225-03	7472-003	80A/80		10/04/00	10/09/00	MCM	Gross Alpha in Water
		WATER		7472-003	80B/80		10/04/00	10/09/00	MCM	Gross Beta in Water
	B99-037			7472-003	GAM		09/12/00	10/09/00	MCM	Gamma Emitters
Duplicate (R008225-01)			R008225-05	7472-005	80A/80		10/04/00	10/09/00	MCM	Gross Alpha in Water
ERDF		WATER	08/28/00	7472-005	80B/80		10/04/00	10/09/00	MCM	Gross Beta in Water
	B99-037		08/30/00	7472-005	GAM		09/12/00	10/09/00	MCM	Gamma Emitters

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
80A/80	B99-037	Gross Alpha in Water	900.0_ALPHABETA_GPC	2			1	1	1	5
80B/80	B99-037	Gross Beta in Water	900.0_ALPHABETA_GPC	2			1	1	1	5
GAM	B99-037	Gamma Emitters	GAMMA_GS	2			1	1	1	5
TOTALS				6			3	3	3	15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DV1-GWS
Version 3.06
Report date 10/09/00

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0997

R008225-04 Method Blank

METHOD BLANK

SDG 7472 Client/Case no Hanford SDG H0997
Contact Melissa C. Mannion Contract TRC-SBB-207925

Lab sample id R008225-04 Client sample id Method Blank
Dept sample id 7472-004 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	-0.227	0.60	1.3	3.0	U	80A
Gross Beta	12587-47-2	-0.075	1.1	1.9	4.0	U	80B
Potassium 40	13966-00-2	U		220		U	GAM
Cobalt 60	10198-40-0	U		12	25	U	GAM
Cesium 137	10045-97-3	U		11	15	U	GAM
Radium 226	13982-63-3	U		21		U	GAM
Radium 228	15262-20-1	U		50		U	GAM
Europium 152	14683-23-9	U		29	50	U	GAM
Europium 154	15585-10-1	U		35	50	U	GAM
Europium 155	14391-16-3	U		37	50	U	GAM
Thorium 228	14274-82-9	U		17		U	GAM
Thorium 232	TH-232	U		50		U	GAM
Uranium 235	15117-96-1	U		49		U	GAM
Uranium 238	U-238	U		1500		U	GAM
Americium 241	14596-10-2	U		79		U	GAM

ERDF Leachate Delisting Analysis

QC-BLANK 35722

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 10/09/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0997

R008225-03 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7472 Client/Case no Hanford SDG H0997

Contact Melissa C. Mannion Case no TRC-SBB-207925

Lab sample id R008225-03 Client sample id Lab Control Sample

Dept sample id 7472-003 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	84.9	5.5	1.4	3.0		80A	67.0	2.7	127	60-140	70-130
Gross Beta	77.2	3.8	2.4	4.0		80B	73.7	2.9	105	74-126	70-130
Cobalt 60	489	23	8.6	25		GAM	486	19	101	76-124	80-120
Cesium 137	563	21	12	15		GAM	556	22	101	76-124	80-120

ERDF Leachate Delisting Analysis

QC-LCS 35721

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 10/09/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0997

R008225-05 B103K7

DUPLICATE

SDG 7472 Client/Case no Hanford SDG H0997

Contact Melissa C. Mannion Case no TRC-SBB-207925

DUPLICATE ORIGINAL

Lab sample id R008225-05 Lab sample id R008225-01 Client sample id B103K7

Dept sample id 7472-005 Dept sample id 7472-001 Location/Matrix ERDF WATER

Received 08/30/00 Collected 08/28/00 10:05

Custody/SAF No B99-037-10 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	6.08	1.8	1.3	3.0		80A	4.87	1.8	1.8		22	82
Gross Beta	23.4	2.3	2.1	4.0		80B	21.5	2.3	2.5		8	39
Potassium 40	U		410		U	GAM	U		250	U	-	
Cobalt 60	U		14	25	U	GAM	U		13	U	-	
Cesium 137	U		14	15	U	GAM	U		15	U	-	
Radium 226	U		29		U	GAM	U		29	U	-	
Radium 228	U		64		U	GAM	U		57	U	-	
Europium 152	U		32	50	U	GAM	U		38	U	-	
Europium 154	U		42	50	U	GAM	U		43	U	-	
Europium 155	U		24	50	U	GAM	U		36	U	-	
Thorium 228	U		17		U	GAM	U		20	U	-	
Thorium 232	U		64		U	GAM	U		57	U	-	
Uranium 235	U		43		U	GAM	U		59	U	-	
Uranium 238	U		1600		U	GAM	U		1500	U	-	
Americium 241	U		14		U	GAM	U		54	U	-	

ERDF Leachate Delisting Analysis

QC-DUP#1 35723

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 10/09/00

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0997

R008225-01 **B103K7**

DATA SHEET

SDG	7472	Client/Case no	Hanford SDG_H0997
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R008225-01	Client sample id	B103K7
Dept sample id	7472-001	Location/Matrix	ERDF WATER
Received	08/30/00	Collected	08/28/00 10:05
		Custody/SAF No	B99-037-10 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	4.87	1.8	1.8	3.0		80A
Gross Beta	12587-47-2	21.5	2.3	2.5	4.0		80B
Potassium 40	13966-00-2	U		250		U	GAM
Cobalt 60	10198-40-0	U		13	25	U	GAM
Cesium 137	10045-97-3	U		15	15	U	GAM
Radium 226	13982-63-3	U		29		U	GAM
Radium 228	15262-20-1	U		57		U	GAM
Europium 152	14683-23-9	U		38	50	U	GAM
Europium 154	15585-10-1	U		43	50	U	GAM
Europium 155	14391-16-3	U		36	50	U	GAM
Thorium 228	14274-82-9	U		20		U	GAM
Thorium 232	TH-232	U		57		U	GAM
Uranium 235	15117-96-1	U		59		U	GAM
Uranium 238	U-238	U		1500		U	GAM
Americium 241	14596-10-2	U		54		U	GAM

ERDF Leachate Delisting Analysis

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/09/00

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0997

R008225-02 B103K8

DATA SHEET

SDG	7472	Client/Case no	Hanford SDG H0997
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R008225-02	Client sample id	B103K8
Dept sample id	7472-002	Location/Matrix	ERDF WATER
Received	08/30/00	Collected	08/28/00 10:40
		Custody/SAF No	B99-037-10 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	8.96	2.2	1.8	3.0		80A
Gross Beta	12587-47-2	30.0	2.4	2.1	4.0		80B
Potassium 40	13966-00-2	U		250		U	GAM
Cobalt 60	10198-40-0	U		14	25	U	GAM
Cesium 137	10045-97-3	U		14	15	U	GAM
Radium 226	13982-63-3	U		30		U	GAM
Radium 228	15262-20-1	U		61		U	GAM
Europium 152	14683-23-9	U		40	50	U	GAM
Europium 154	15585-10-1	U		48	50	U	GAM
Europium 155	14391-16-3	U		35	50	U	GAM
Thorium 228	14274-82-9	U		19		U	GAM
Thorium 232	TH-232	U		61		U	GAM
Uranium 235	15117-96-1	U		56		U	GAM
Uranium 238	U-238	U		1700		U	GAM
Americium 241	14596-10-2	U		51		U	GAM

ERDF Leachate Delisting Analysis

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/09/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0997

Test 80A Matrix WATER
SDG 7472
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H0997

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha
Preparation batch 6929-198					
B103K7	R008225-01	80		7472-001	4.87
B103K8	R008225-02	80		7472-002	8.96
BLK (QC ID=35722)	R008225-04	80		7472-004	U
LCS (QC ID=35721)	R008225-03	80		7472-003	ok
Duplicate (R008225-01)	R008225-05	80		7472-005	ok
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 6929-198 2σ prep error 20.0 % Reference Lab Notebook 6929 pg. 198																
B103K7	R008225-01	80		1.8	0.300			56		100			37	09/18/00	10/04	GRB-110
B103K8	R008225-02	80		1.8	0.300			57		100			37	09/18/00	10/04	GRB-111
BLK (QC ID=35722)	R008225-04	80		1.3	0.300			24		100				09/18/00	10/04	GRB-113
LCS (QC ID=35721)	R008225-03	80		1.4	0.300			29		100				09/18/00	10/04	GRB-112
Duplicate (R008225-01) (QC ID=35723)	R008225-05	80		1.3	0.300			56		100			37	09/18/00	10/04	GRB-114
Nominal values and limits from method				3.0	0.300			5-250		100			180			

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
CP-120 Gross Alpha and Gross Beta in Water, rev 3

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 1.5 ± 0.52
RESIDUE 44 ± 33

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/09/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0997

METHOD SUMMARY

GROSS BETA IN WATER

GAS PROPORTIONAL COUNTING

Test 80B Matrix WATER
SDG 7472
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H0997

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta
Preparation batch 6929-198					
B103K7	R008225-01	80		7472-001	21.5
B103K8	R008225-02	80		7472-002	30.0
BLK (QC ID=35722)	R008225-04	80		7472-004	U
LCS (QC ID=35721)	R008225-03	80		7472-003	ok
Duplicate (R008225-01)	R008225-05	80		7472-005	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 6929-198 2σ prep error 15.0 % Reference Lab Notebook 6929 pg. 198																
B103K7	R008225-01	80		2.5	0.300			56	100				37	09/18/00	10/04	GRB-110
B103K8	R008225-02	80		2.1	0.300			57	100				37	09/18/00	10/04	GRB-111
BLK (QC ID=35722)	R008225-04	80		1.9	0.300			24	100					09/18/00	10/04	GRB-113
LCS (QC ID=35721)	R008225-03	80		2.4	0.300			29	100					09/18/00	10/04	GRB-112
Duplicate (R008225-01) (QC ID=35723)	R008225-05	80		2.1	0.300			56	100				37	09/18/00	10/04	GRB-114
Nominal values and limits from method				4.0	0.300			5-250	100				180			

PROCEDURES REFERENCE 900.0_ALPHABETA_GPC
CP-120 Gross Alpha and Gross Beta in Water, rev 3

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 2.2 ± 0.49
RESIDUE 44 ± 33

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/09/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0997

Test GAM Matrix WATER
SDG 7472
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA EMITTERS

GAMMA SCAN

Client Hanford
Contract TRC-SBB-207925
Contract SDG H0997

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6929-198								
B103K7	R008225-01			7472-001	U		U	
B103K8	R008225-02			7472-002	U		U	
BLK (QC ID=35722)	R008225-04			7472-004	U		U	
LCS (QC ID=35721)	R008225-03			7472-003	ok		ok	
Duplicate (R008225-01)	R008225-05			7472-005	-	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 6929-198 2σ prep error 15.0 % Reference Lab Notebook 6929 pg. 198																
B103K7	R008225-01			15	0.500					437			14	09/11/00	09/11	01,03,00
B103K8	R008225-02			14	0.500					450			15	09/11/00	09/12	01,03,00
BLK (QC ID=35722)	R008225-04			11	0.500					450				09/11/00	09/12	MB,05,00
LCS (QC ID=35721)	R008225-03			12	0.500					450				09/11/00	09/12	01,04,00
Duplicate (R008225-01) (QC ID=35723)	R008225-05			14	0.500					449			15	09/11/00	09/12	MB,07,00
Nominal values and limits from method				15	0.500					400			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 13 ± 3.3
YIELD _____ ± _____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/09/00

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B99-037-10	Page 2 of 2 8.28.00
Collector: Fahlberg/Bowers/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 H0997 (7472)		SAF No.: B99-037	Air Quality: ☐
Ice Chest No.: SML-357	Field Logbook No.: EL ~~1381-3~~ 1517 RF 8.24.00	COA: RERDF22560	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA	Offsite Property No.: A000278		Bill of Lading/Air Bill No.: 42387953-8566	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Preservation	ZnAc+NaOH to pH >9 Cool	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	HCL to pH <2 Cool 4C	HNO3 to pH <2	HCl Cool 4C
Type of Container	P	P	P	aG	aG	aG	aG	G	P	aGs*
No. of Container(s)	1	1	1	2	2	2	2	2	2	3
Volume	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	40mL
SAMPLE ANALYSIS	Sulfides - 9030	See item (1) in Special Instructions.	Total Cyanide - 9010	See item (2) in Special Instructions.	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions.	oil & Grease - 9070	Gross Alpha; Gross Beta	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B103K7	WATER	8.28.00	1005		X							X	
B103K8	WATER	8.28.00	1040	X RT 8.28.00	X	X	X	X	X	X	X RT 8.28.00	X	X RT 8.28.00

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

Relinquished By	Date/Time	Received By	Date/Time
[signature]	8-28-00 1200	R. Thoren 8.28.00	1200
R. Thoren 8.28.00	1245	Stored in Ref 2C 3728 8.28.00	1245
Removed from Ref 2C 3728 8.29.00	0900	R. Thoren 8.29.00	0900
R. Thoren 8.29.00	1430	FED EX 08/29/00	—
FED-Express 08/30/00	9.45	E. Degner 08/30/00	9.45

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}
(4) 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 originated in non Rad controlled area. <2000 pCi/g
NOTA'S Required

*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)

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: BECHTEL HANFORD Date/Time received 08/30/00 9:45 AM

CoC No. B99-037-10

Container I.D. No. SML-357 Requested TAT (Days) 45 P.O. Received Yes [ ] No [✓]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 2
7. Number of containers per sample: (3 EACH) (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [✓] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by E. Segura Date: 08/30/00 Time: 9:45 AM

LOGIN

TNU W.O. No. _____ Group No. _____ Client W.O. No. _____

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____

RECRA ENVIRONMENTAL INC.
Chemical and Environmental Measurement Information

NOV 2000 RECEIVED

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-037
RFW# : 0008L402
SDG# : H0997
SAF# : B99-037

W.O. # : 10985-001-001-9999-00
Date Received: 08-30-00

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 and Phosphate which were analyzed past hold and pH which were received past hold.

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

5. The method blanks were within method criteria.

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

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

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

9. Matrix quality control analysis was not performed for pH.

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.

Pat Ea

09-26-00
Date

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

njp\i08-402

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

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.

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INORGANICS DATA SUMMARY REPORT 09/26/00

CLIENT: TNU-HANFORD B99-037 RECRA LOT #: 0008L402

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B103K7	Bromide by IC	2.7		MG/L	2.5	10.0
		Chloride by IC	280		MG/L	12.5	50.0
		Fluoride by IC	5.0	u	MG/L	5.0	10.0
		Nitrite by IC	2.5	u	MG/L	2.5	10
		Nitrate by IC	160		MG/L	12	50
		Cyanide, Total	5.0	u	UG/L	5.0	1.0
		Phosphate by IC	2.5	u	MG/L	2.5	10.0
		Sulfate by IC	531		MG/L	25.0	100
		Ammonia, as N	0.10	u	MG/L	0.10	1.0
		Total Organic Carbon	11.8		MG/L	0.50	1.0
		Oil & Grease Gravimetri	1.0	u	MG/L	1.0	1.0
		pH	7.7		PH UNIT	0.01	1.0
		Sulfide	1.0	u	MG/L	1.0	1.0
		Specific Conductance	2400		US/CM	1.0	1.0
		Total Dissolved Solids	1600		MG/L	5.0	1.0
		Total Suspended Solids	10		MG/L	5.0	1.0
-002	B103K8	Bromide by IC	2.5	u	MG/L	2.5	10.0
		Chloride by IC	298		MG/L	12.5	50.0
		Fluoride by IC	5.0	u	MG/L	5.0	10.0
		Nitrite by IC	2.5	u	MG/L	2.5	10
		Nitrate by IC	190		MG/L	12	50
		Cyanide, Total	5.0	u	UG/L	5.0	1.0
		Phosphate by IC	2.5	u	MG/L	2.5	10.0
		Sulfate by IC	528		MG/L	25.0	100
		Ammonia, as N	0.10	u	MG/L	0.10	1.0
		Total Organic Carbon	12.0		MG/L	0.50	1.0
		Oil & Grease Gravimetri	1.0	u	MG/L	1.0	1.0
		pH	7.8		PH UNIT	0.01	1.0
		Sulfide	1.0	u	MG/L	1.0	1.0
		Specific Conductance	2490		US/CM	1.0	1.0
		Total Dissolved Solids	1700		MG/L	5.0	1.0
		Total Suspended Solids	5.0	u	MG/L	5.0	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/26/00

CLIENT: TNU-HANFORD B99-037 RECRA LOT #: 0008L402

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LCC052-MB1	Bromide by IC	2.5 u	MG/L	2.5	10.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	00LBC052-MB1	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
BLANK10	00LAC052-MB1	Nitrite by IC	0.25 u	MG/L	0.25	1.0
BLANK10	00LIC052-MB1	Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
BLANK1	00LCC74-MB1	Cyanide, Total	5.0 u	UG/L	5.0	1.0
BLANK10	00LAM038-MB1	Ammonia, as N	0.10 u	MG/L	0.10	1.0
BLANK10	00LTC027-MB1	Total Organic Carbon	0.50 u	MG/L	0.50	1.0
BLANK10	00LOG030-MB1	Oil & Grease Gravimetri	1.0 u	MG/L	1.0	1.0
BLANK10	00LSD031-MB1	Sulfide	1.0 u	MG/L	1.0	1.0
BLANK10	00LSPA38-MB1	Specific Conductance	0.89 u	US/CM	0.89	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/26/00

CLIENT: TNU-HANFORD B99-037 RECRA LOT #: 0008L402

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LSA135-MB1	Total Dissolved Solids	5.0 u	MG/L	5.0	1.0
BLANK10	00LSS135-MB1	Total Suspended Solids	5.0 u	MG/L	5.0	1.0

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INORGANICS ACCURACY REPORT 09/26/00

CLIENT: TNU-HANFORD B99-037 RECRA LOT #: 0008L402

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B103K7	Bromide by IC	246	2.7	250	97.3	50.0
		Chloride by IC	1300	280	1000	101.6	200
		Fluoride by IC	109	2.0	100	107.0	10.0
		Nitrite by IC	45	2.5 u	50	90.5	10
		Nitrate by IC	430	160	250	105.7	50
		Phosphate by IC	49.2	2.5 u	50.0	98.4	10.0
		Sulfate by IC	1560	531	1000	103.0	200
		Total Organic Carbon	16.8	11.8	5.0	100.6	1.0
		Sulfide	21.0	0.40	20.0	103.2	1.0
-002	B103K8	Cyanide, Total	48	5.0 u	50	96.2	1.0
BLANK10	00LCC052-MB1	Bromide by IC	4.9	2.5 u	5.0	98.3	1.0
		Phosphate by IC	5.2	0.25u	5.0	103.3	1.0
BLANK10	00LBC052-MB1	Chloride by IC	4.8	0.25u	5.0	96.0	1.0
		Fluoride by IC	10.8	0.50u	10.0	108.4	1.0
BLANK10	00LAC052-MB1	Nitrite by IC	5.0	0.25u	5.0	100.2	1.0
BLANK10	00LIC052-MB1	Nitrate by IC	4.9	0.25u	5.0	97.9	1.0
		Sulfate by IC	4.8	0.25u	5.0	96.4	1.0
BLANK10	00LAM038-MB1	Ammonia, as N	2.1	0.10u	2.0	105.0	1.0
		Ammonia, as N MSD	2.1	0.10u	2.0	104.5	1.0
BLANK10	00LTC027-MB1	Total Organic Carbon	4.9	0.50u	5.0	98.4	1.0
BLANK10	00LOG030-MB1	Oil & Grease Gravimetr	50.5	1.0 u	56.8	88.9	1.0
		Oil & Grease - Grav M	42.0	1.0 u	43.2	97.2	1.0
BLANK10	00LSD031-MB1	Sulfide	10.6	1.0 u	10.5	101.0	1.0
		Sulfide MSD	11.0	1.0 u	11.0	100.5	1.0

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INORGANICS ACCURACY REPORT 09/26/00

CLIENT: TNU-HANFORD B99-037 RECRA LOT #: 0008L402

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
BLANK10	00LSPA38-MB1	Specific Conductance	148	0.89u	147	100.6	1.0
		Spec Conductance MSD	146	0.89u	147	99.3	1.0
BLANK10	00LSA135-MB1	Total Dissolved Solids	90	5.0 u	100	90.0	1.0
		Total Dissolved Solids	84	5.0 u	100	84.0	1.0
BLANK10	00LSS135-MB1	Total Suspended Solids	87	5.0 u	100	87.0	1.0
		Total Suspended Solids	85	5.0 u	100	85.0	1.0

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INORGANICS DUPLICATE SPIKE REPORT 09/26/00

CLIENT: TNU-HANFORD B99-037 RECRA LOT #: 0008L402

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	00LAM038-MB1	Ammonia, as N	105.0	104.5	0.48
BLANK10	00LOG030-MB1	Oil & Grease - Grav	88.9	97.2	8.9
BLANK10	00LSD031-MB1	Sulfide	101.0	100.5	0.48
BLANK10	00LSPA38-MB1	Specific Conductance	100.6	99.3	1.3
BLANK10	00LSA135-MB1	Total Dissolved Solids	90.0	84.0	6.9
BLANK10	00LSS135-MB1	Total Suspended Solids	87.0	85.0	2.3

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INORGANICS PRECISION REPORT 09/26/00

CLIENT: TNU-HANFORD B99-037 RECRA LOT #: 0008L402

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B103K7	Bromide by IC	2.7	2.8	3.2	10.0
		Chloride by IC	280	284	1.4	50.0
		Fluoride by IC	5.0 u	5.0 u	NC	10.0
		Nitrite by IC	2.5 u	2.5 u	NC	10
		Nitrate by IC	160	160	0.26	50
		Cyanide, Total	5.0 u	5.0 u	NC	1.0
		Phosphate by IC	2.5 u	2.5 u	NC	10.0
		Sulfate by IC	531	534	0.48	100
		Ammonia, as N	0.10u	0.10u	NC	1.0
		Total Organic Carbon	11.8	11.7	0.94	1.0
		Oil & Grease Gravimetri	1.0 u	1.0 u	NC	1.0
		Sulfide	1.0 u	2.0 u	NC	1.0
		Specific Conductance	2400	2400	0.087	1.0
		Total Dissolved Solids	1600	1700	0.91	1.0
		Total Suspended Solids	10	11	9.5	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/26/00

CLIENT: TNU-HANFORD B99-037 RECRA LOT #: 0008L402

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	00LCC74-LCS1	Cyanide, Total LCS	17	20	UG/L	86.2
LCSS2	00LCC74-LCS2	Cyanide, Total LCS	91	100	UG/L	91.5

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037

DATE RECEIVED: 08/30/00 RFW LOT # :0008L402

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B103K7						
BROMIDE BY IC	001	W	00LCC052	08/28/00	09/06/00	09/06/00
BROMIDE BY IC	001 REP	W	00LCC052	08/28/00	09/06/00	09/06/00
BROMIDE BY IC	001 MS	W	00LCC052	08/28/00	09/06/00	09/06/00
CHLORIDE BY IC	001	W	00LBC052	08/28/00	09/06/00	09/06/00
CHLORIDE BY IC	001 REP	W	00LBC052	08/28/00	09/06/00	09/06/00
CHLORIDE BY IC	001 MS	W	00LBC052	08/28/00	09/06/00	09/06/00
FLUORIDE BY IC	001	W	00LBC052	08/28/00	09/06/00	09/06/00
FLUORIDE BY IC	001 REP	W	00LBC052	08/28/00	09/06/00	09/06/00
FLUORIDE BY IC	001 MS	W	00LBC052	08/28/00	09/06/00	09/06/00
NITRITE BY IC	001	W	00LAC052	08/28/00	09/06/00	09/06/00
NITRITE BY IC	001 REP	W	00LAC052	08/28/00	09/06/00	09/06/00
NITRITE BY IC	001 MS	W	00LAC052	08/28/00	09/06/00	09/06/00
NITRATE BY IC	001	W	00LIC052	08/28/00	09/06/00	09/06/00
NITRATE BY IC	001 REP	W	00LIC052	08/28/00	09/06/00	09/06/00
NITRATE BY IC	001 MS	W	00LIC052	08/28/00	09/06/00	09/06/00
TOTAL CYANIDE	001	W	00LCC74	08/28/00	09/06/00	09/06/00
TOTAL CYANIDE	001 REP	W	00LCC74	08/28/00	09/06/00	09/06/00
PHOSPHATE BY IC	001	W	00LCC052	08/28/00	09/06/00	09/06/00
PHOSPHATE BY IC	001 REP	W	00LCC052	08/28/00	09/06/00	09/06/00
PHOSPHATE BY IC	001 MS	W	00LCC052	08/28/00	09/06/00	09/06/00
SULFATE BY IC	001	W	00LIC052	08/28/00	09/06/00	09/06/00
SULFATE BY IC	001 REP	W	00LIC052	08/28/00	09/06/00	09/06/00
SULFATE BY IC	001 MS	W	00LIC052	08/28/00	09/06/00	09/06/00
AMMONIA	001	W	00LAM038	08/28/00	08/31/00	08/31/00
AMMONIA	001 REP	W	00LAM038	08/28/00	08/31/00	08/31/00
TOTAL ORGANIC CARBON	001	W	00LTC027	08/28/00	09/18/00	09/18/00
TOTAL ORGANIC CARBON	001 REP	W	00LTC027	08/28/00	09/18/00	09/18/00
TOTAL ORGANIC CARBON	001 MS	W	00LTC027	08/28/00	09/18/00	09/18/00
OIL & GREASE BY GRAV	001	W	00LOG030	08/28/00	09/05/00	09/06/00
OIL AND GREASE BY GR	001 REP	W	00LOG030	08/28/00	09/05/00	09/06/00
PH	001	W	00LPH072	08/28/00	08/30/00	08/30/00
SULFIDE	001	W	00LSD031	08/28/00	09/04/00	09/04/00
SULFIDE	001 REP	W	00LSD031	08/28/00	09/04/00	09/04/00
SULFIDE	001 MS	W	00LSD031	08/28/00	09/04/00	09/04/00
SPECIFIC CONDUCTANCE	001	W	00LSPA38	08/28/00	09/11/00	09/11/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037

DATE RECEIVED: 08/30/00 RFW LOT # :0008L402

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SPECIFIC CONDUCTANCE	001 REP	W	00LSPA38	08/28/00	09/11/00	09/11/00
TOTAL DISSOLVED SOLI	001	W	00LSA135	08/28/00	09/01/00	09/05/00
TOTAL DISSOLVED SOLI	001 REP	W	00LSA135	08/28/00	09/01/00	09/05/00
TOTAL SUSPENDED SOLI	001	W	00LSS135	08/28/00	09/01/00	09/05/00
TOTAL SUSPENDED SOLI	001 REP	W	00LSS135	08/28/00	09/01/00	09/05/00
B103K8						
BROMIDE BY IC	002	W	00LCC052	08/28/00	09/06/00	09/06/00
CHLORIDE BY IC	002	W	00LBC052	08/28/00	09/06/00	09/06/00
FLUORIDE BY IC	002	W	00LBC052	08/28/00	09/06/00	09/06/00
NITRITE BY IC	002	W	00LAC052	08/28/00	09/06/00	09/06/00
NITRATE BY IC	002	W	00LIC052	08/28/00	09/06/00	09/06/00
TOTAL CYANIDE	002	W	00LCC74	08/28/00	09/06/00	09/06/00
TOTAL CYANIDE	002 MS	W	00LCC74	08/28/00	09/06/00	09/06/00
PHOSPHATE BY IC	002	W	00LCC052	08/28/00	09/06/00	09/06/00
SULFATE BY IC	002	W	00LIC052	08/28/00	09/06/00	09/06/00
AMMONIA	002	W	00LAM038	08/28/00	08/31/00	08/31/00
TOTAL ORGANIC CARBON	002	W	00LTC027	08/28/00	09/18/00	09/18/00
OIL & GREASE BY GRAV	002	W	00LOG030	08/28/00	09/05/00	09/06/00
PH	002	W	00LPH072	08/28/00	08/30/00	08/30/00
SULFIDE	002	W	00LSD031	08/28/00	09/04/00	09/04/00
SPECIFIC CONDUCTANCE	002	W	00LSPA38	08/28/00	09/11/00	09/11/00
TOTAL DISSOLVED SOLI	002	W	00LSA135	08/28/00	09/01/00	09/05/00
TOTAL SUSPENDED SOLI	002	W	00LSS135	08/28/00	09/01/00	09/05/00
LAB QC:						
BROMIDE BY IC	MB1	W	00LCC052	N/A	09/06/00	09/06/00
BROMIDE BY IC	MB1 BS	W	00LCC052	N/A	09/06/00	09/06/00
CHLORIDE BY IC	MB1	W	00LBC052	N/A	09/06/00	09/06/00
CHLORIDE BY IC	MB1 BS	W	00LBC052	N/A	09/06/00	09/06/00
FLUORIDE BY IC	MB1	W	00LBC052	N/A	09/06/00	09/06/00
FLUORIDE BY IC	MB1 BS	W	00LBC052	N/A	09/06/00	09/06/00
NITRITE BY IC	MB1	W	00LAC052	N/A	09/06/00	09/06/00
NITRITE BY IC	MB1 BS	W	00LAC052	N/A	09/06/00	09/06/00
NITRATE BY IC	MB1	W	00LIC052	N/A	09/06/00	09/06/00
NITRATE BY IC	MB1 BS	W	00LIC052	N/A	09/06/00	09/06/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037

DATE RECEIVED: 08/30/00 RFW LOT # :0008L402

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL CYANIDE	LCS L	W	00LCC74	N/A	09/06/00	09/06/00
TOTAL CYANIDE	LCS L	W	00LCC74	N/A	09/06/00	09/06/00
TOTAL CYANIDE	MB1	W	00LCC74	N/A	09/06/00	09/06/00
PHOSPHATE BY IC	MB1	W	00LCC052	N/A	09/06/00	09/06/00
PHOSPHATE BY IC	MB1 BS	W	00LCC052	N/A	09/06/00	09/06/00
SULFATE BY IC	MB1	W	00LIC052	N/A	09/06/00	09/06/00
SULFATE BY IC	MB1 BS	W	00LIC052	N/A	09/06/00	09/06/00
AMMONIA	MB1	W	00LAM038	N/A	08/31/00	08/31/00
AMMONIA	MB1 BS	W	00LAM038	N/A	08/31/00	08/31/00
AMMONIA	MB1 BSD	W	00LAM038	N/A	08/31/00	08/31/00
TOTAL ORGANIC CARBON	MB1	W	00LTC027	N/A	09/18/00	09/18/00
TOTAL ORGANIC CARBON	MB1 BS	W	00LTC027	N/A	09/18/00	09/18/00
OIL & GREASE BY GRAV	MB1	W	00LOG030	N/A	09/05/00	09/06/00
OIL AND GREASE BY GR	MB1 BS	W	00LOG030	N/A	09/05/00	09/06/00
OIL AND GREASE BY GR	MB1 BSD	W	00LOG030	N/A	09/05/00	09/06/00
SULFIDE	MB1	W	00LSD031	N/A	09/04/00	09/04/00
SULFIDE	MB1 BS	W	00LSD031	N/A	09/04/00	09/04/00
SULFIDE	MB1 BSD	W	00LSD031	N/A	09/04/00	09/04/00
SPECIFIC CONDUCTANCE	MB1	W	00LSPA38	N/A	09/11/00	09/11/00
SPECIFIC CONDUCTANCE	MB1 BS	W	00LSPA38	N/A	09/11/00	09/11/00
SPECIFIC CONDUCTANCE	MB1 BSD	W	00LSPA38	N/A	09/11/00	09/11/00
TOTAL DISSOLVED SOLI	MB1	W	00LSA135	N/A	09/01/00	09/05/00
TOTAL DISSOLVED SOLI	MB1 BS	W	00LSA135	N/A	09/01/00	09/05/00
TOTAL DISSOLVED SOLI	MB1 BSD	W	00LSA135	N/A	09/01/00	09/05/00
TOTAL SUSPENDED SOLI	MB1	S	00LSS135	N/A	09/01/00	09/05/00
TOTAL SUSPENDED SOLI	MB1 BS	S	00LSS135	N/A	09/01/00	09/05/00
TOTAL SUSPENDED SOLI	MB1 BSD	S	00LSS135	N/A	09/01/00	09/05/00

RECRA LabNet Use Only
00084402

Custody Transfer Record/Lab Work Request

Page 1 of 2

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

115

Client: TMU-Hanford B99-037
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: QS
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 8-30-00 Date Due: 9-29-00
Account #:

Refrigerator #		1	3	3	3	3	1		3	3	3	3	3	3	1	3
#/Type Container	Liquid	3aj	2aj	2aj	2aj	2aj	3aj	1j	1P	1P	1P	2aj	1P	1aj	1aj	1aj
	Solid	j	j	j	j	j	j					j		j	j	j
Volume	Liquid	40	1L	1L	1L	1L	40		500	1L	500	1L	500	500	500	500
	Solid															
Preservatives		HCL	—	—	—	—	—		H_2SO_4	$NaOH$	—	HCL	—	Sulfuric Acid	HCL	HNO3

ANALYSES REQUESTED →

ORGANIC								INORG								
VOA 8240A	BNA	Pest/PCB	Chloro Herb	SVOC HPLC	Alcohols Glycols Ketone	Carbonyls Form		Total Metal Hex Cr	TCLP Metal	CN	Silica	Oil + Grease	PH	Carbonyls Formaldehyde	TOC	Merc.

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	RECRA LabNet Use Only													
							624H	625H	8260H	OHPAGX	8310	8270C	TCLP 8260C	TCLP 8270C	Met(1)	ICAP	ISE	IAGX	IPH	OCSC	IOCT	MHGTO
001	B103K7			W	8/29/00	1005	X	X	X	X	X	X			X	X	X	X	X	X	X	X
002	B103K8			⊥	⊥	1040	X	X	X	X	X	X			X	X	X	X	X	X	X	X

Special Instructions: Saf B99-037

Run Matrix QC

4235 7953 · 8577/4.6°C
8599/3.8°C *
8588/4.2°C

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, Se,
3. Si, Tl, Sn
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
pH

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
[illegible]	[illegible]	8/30/00	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

RECRA LabNet Use Only: 0008L402

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

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

Refrigerator #										3		3	3	3	3
#/Type Container	Liquid									1P		1P	1P	1P	1P
	Solid														
Volume	Liquid									500		500	500	500	500
	Solid														
Preservatives										—		—	—	—	H_2SO_4
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb			INORG: Metal	CN	[illegible]		IC Anions	TDS	TSS	Ammonia

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		IC①	ITDS	ITSS	INH3N
001	B103K7														X		X	X	X	X
002	830a B103K8														X		X	X	X	X

Special Instructions:

DATE/REVISIONS:
IC① 1. Br, Cl, Fl, NO3, NO2, 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	Relinquished by	Received by	Date	Time
[signature]	[signature]	8/30/00	0930				

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-10	Page 2 of 2

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code / Data Turnaround
Fahlberg/Bowers/Johansen	F Roeck 372-9086	WEISS, RL	7N / 45 Days
Project Designation ERDF Leachate Delisting Analysis	**Sampling Location** ERDF	**SAF No.** B99-037	**Air Quality** ☐
Ice Chest No. ERC99-058, ERC99-042, ERC96,050	**Field Logbook No.** EL ~~1381-3~~ 1517 8-24-00 / **COA** RERDF22560	**Method of Shipment** Fed EX	
Shipped To TMA/RECRA	**Offsite Property No.** A00298	**Bill of Lading/Air Bill No.** 42357953-8588, 8577, 8599	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	ZnAc+NaOH to pH >9 Cool	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	HCL to pH <2 Cool 4C	HNO3 to pH <2	HCl Cool 4C
Type of Container	P	P	P	aG	aG	aG	aG	G	P	aGs*
No. of Container(s)	1	1	1	2	2	2	2	2	2	3
Volume	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	40mL
SAMPLE ANALYSIS	Sulfides - 9030	See item (1) in Special Instructions.	Total Cyanide - 9010	See item (2) in Special Instructions.	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions.	oil & Grease - 9070	Gross Alpha; Gross Beta	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B103K7	WATER	8-28-00	1005	X		X	X	X	X	X	X		X
B103K8	WATER	8-28-00	1040	X		X	X	X	X	X	X		X

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

Relinquished By	Date/Time	Received By	Date/Time
[illegible]	8-28-00 1200	R. Thoren	8-28-00 1200
R. Thoren	8-28-00 1245	Stored in Ref 2C 3728 bld	8-28-00 1245
Removed from Ref 2C 3728	8-29-00 0900	R. Thoren	8-29-00 0900
R. Thoren	8-29-00 1430	FED EX	
FED EX	8/30/00 0930	[illegible]	8/30/00 0930
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}
(4) 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 originated in non Rad controlled area <2000pCi/g
NOTA Required

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
		00086402	

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-10	Page 3 of 3

Collector Fahlberg/Bowers/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. ERC99-058, ERC99-042, ERC96-050	**Field Logbook No.** EL ~~1381-3~~ 1517 8-28-00	**COA** RERDF22560	**Method of Shipment** Fed EX		
Shipped To TMA/RECRA RECRA	**Offsite Property No.** AQ00298		**Bill of Lading/Air Bill No.** 4235753-8588, 8577, 8594		

POSSIBLE SAMPLE HAZARDS/REMARKS
NONE

Special Handling and/or Storage

Preservation	Cool 4C										
Type of Container	Gs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions										
Sample No. / Matrix * / Sample Date / Sample Time											
B103K7 / WATER / 8-28-00 / 1005	X										
B103K8 / WATER / 8-28-00 / 1040	X										

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

Relinquished By / Date/Time	Received By / Date/Time
[illegible] 8-28-00 1200	R Thoren 8.28.00 1200
R Thoren 8.28.00 1245	Stored in Ref 3728 8.28.00 1245
Removed from Ref 3728 8.29.00 0900	R Thoren 8.29.00 0900
R Thoren 8.29.00 1430	FEDEX
FedEx 8/30/00 0930	D. [illegible] 8/31/00 0830
Relinquished By / Date/Time	Received By / Date/Time

SPECIAL INSTRUCTIONS

(1) Alcohols, Glycols, & Ketones - 8015M (1-Butanol, Diethyl ether, Methanol)

Samples originated in non-RAD Controlled area <2000 pCi/g. NO TA Required

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	B99-037-10	Page 1 of 3

Collector: Fahlberg/Bowers/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.: ERC99-056, ERC9904R, ERC46000	Field Logbook No.: EL ~~1381-3~~ 1577 R.F 8.24.00	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A0000298	Bill of Lading/Air Bill No.: 42357953-8588, 8577, 8591	

POSSIBLE SAMPLE HAZARDS/REMARKS
NONE

Special Handling and/or Storage

Preservation	None	Cool 4C	HCl to pH <2 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	G	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	~~100mL~~ 500 RC 8.24.00	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL
SAMPLE ANALYSIS	pH (Water) - 9040	Carbonyls - 8315 (Formaldehyde)	TOC - 9060	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									
B103K7	WATER	8.28.00	1005	X	X	X	X	X	X	X	X	X	X
B103K8	WATER	8.28.00	1040	X	X	X	X	X	X	X	X	X	X

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

Relinquished By	Date/Time	Received By	Date/Time
Matthews Bowers Johansen	8-28-00 1200	R Thoren	8.28.00 1200
R Thoren	8.28.00 1245	Storage in Ref 2C 37286d	8.28.00 1245
Removed from Ref 2C 37286d	8.29.00 0900	R Thoren	8.29.00 0900
R Thoren	8.29.00 1430	FED EX	
FED EX	8/30/00 0930	D J Smith	8/30/00 0930

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 originated in non Rad Controlled area. <2000 pCi/g. NO TA Required

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
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-037
RFW#: 0008L402
SDG/SAF#: H0997/B99-037

W.O.#: 10985-001-001-9999-00
Date Received: 08-30-00

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.

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).

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 laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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 20 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
B103K7	Sodium	50,000	73.0
B103K7	Silicon	5,000	102.6

12. The duplicate analysis for 1 analyte was 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.

Pat G

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-12-00
Date

gmb/m08-402

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 00081402

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:_____

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.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 10/12/00

CLIENT: TNU-HANFORD B99-037 RECRA LOT #: 0008L402

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B103K7	Silver, Total	1.1	u	UG/L	1.1	1.0
		Aluminum, Total	41.3		UG/L	10.6	1.0
		Arsenic, Total	11.3		UG/L	3.4	1.0
		Barium, Total	105		UG/L	0.20	1.0
		Beryllium, Total	0.13		UG/L	0.10	1.0
		Calcium, Total	213000		UG/L	8.9	1.0
		Cadmium, Total	0.30	u	UG/L	0.30	1.0
		Cobalt, Total	0.80	u	UG/L	0.80	1.0
		Chromium, Total	15.9		UG/L	0.90	1.0
		Copper, Total	6.6		UG/L	0.80	1.0
		Iron, Total	87.5		UG/L	16.4	1.0
		Mercury, Total	0.10	u	UG/L	0.10	1.0
		Potassium, Total	17300		UG/L	29.9	1.0
		Magnesium, Total	57000		UG/L	7.8	1.0
		Manganese, Total	0.27		UG/L	0.20	1.0
		Sodium, Total	226000		UG/L	3.8	1.0
		Nickel, Total	7.6		UG/L	1.2	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Antimony, Total	2.1	u	UG/L	2.1	1.0
		Selenium, Total	4.3	u	UG/L	4.3	1.0
		Silicon, Total	18700		UG/L	6.1	1.0
		Tin, Total	2.1	u	UG/L	2.1	1.0
		Thallium, Total	3.6	u	UG/L	3.6	1.0
		Vanadium, Total	21.6		UG/L	0.90	1.0
		Zinc, Total	4.5		UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 10/12/00

CLIENT: TNU-HANFORD B99-037 RECRA LOT #: 0008L402

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B103K8	Silver, Total	1.1	u	UG/L	1.1	1.0
		Aluminum, Total	48.5		UG/L	10.6	1.0
		Arsenic, Total	9.9		UG/L	3.4	1.0
		Barium, Total	123		UG/L	0.20	1.0
		Beryllium, Total	0.15		UG/L	0.10	1.0
		Calcium, Total	232000		UG/L	8.9	1.0
		Cadmium, Total	0.30	u	UG/L	0.30	1.0
		Cobalt, Total	0.80	u	UG/L	0.80	1.0
		Chromium, Total	11.5		UG/L	0.90	1.0
		Copper, Total	8.7		UG/L	0.80	1.0
		Iron, Total	42.0		UG/L	16.4	1.0
		Mercury, Total	0.10	u	UG/L	0.10	1.0
		Potassium, Total	17400		UG/L	29.9	1.0
		Magnesium, Total	63300		UG/L	7.8	1.0
		Manganese, Total	0.20	u	UG/L	0.20	1.0
		Sodium, Total	248000		UG/L	3.8	1.0
		Nickel, Total	9.4		UG/L	1.2	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Antimony, Total	2.1	u	UG/L	2.1	1.0
		Selenium, Total	4.3	u	UG/L	4.3	1.0
		Silicon, Total	19000		UG/L	6.1	1.0
		Tin, Total	2.1	u	UG/L	2.1	1.0
		Thallium, Total	3.6	u	UG/L	3.6	1.0
		Vanadium, Total	20.4		UG/L	0.90	1.0
		Zinc, Total	3.9		UG/L	0.40	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/12/00

CLIENT: TNU-HANFORD B99-037 RECRA LOT #: 0008L402

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L1549-MB1	Silver, Total	1.1	u	UG/L	1.1	1.0
		Aluminum, Total	10.6	u	UG/L	10.6	1.0
		Arsenic, Total	3.4	u	UG/L	3.4	1.0
		Barium, Total	0.20	u	UG/L	0.20	1.0
		Beryllium, Total	0.10	u	UG/L	0.10	1.0
		Calcium, Total	8.9	u	UG/L	8.9	1.0
		Cadmium, Total	0.30	u	UG/L	0.30	1.0
		Cobalt, Total	0.80	u	UG/L	0.80	1.0
		Chromium, Total	0.90	u	UG/L	0.90	1.0
		Copper, Total	0.80	u	UG/L	0.80	1.0
		Iron, Total	16.4	u	UG/L	16.4	1.0
		Potassium, Total	29.9	u	UG/L	29.9	1.0
		Magnesium, Total	7.8	u	UG/L	7.8	1.0
		Manganese, Total	0.20	u	UG/L	0.20	1.0
		Sodium, Total	3.8	u	UG/L	3.8	1.0
		Nickel, Total	1.2	u	UG/L	1.2	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Antimony, Total	2.1	u	UG/L	2.1	1.0
		Selenium, Total	4.3	u	UG/L	4.3	1.0
		Silicon, Total	6.1	u	UG/L	6.1	1.0
		Tin, Total	2.1	u	UG/L	2.1	1.0
		Thallium, Total	3.6	u	UG/L	3.6	1.0
		Vanadium, Total	0.90	u	UG/L	0.90	1.0
		Zinc, Total	0.40		UG/L	0.40	1.0
BLANK1	00C0303-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 10/12/00

CLIENT: TNU-HANFORD B99-037 RECRA LOT #: 0008L402

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B103K7	Silver, Total	51.6	1.1 u	50.0	103.2	1.0
		Aluminum, Total	2170	41.3	2000	106.5	1.0
		Arsenic, Total	2100	11.3	2000	104.7	1.0
		Barium, Total	2170	105	2000	103.1	1.0
		Beryllium, Total	51.0	0.13	50.0	101.7	1.0
		Calcium, Total	237000	213000	25000	97.7*	1.0
		Cadmium, Total	48.9	0.30u	50.0	97.8	1.0
		Cobalt, Total	496	0.80u	500	99.2	1.0
		Chromium, Total	217	15.9	200	100.6	1.0
		Copper, Total	266	6.6	250	103.6	1.0
		Iron, Total	1080	87.5	1000	99.5	1.0
		Mercury, Total	0.99	0.10u	1.0	98.8	1.0
		Potassium, Total	40300	17300	25000	92.3	1.0
		Magnesium, Total	82500	57000	25000	101.7	1.0
		Manganese, Total	512	0.27	500	102.3	1.0
		Sodium, Total	242000	226000	25000	61.6*	1.0
		Nickel, Total	494	7.6	500	97.3	1.0
		Lead, Total	495	2.1 u	500	99.0	1.0
		Antimony, Total	525	2.1 u	500	105.0	1.0
		Selenium, Total	2090	4.3 u	2000	104.7	1.0
		Silicon, Total	20000	18700	1000	127.6*	1.0
		Tin, Total	1010	2.1 u	1000	100.9	1.0
		Thallium, Total	1990	3.6 u	2000	99.4	1.0
		Vanadium, Total	531	21.6	500	101.8	1.0
		Zinc, Total	513	4.5	500	101.7	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 10/12/00

CLIENT: TNU-HANFORD B99-037 RECRA LOT #: 0008L402

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B103K7	Silver, Total	1.1 u	1.1 u	NC	1.0
		Aluminum, Total	41.3	44.1	6.6	1.0
		Arsenic, Total	11.3	12.3	8.5	1.0
		Barium, Total	105	109	3.7	1.0
		Beryllium, Total	0.13	0.11	16.7	1.0
		Calcium, Total	213000	218000	2.3	1.0
		Cadmium, Total	0.30u	0.30u	NC	1.0
		Cobalt, Total	0.80u	0.80u	NC	1.0
		Chromium, Total	15.9	16.6	4.3	1.0
		Copper, Total	6.6	6.4	3.1	1.0
		Iron, Total	87.5	96.6	9.9	1.0
		Mercury, Total	0.10u	0.10u	NC	1.0
		Potassium, Total	17300	17200	0.56	1.0
		Magnesium, Total	57000	58400	2.3	1.0
		Manganese, Total	0.27	0.38	33.8	1.0
		Sodium, Total	226000	225000	0.82	1.0
		Nickel, Total	7.6	7.4	2.7	1.0
		Lead, Total	2.1 u	2.1 u	NC	1.0
		Antimony, Total	2.1 u	2.1 u	NC	1.0
		Selenium, Total	4.3 u	4.3 u	NC	1.0
		Silicon, Total	18700	19300	2.8	1.0
		Tin, Total	2.1 u	2.1 u	NC	1.0
		Thallium, Total	3.6 u	3.6 u	NC	1.0
		Vanadium, Total	21.6	22.1	2.3	1.0
		Zinc, Total	4.5	4.3	4.5	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/12/00

CLIENT: TNU-HANFORD B99-037 RECRA LOT #: 0008L402

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L1549-LC1	Silver, LCS	501	500	UG/L	100.1
		Aluminum, LCS	5100	5000	UG/L	102.0
		Arsenic, LCS	9770	10000	UG/L	97.7
		Barium, LCS	4950	5000	UG/L	99.0
		Beryllium, LCS	248	250	UG/L	99.1
		Calcium, LCS	24400	25000	UG/L	97.4
		Cadmium, LCS	248	250	UG/L	99.4
		Cobalt, LCS	2490	2500	UG/L	99.6
		Chromium, LCS	496	500	UG/L	99.2
		Copper, LCS	1240	1250	UG/L	99.1
		Iron, LCS	5000	5000	UG/L	100
		Potassium, LCS	25300	25000	UG/L	101.3
		Magnesium, LCS	25300	25000	UG/L	101.2
		Manganese, LCS	758	750	UG/L	101.1
		Sodium, LCS	25400	25000	UG/L	101.4
		Nickel, LCS	1980	2000	UG/L	98.9
		Lead, LCS	2470	2500	UG/L	98.8
		Antimony, LCS	3010	3000	UG/L	100.4
		Selenium, LCS	9930	10000	UG/L	99.3
		Silicon, LCS	5240	5000	UG/L	104.8
		Tin, LCS	4870	5000	UG/L	97.4
		Thallium, LCS	9930	10000	UG/L	99.3
		Vanadium, LCS	2500	2500	UG/L	100.1
		Zinc, LCS	1000	1000	UG/L	100.2
LCS1	00C0303-LC1	Mercury, LCS	5.3	5.0	UG/L	105.2

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037

DATE RECEIVED: 08/30/00 RFW LOT # :0008L402

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B103K7						
SILVER, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
SILVER, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
SILVER, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
ALUMINUM, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
ALUMINUM, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
ALUMINUM, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
ARSENIC, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
ARSENIC, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
ARSENIC, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
BARIUM, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
BARIUM, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
BARIUM, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
BERYLLIUM, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
BERYLLIUM, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
BERYLLIUM, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
CALCIUM, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
CALCIUM, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
CALCIUM, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
CADMIUM, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
CADMIUM, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
CADMIUM, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
COBALT, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
COBALT, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
COBALT, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
CHROMIUM, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
CHROMIUM, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
CHROMIUM, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
COPPER, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
COPPER, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
COPPER, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
IRON, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
IRON, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
IRON, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
MERCURY, TOTAL	001	W	00C0303	08/28/00	09/24/00	09/25/00
MERCURY, TOTAL	001 REP	W	00C0303	08/28/00	09/24/00	09/25/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037

DATE RECEIVED: 08/30/00 RFW LOT # :0008L402

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	001 MS	W	00C0303	08/28/00	09/24/00	09/25/00
POTASSIUM, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/18/00
POTASSIUM, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/18/00
POTASSIUM, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/18/00
MAGNESIUM, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
MAGNESIUM, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
MAGNESIUM, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
MANGANESE, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
MANGANESE, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
MANGANESE, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
SODIUM, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/18/00
SODIUM, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/18/00
SODIUM, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/18/00
NICKEL, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
NICKEL, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
NICKEL, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
LEAD, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
LEAD, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
LEAD, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
ANTIMONY, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
ANTIMONY, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
ANTIMONY, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
SELENIUM, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
SELENIUM, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
SELENIUM, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
SILICON, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
SILICON, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
SILICON, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
TIN, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
TIN, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
TIN, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
THALLIUM, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
THALLIUM, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
THALLIUM, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
VANADIUM, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00
VANADIUM, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
VANADIUM, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
ZINC, TOTAL	001	W	99L1549	08/28/00	09/13/00	09/13/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037

DATE RECEIVED: 08/30/00 RFW LOT # :0008L402

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ZINC, TOTAL	001 REP	W	99L1549	08/28/00	09/13/00	09/13/00
ZINC, TOTAL	001 MS	W	99L1549	08/28/00	09/13/00	09/13/00
B103K8						
SILVER, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
ALUMINUM, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
ARSENIC, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
BARIUM, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
BERYLLIUM, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
CALCIUM, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
CADMIUM, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
COBALT, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
CHROMIUM, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
COPPER, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
IRON, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
MERCURY, TOTAL	002	W	00C0303	08/28/00	09/24/00	09/25/00
POTASSIUM, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/18/00
MAGNESIUM, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
MANGANESE, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
SODIUM, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/18/00
NICKEL, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
LEAD, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
ANTIMONY, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
SELENIUM, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
SILICON, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
TIN, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
THALLIUM, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
VANADIUM, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
ZINC, TOTAL	002	W	99L1549	08/28/00	09/13/00	09/13/00
LAB QC:						
SILVER LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
SILVER, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
ALUMINUM LABORTORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
ALUMINUM, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
ARSENIC LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037

DATE RECEIVED: 08/30/00 RFW LOT # :0008L402

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
BARIUM LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
BARIUM, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
BERYLLIUM LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
BERYLLIUM, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
CALCIUM LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
CALCIUM, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
CADMIUM LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
CADMIUM, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
COBALT LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
COBALT, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
CHROMIUM LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
CHROMIUM, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
COPPER LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
COPPER, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
IRON LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
IRON, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
MERCURY LABORATORY	LC1 BS	W	00C0303	N/A	09/24/00	09/25/00
MERCURY, TOTAL	MB1	W	00C0303	N/A	09/24/00	09/25/00
POTASSIUM LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/18/00
POTASSIUM, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/18/00
MAGNESIUM LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
MAGNESIUM, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
MANGANESE LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
MANGANESE, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
SODIUM LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/18/00
SODIUM, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/18/00
NICKEL LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
NICKEL, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
LEAD LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
LEAD, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
ANTIMONY LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
ANTIMONY, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
SELENIUM LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
SELENIUM, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
SILICON LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
SILICON, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
TIN LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037

DATE RECEIVED: 08/30/00 RFW LOT # :0008L402

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TIN, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
THALLIUM LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
THALLIUM, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
VANADIUM LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
VANADIUM, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00
ZINC LABORATORY	LC1 BS	W	99L1549	N/A	09/13/00	09/13/00
ZINC, TOTAL	MB1	W	99L1549	N/A	09/13/00	09/13/00

RECRA LabNet Use Only
00084402

Custody Transfer Record/Lab Work Request

Page 1 of 2

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client TMU-Hanford B99-037
Est. Final Proj. Sampling Date
Project # 10985-001-001-9999-00
Project Contact/Phone #
RECRA Project Manager QS
QC Spec Del Std TAT 30 day
Date Rec'd 8-30-00 Date Due 9-29-00
Account #

Refrigerator #		1	3	3	3	3	1		3	3	3	3	3	3	1	
#/Type Container	Liquid	3aj	2aj	2aj	2aj	2aj	3aj		1P	1P	1P	2aj	1P	1aj	1aj	
	Solid															
Volume	Liquid	40	1L	1L	1L	1L	40		500	1L	500	1L	500	500	500	5
	Solid															
Preservatives		HCl	—	—	—	—	—		H_2SO_4	$NaOH$	—	HCl	—	—	HCl	H

ANALYSES REQUESTED → ORGANIC: VOA 8240A; BNA; Pest/PCB; Chlora Herb; SVOA HPLC; Alcohols Glycols Ketones Acetate; Form. INORG: Total Metal ICP; Total CN; Sulfide; Oil + Grease; pH; Carbonyls Formaldehyde; 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														
001	B103K7			W	8/30/00	1005	X	X	X	X	X	X		X	X	X	X	X	X	X
002	B103K8			⊥	⊥	1040	X	X	X	X	X	X		X	X	X	X	X	X	X

Special Instructions: Saf B99-037
Run Matrix QC
4235 7953 · 8577/14.6°C
8599/3.8°C *
8588/42°C

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, Sr,
3. Si, Tl, Sn
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 (pH)

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
[illegible]	[illegible]	8/30/00	1930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

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

RECRA LabNet Use Only
0008L402

Custody Transfer Record/Lab Work Request

Page 2 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNU- Hanford B99-037

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #:

RECRA Project Manager:

QC: Del: TAT:

Date Rec'd: Date Due:

Account #:

Page 1

Refrigerator #											3		3	3	3	3
#/Type Container	Liquid										1P		1P	1P	1P	1P
	Solid															
Volume	Liquid										500		500	500	500	500
	Solid															
Preservatives											—		—	—	—	H_2SO_4
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb				INORG: Metal	CN	[illegible]		IC Anions	TDS	TSS	Ammonia
											RECRA LabNet Use Only					
											ISPCD		IC(1)	ITDS	ITSS	INH3N
001	B103K7										X		X	X	X	X
001/2	TK 8300 B103K8										X		X	X	X	X

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, Fl, NO3, NO2, PO4, SO4

2.

3.

4.

5.

6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	8/30/00	0930

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

Page 1

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-10	Page 2 of 3

Collector: Fahlberg/Bowers/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.: ERC99-058, ERC99-042, ERC96,050	Field Logbook No.: EL ~~1381-3~~ 1517 8.24.00	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: AQ00298	Bill of Lading/Air Bill No.: 42357953-8588, 8577, 8599	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	ZnAc+NaOH to pH >9 Cool	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	HCL to pH <2 Cool 4C	HNO3 to pH <2	HCl Cool 4C
Type of Container	P	P	P	aG	aG	aG	aG	G	P	aGs*
No. of Container(s)	1	1	1	2	2	2	2	2	2	3
Volume	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	40mL
SAMPLE ANALYSIS	Sulfides - 9030	See item (1) in Special Instructions.	Total Cyanide - 9010	See item (2) in Special Instructions.	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions.	oil & Grease - 9070	Gross Alpha; Gross Beta	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B103K7	WATER	8.28.00	1005	X		X	X	X	X	X	X		X
B103K8	WATER	8.28.00	1040	X		X	X	X	X	X	X		X

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

Relinquished By	Date/Time	Received By	Date/Time
[illegible]	8-28-00 1200	R. Thoren	8.28.00 1200
R. Thoren	8.28.00 1245	Stored in Ref 2C 3728 bld	8.28.00 1245
Removed from Ref 2C 3728	8.24.00 0900	R. Thoren	8.24.00 0900
R. Thoren	8.24.00 1430	FED EX	
FED EX	8/30/00 0930	[illegible]	8/30/00 0930
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}
(4) 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 originated in non Rad Controlled area <2000pCi/g
NOTA Required

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 00086402

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-10	Page 3 of 3

Collector: Fahlberg/Bowers/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 49-058, ERC 49-042, ERC 96-050	Field Logbook No.: EL ~~1381-3~~ 1517 8-24-00	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: TMA/RECRA RECRA	Offsite Property No.: AØØ0298	Bill of Lading/Air Bill No.: 4235753-8588, 8577, 859	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	Cool 4C										
Type of Container	Gs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.										
Sample No.	Matrix *	Sample Date	Sample Time								
B103K7	WATER	8-28-00	1005	X							
B103K8	WATER	8-28-00	1040	X							

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
Matthew Bowers	8-28-00 1200	R. Thoren	8.28.00 1200
R Thoren	8.28.00 245	Stored in Ref SC 3728	8.28.00 245
Removed from Ref SC 3728	8.29.00 0900	R Thoren	8.29.00 0900
R Thoren	8.24.00 1430	FEDEX	
FedEx	8/28/00 0930	D. Johnson	8/29/00 0830

SPECIAL INSTRUCTIONS

(1) Alcohols, Glycols, & Ketones - 8015M (1-Butanol, Diethyl ether, Methanol)

Samples originated in non-RAD Controlled area <2000 pCi/g. NO TA Requested

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		B99-037-10	Page 1 of 3
Collector: Fahlberg/Bowers/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.: ERC99-058, ERC99042, ERC46050	Field Logbook No.: EL ~~1381-3~~ 1577 R.F 8.24.00	COA: RERDF22560	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA	Offsite Property No.: A000298		Bill of Lading/Air Bill No.: 42357953-8588, 8577, 85	

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage

Preservation	None	Cool 4C	HCl to pH <2 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	G	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	~~100mL~~ 500 RF 8.24.00	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL
SAMPLE ANALYSIS	pH (Water) - 9040	Carbonyls - 8315 (Formaldehyde)	TOC - 9060	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										
B103K7	WATER	8.28.00	1005	X	X	X	X	X	X	X	X	X	X
B103K8	WATER	8.28.00	1040	X	X	X	X	X	X	X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Johansen Johansen	8-28-00 1200	R Thoren R Thoren	8.28.00 1200
R Thoren R Thoren	8.28.00 1245	Stored in Ref 2C 3728 bld	8.28.00 1245
Removed from Ref 2C 3708	8.29.00 0900	R Thoren R Thoren	8.29.00 0900
R Thoren R Thoren	8.29.00 1430	FED EX	
Fed Ex	8/30/00 0930	[signature]	8/30/00 / 0930

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 originated in non Rad Controlled area. <2000 pCi/g. NO TA Required

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
GCSC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037 H0997

RFW LOT # :0008L402

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B103K7	001	W	00LLC157	08/28/00	08/30/00	08/31/00	09/07/00
B103K7	001 MS	W	00LLC157	08/28/00	08/30/00	08/31/00	09/07/00
B103K7	001 MSD	W	00LLC157	08/28/00	08/30/00	08/31/00	09/07/00
B103K8	002	W	00LLC157	08/28/00	08/30/00	08/31/00	09/07/00
LAB QC:							
BLK	MB1	W	00LLC157	N/A	N/A	08/31/00	09/07/00
BLK	MB1 BS	W	00LLC157	N/A	N/A	08/31/00	09/07/00

pi 11-07-00

NOV 2000
RECEIVED

001
~~005~~ 11/22/00

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B00-037
RFW #: 0008L402
SDG/SAF#: H0997/B00-037

W.O. #: #: 10985-001-001-9999-00
Date Received: 08-30-00

GC SCAN

The set of samples consisted of two (2) water samples collected on 08-28-00.

The samples and their associated QC samples were prepared on 08-31-00 and analyzed by methodology based on EPA Method 8015B for Methanol on 09-07-00.

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. The blank spike recovery was within advisory control limits of 50%-150%.

7. One (1) of four (4) matrix spike recoveries was outside 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.

by _____
J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-22-00
Date

r:\group\hplc-gcsc\narr\\gcvoa-scan\2000\09-524al..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.

002

RECRA **Sample Discrepancy Report (SDR)** SDR #: 001C06

Initiator: BPastor Batch: 0008402 Parameter: OGGSC
Date: 11/7/00 Samples: 001MSD Matrix: water
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: 000C153

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)

The sample 001MSD had a high surrogate recovery for methanol @ 153% (QC limit = 150?) the MS was ok

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): the sample contained methanol. Probably due to matrix.

3. Discussion and Proposed Action Other Description: Narrate

__ 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] 11/21/00

✓ 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] 11/21/00 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: _____

003
~~002~~ 11/21

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

GC SCAN

Report Date: 11/07/00 13:11

RFW Batch Number: **0008L402** Client: **TNU-HANFORD B99-037** Work Order: **10985-001-001-9999-00**

	Cust ID:	B103K7	B103K7	B103K7	B103K8	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	00LLC157-MB1	00LLC157-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	4.0	J	145	%	153	* %	11		5.0	U	112	%	
Butanol	5.0	U	102	%	103	%	5.0	U	5.0	U	104	%	

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.

C05
C04

RECRA LabNet Use Only

00081402

Custody Transfer Record/Lab Work Request

Page 1 of 2

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client TMU-Hanford B99-037

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager QS

QC Spec Del Std TAT 30 day

Date Rec'd 8-30-00 Date Due 9-29-00

Account #

Refrigerator #		1	3	3	3	3	1		3	3	3	3	3	3	1	3
#/Type Container	Liquid	3g	2ag	2ag	2ag	2ag	3g	1g	1P	1P	1P	2ag	1P	1ag	1ag	1ag
	Solid	1g	1g	1g	1g		1g					1g		1g	1g	1g
Volume	Liquid	40	1L	1L	1L	1L	40		500	1L	500	1L	500	500	500	500
	Solid															
Preservatives		HCl	—	—	—	—	—		H_2SO_4	NaOH	—	HCl	—	H_2SO_4	HCl	HNO3

ANALYSES REQUESTED →

ORGANIC: VOA 8260B | BNA | Pest/PCB | Chlor Herb | SVOC HPLC | Alcohols Glycols Ketones Acetate | Form

INORG: Total Metal ICP | Total CN | SULFIDE | Oil + Grease | PH | Carbonyls + Formaldehyde | TOC | Misc.

RECRA LabNet Use Only

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	CLEAN	CLASN	CLSGH	CHBGX	8310	CLCSC	8330 CLCSC	Met(1)	IONTD	ISFD	IOCGR	IPH	CLCSC	IOCT	MHGTD
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	B103K7			W	8/28/00	1005	X	X	X	X	X	X		X	X	X	X	X	X	X	X
	002	B103K8			⊥	⊥	1040	X	X	X	X	X	X		X	X	X	X	X	X	X	X

Special Instructions: Saf B99-037

Run Matrix QC

#4235 7953-8577/4.6°C

001 ⊥ ⊥ 8599/3.8°C *

002 8588/4.2°C

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, Sr,

3. Si, Tl, Sn

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:

pH

Relinquished by	Received by	Date	Time
[signature]	[signature]	8/30/00	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

RECRA LabNet Use Only
0008L402

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

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

Page

Refrigerator #													3		3	3	3	3
#/Type Container	Liquid												1P		1P	1P	1P	1P
	Solid																	
Volume	Liquid												500		500	500	500	500
	Solid																	
Preservatives													—		—	—	—	H_2SO_4
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb				INORG: Metal	CN			[illegible]		IC Anions	TDS	TSS	Ammonia

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	IC①	ITDS	ITSS	INH3N
001	B103K7						X	X	X	X	X
002	B103K8						X	X	X	X	X

RECRA LabNet Use Only

Special Instructions:

DATE/REVISIONS:
IC① 1. Br, Cl, Fl, NO3, NO2, PO4, SO4
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[signature]	D. Smith	8/30/00	09:30

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	B99-037-10	Page 2 of 3

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code / Data Turnaround
Fahlberg/Bowers/Johansen	F Roeck 372-9086	WEISS, RL	7N / 45 Days
Project Designation	**Sampling Location**	**SAF No.**	**Air Quality** ☐
ERDF Leachate Delisting Analysis	ERDF	B99-037	
Ice Chest No.	**Field Logbook No.**	**COA**	**Method of Shipment**
ERC99-058, ERC99-042, ERC96,050	EL ~~1381-3~~ 1517 8-24-00 RF	RERDF22560	Fed EX
Shipped To	**Offsite Property No.**	**Bill of Lading/Air Bill No.**	
TMA/RECRA	A00298	423574 53-8588, 8577, 8599	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	ZnAc+NaOH to pH >9 Cool	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	HCL to pH <2 Cool 4C	HNO3 to pH <2	HCl Cool 4C
Type of Container	P	P	P	aG	aG	aG	aG	G	P	aGs*
No. of Container(s)	1	1	1	2	2	2	2	2	2	3
Volume	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	40mL
SAMPLE ANALYSIS	Sulfides - 9030	See item (1) in Special Instructions	Total Cyanide - 9010	See item (2) in Special Instructions	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions.	oil & Grease - 9070	Gross Alpha; Gross Beta	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B103K7	WATER	8-28-00	1005	X		X	X	X	X	X	X		X
B103K8	WATER	8-28-00	1040	X		X	X	X	X	X	X		X

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

Relinquished By	Date/Time	Received By	Date/Time
M Johnson	8-28-00 1200	R Thoren	8-28-00 1200
R Thoren	8-28-00 1245	Stored in Ref 2C 3728 bld	8-28-00 1245
Removed from Ref 2C 3728	8-29-00 0900	R Thoren	8-29-00 0900
R Thoren	8-29-00 1430	FED EX	
FED EX	8/30/00 0930		8/30/00 0930

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}
(4) 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 originated in non Rad controlled area <2000pCi/g
NO TA Required

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

00086402

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-10	Page 3 of 3
Collector Fahlberg/Bowers/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. ERC99-058, ERC99-042, ERC96-050	**Field Logbook No.** EL ~~1381-3~~ 1517 8-24-00 **COA** RERDF22560	**Method of Shipment** Fed EX	
Shipped To TMA/RECRA RECRA	**Offsite Property No.** A00298	**Bill of Lading/Air Bill No.** 4235753-8588,8587,859	

POSSIBLE SAMPLE HAZARDS/REMARKS
NONE

Special Handling and/or Storage

Preservation	Cool 4C										
Type of Container	Gs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.										
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**								
B103K7	WATER	8-28-00	1005	X							
B103K8	WATER	8-28-00	1040	X							

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

Relinquished By	Date/Time	Received By	Date/Time
[illegible]	8-28-00 1200	R Thoren	8.28.00 1200
R Thoren	8.28.00 1245	Stored in RLF 3728	8.28.00 1245
Removed from RLF 3728	8.29.00 0900	R Thoren	8.29.00 0900
R Thoren	8.29.00 1430	FEDEX	
FedEx	8/30/00 0930	D. Smith	8/31/00 0830

SPECIAL INSTRUCTIONS

(1) Alcohols, Glycols, & Ketones - 8015M (1-Butanol, Diethyl ether, Methanol)

Samples originated in non-RAD Controlled area <2000 pCi/g. NO TA Required

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	B99-037-10	Page 1 of 3

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code / Data Turnaround
Fahlberg/Bowers/Johansen	F Roeck 372-9086	WEISS, RL	7N / 45 Days
Project Designation	**Sampling Location**	**SAF No.**	**Air Quality** ☐
ERDF Leachate Delisting Analysis	ERDF	B99-037	
Ice Chest No.	**Field Logbook No.** / **COA**	**Method of Shipment**	
ERC99-058, ERC9904Z, ERC4605D	EL ~~1381-3~~ 1577 R.F 8.24.00 / RERDF22560	Fed EX	
Shipped To	**Offsite Property No.**	**Bill of Lading/Air Bill No.**	
TMA/RECRA	A00298	42357953-8588, 8577, 859	

POSSIBLE SAMPLE HAZARDS/REMARKS
NONE

Special Handling and/or Storage

Preservation	None	Cool 4C	HCl to pH <2 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	G	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	~~100mL~~ 500 RC 8.24.00	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL
SAMPLE ANALYSIS	pH (Water) - 9040	Carbonyls - 8315 (Formaldehyde)	TOC - 9060	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									
B103K7	WATER	8.28.00	1005	X	X	X	X	X	X	X	X	X	X
B103K8	WATER	8.28.00	1040	X	X	X	X	X	X	X	X	X	X

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
Mathers/Johansen	8-28-00 1200	R Thoren	8.28.00 1200
R Thoren	8.28.00 1245	Stored in Ref 2C 3728 bld	8.28.00 1245
Retrieved from Ref 2C 3728	8.29.00 0900	R Thoren	8.29.00 0900
R Thoren	8.29.00 1430	FED EX	
FED EX	8/30/00 0930	D Johnson	8/30/00 0930

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 originated in non Rad Controlled area. <2000 pCi/g. NO TA Required

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

C10

BHI-EE-011 (10/99)

Recra LabNet - Lionville Laboratory
LCSC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037 40997

DATE RECEIVED: 08/30/00 RFW LOT # :0008L402

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B103K7	001	W	00LLC156	08/28/00	08/31/00	09/06/00
B103K7	001 MS	W	00LLC156	08/28/00	08/31/00	09/06/00
B103K7	001 MSD	W	00LLC156	08/28/00	08/31/00	09/06/00
B103K8	002	W	00LLC156	08/28/00	08/31/00	09/06/00
LAB QC:						
BLK	MB1	W	00LLC156	N/A	08/31/00	09/06/00
BLK	MB1 BS	W	00LLC156	N/A	08/31/00	09/06/00

11-22-00

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-037
RFW #: 0008L402
SDG/SAF#: H0997/B99-037

W.O. #: #: 10985-001-001-9999-00
Date Received: 08-30-00

LC SCAN

The set of samples consisted of two (2) water samples collected on 08-28-00.

The samples and their associated QC samples were prepared on 08-31-00 and analyzed by methodology based on EPA Method 8315 formaldehyde on 09-06-00.

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

5. One (1) of two (2) matrix spike recoveries was outside advisory control limits of 50%-150%.

6. The blank contained Formaldehyde at slightly 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. The samples were inadvertently analysed outside of technical holding times. A copy of the SDR is included.

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

J. Michael Taylor
VP, General Manager
Lionville Laboratory

11-22-00
Date

r:\group\hpls-gcscan\narr\aldehydes\08-402tnu..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 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 Sample Discrepancy Report (SDR)

SDR # 00LC078

Initiator: BPastor Batch: 0008L402 Parameter: OLCSC
Date: 11/21/00 Samples: All Matrix: WATER
Client: TAL Method: SW846/MCAWW/CLP/ Prep Batch: 00LLC152

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
X 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)

EXTRACTED 8/31/00, ANALYZED 9/6/00 (HT = 3 DAYS)
THE B/K + ALL SAMPLES CONTAINED FORMALDEHYDE ABOVE THE RL

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):

Reporting limit 13, blank 19.

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)

narrate

4. Project Manager Instructions...signature/date: Judith Johnson 11/21/00

✓ 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: _____ 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	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: _____

Recra LabNet - Lionville Laboratory

HPLC scan

Report Date: 11/21/00 16:51

RFW Batch Number: **0008L402** Client: **TNU-HANFORD B99-037** Work Order: 10985001001 Page: 1

005

	Cust ID:	B103K7	B103K7	B103K7	B103K8	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	00LLC156-MB1	00LLC156-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
		fl	fl	fl	fl	fl	fl
Formaldehyde		19 B	57 %	47 %	18 B	19	71 %

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
00084402

Custody Transfer Record/Lab Work Request

Page 1 of 2

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TMU-Hanford B99-037
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: QS
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 8-30-00 Date Due: 9-29-00
Account #:

Refrigerator #		1	3	3	3	3	1		3	3	3	3	3	3	1	3
#/Type Container	Liquid	3aj	2aj	2aj	2aj	2aj	3aj	J	1P	1P	1P	2aj	1P	1aj	1aj	1aj
	Solid	J	J	J	J	J	J					J		J	J	J
Volume	Liquid	40	1L	1L	1L	1L	40		500	1L	500	1L	500	500	500	500
	Solid															
Preservatives		HCl	—	—	—	—	—		HNO_3	$NaOH$	—	HCl	—	H_2SO_4	HCl	HNO3

ANALYSES REQUESTED → ORGANIC: VOA 8260A; BNA; Pest/PCB; Chlorinated Herb; SVOA HPLC; Alcohols (GC) Ketones; Acetate Ester; Formaldehyde; INORG: Total Metal ICP; Total CN; Sulfide; Oil + Grease; PH; Carbonyls (HPLC) Formaldehyde; TOC; Mercury

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	8260A	8270A	8081A	8151A	8310	8015C	8315A	Met(1)	ICNTD	ISFD	ICGGR	IPH	OLSC	IOCT	MHGTD
001	B103K7			W	8/29/00	1005	X	X	X	X	X	X		X	X	X	X	X	X	X	X
002	B103K8			⊥	⊥	1040	X	X	X	X	X	X		X	X	X	X	X	X	X	X

Special Instructions: SAF B99-037
Run Matrix QC
#4235 7953·8577/4.6°C
8599/3.8°C *
8588/4.2°C

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, Se,
3. Si, Tl, Sn
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 (PH)
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'd Y or N
Cooler Temp. * °C

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	8/30/00	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

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

RECRA LabNet Use Only

0008L402

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

007

Client: TNU-Hanford B99-037

Est. Final Proj. Sampling Date

Project #

Project Contact/Phone #

RECRA Project Manager

QC Del TAT

Date Rec'd Date Due

Account #

		ORGANIC					INORG							
Refrigerator #									3		3	3	3	3
#/Type Container Liquid									1P		1P	1P	1P	1P
#/Type Container Solid														
Volume Liquid									500		500	500	500	500
Volume Solid														
Preservatives									—		—	—	—	H_2SO_4
ANALYSES REQUESTED	VOA	BNA	Pest/PCB	Herb			Metal	CN	[illegible]		IC Anions	TDS	TSS	Ammonia

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		IC①	ITDS	ITSS	INH3N
001	B103K7						X		X	X	X	X
002	830a B103K8						X		X	X	X	X

Special Instructions:

DATE/REVISIONS:
IC① 1. Br, Cl, Fl, NO3, NO2, 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]	8/30/00	0930

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		B99-037-10	Page 2 of 3
Collector Fahlberg/Bowers/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. ERC99-058, ERC99-042, ERC96,050	Field Logbook No. 8-24-00 EL ~~1381-3~~ 1517 RF	COA RERDF22560	Method of Shipment Fed EX	
Shipped To TMA/RECRA	Offsite Property No. A000298		Bill of Lading/Air Bill No. 42357953-8588, 8577, 8599	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Preservation	ZnAc+NaOH to pH >9 Cool	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	HCL to pH <2 Cool 4C	HNO3 to pH <2	HCl Cool 4C
Type of Container	P	P	P	aG	aG	aG	aG	G	P	aGs*
No. of Container(s)	1	1	1	2	2	2	2	2	2	3
Volume	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	40mL
SAMPLE ANALYSIS	Sulfides - 9030	See item (1) in Special Instructions	Total Cyanide - 9010	See item (2) in Special Instructions	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions	oil & Grease - 9070	Gross Alpha, Gross Beta	See item (4) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time										
B103K7	WATER	8-28-00	1005	X		X	X	X	X	X	X		X
B103K8	WATER	8-28-00	1040	X		X	X	X	X	X	X		X

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By [signature]	Date/Time 8-28-00 1200	Received By R. Thoren	Date/Time RCO 8-28-00
Relinquished By R. Thoren	Date/Time 8-28-00 1245	Received By Stored in Ref 2C 3728 bld	Date/Time 8-28-00 1245
Relinquished By Removed from Ref 2C 3728	Date/Time 8-29-00 0900	Received By R. Thoren	Date/Time 8-29-00 0900
Relinquished By R. Thoren	Date/Time 8-29-00 1430	Received By FED EX	Date/Time
Relinquished By [signature]	Date/Time 8/30/00 0930	Received By [signature]	Date/Time 8/30/00 0930
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}
(4) 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 originated in non Rad controlled area <2000pci/g
NOTA Required

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 0008L402	Date/Time

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-10	Page 3 of 3

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code / Data Turnaround
Fahlberg/Bowers/Johansen	F Roeck 372-9086	WEISS, RL	7N / 45 Days
Project Designation	**Sampling Location**	**SAF No.**	**Air Quality** ☐
ERDF Leachate Delisting Analysis	ERDF	B99-037	
Ice Chest No.	**Field Logbook No.**	**COA**	**Method of Shipment**
ERC 99-058, ERC 99-042, ERC 96-050	EL ~~1381-3~~ 1517 8-28-00	RERDF22560	Fed EX
Shipped To	**Offsite Property No.**		**Bill of Lading/Air Bill No.**
TMA/RECRA RECRA	A00298		4235753-8588, 8577, 8594

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	Cool 4C										
Type of Container	Gs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions										
Sample No.	Matrix *	Sample Date	Sample Time								
B103K7	WATER	8-28-00	1005	X							
B103K8	WATER	8-28-00	1040	X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By / Date/Time	Received By / Date/Time		
[illegible] 8-28-00 1200	R Thoren 8.28.00 1200		
Relinquished By / Date/Time	Received By / Date/Time		
R Thoren 8.28.00 1245	Stored in R4 RC 3728 8.28.00 1245		
Relinquished By / Date/Time	Received By / Date/Time		
Removed from R4 RC 3728 8.29.00 0900	R Thoren 8.29.00 0900		
Relinquished By / Date/Time	Received By / Date/Time		
R Thoren 8.29.00 1430	FEDEX		
Relinquished By / Date/Time	Received By / Date/Time		
Fed Ex 8/30/00 0930	D. Myers 8/31/00 0830		
Relinquished By / Date/Time	Received By / Date/Time		

SPECIAL INSTRUCTIONS

(1) Alcohols, Glycols, & Ketones - 8015M (1-Butanol, Diethyl ether, Methanol)

Samples originated in non-RAD Controlled area <2000 pCi/g. NO TA Required

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		B99-037-10	Page 1 of 3
Collector: Fahlberg/Bowers/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.: ERC99-058, ERC99042, ERC46050	Field Logbook No.: EL ~~1381-3~~ 1577 R.F 8.24.00	COA: RERDF22560	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA	Offsite Property No.: A000298		Bill of Lading/Air Bill No.: 42357953-8588, 8577, 8599	

010

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage

Preservation	None	Cool 4C	HCl to pH <2 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	G	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	~~100mL~~ 500 RC 8.24.00	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL
SAMPLE ANALYSIS	pH (Water) - 9040	Carbonyls - 8315 (Formaldehyde)	TOC - 9060	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										
B103K7	WATER	8.28.00	1005	X	X	X	X	X	X	X	X	X	X
B103K8	WATER	8.28.00	1040	X	X	X	X	X	X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Johansen Johansen	Date/Time: 8-28-00 1200	Received By: R Thoren R Thoren	Date/Time: 8.28.00 1200
Relinquished By: R Thoren R Thoren	Date/Time: 8.28.00 1245	Received By: Stored in Ref 2C 3728 bld	Date/Time: 8.28.00 1245
Relinquished By: Removed from Ref 2C 3708	Date/Time: 8.29.00 0900	Received By: R Thoren R Thoren	Date/Time: 8.29.00 0900
Relinquished By: R Thoren R Thoren	Date/Time: 8.29.00 1430	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 8/30/00 0930	Received By: [signature]	Date/Time: 8/30/00 / 0930
Relinquished By	Date/Time	Received By	Date/Time

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 originated in non Rad Controlled area. <2000 pCi/g. NO TA Required

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
8310 ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037 H0997

RFW LOT # :0008L402

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B103K7	001	W	00LE1081	08/28/00	08/30/00	09/01/00	10/09/00
B103K8	002	W	00LE1081	08/28/00	08/30/00	09/01/00	10/09/00
B103K8	002 MS	W	00LE1081	08/28/00	08/30/00	09/01/00	10/09/00
B103K8	002 MSD	W	00LE1081	08/28/00	08/30/00	09/01/00	10/09/00
LAB QC:							
BLK	MB1	W	00LE1081	N/A	N/A	09/01/00	10/09/00
BLK	MB1 BS	W	00LE1081	N/A	N/A	09/01/00	10/09/00
BLK	MB1 BSD	W	00LE1081	N/A	N/A	09/01/00	10/09/00

11-13-00

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

NOV 2000
RECEIVED

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-037
RFW# : 0008L402
SDG/SAF# : H0997/B99-037

W.O #: 10985-001-001-9999-00
Date Received: 08-30-00

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC

The set of samples consisted of two (2) water samples collected on 08-28-00.

The samples and their associated QC samples were prepared on 09-01-00, and analyzed utilizing Recra OP's based on SW-846 Method 8310 for a list of client specified Polynuclear Aromatic Hydrocarbon target compounds on 10-09-00

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

2. All required holding times for analysis were met.

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 were within acceptance criteria.

6. One (1) of seven (7) blank spike recoveries was outside the laboratory control limits. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

7. All matrix spike recoveries were within the laboratory control limits.

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

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

by _____

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-22-00
Date

r:\group\hplc\nam\8310\2000\08-402tnu.doc

RECRA **Sample Discrepancy Report (SDR)** SDR # 00LC077

Initiator: B Pastor Batch: 0008E402 Parameter: 08310
Date: 11/21/00 Samples: BS Matrix: Water
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: 00LE1081

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)

The BS was low for Indeno @ 61% (QC limit = 65%). The MS + MSD were ok.

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: Narrate

__ 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] 11/21/00

✓ 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] 11/21/00 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

__ Initiator
__ Lab Manager: M. Taylor
__ Project Mgr: Stone/Carey/Johnson
__ Section Mgr: Wesson/Daniels
X QA (file): Schrenkel
__ Data Management: Feldman
__ Sample Prep: Bickel/Kauffman

Route Distribution of Completed SDR

__ Metals: Doughty
__ Inorganic: Perrone
__ GC/LC: Pastor
__ MS: Layman/Rycklak
__ Log-in: Keppel
__ Admin: Soos
__ Other: _____

L-WI-006/E-08/00

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.

Recra LabNet - Lionville Laboratory

PAH'S by HPLC / Method 8310 Report Date: 11/07/00 13:23

RFW Batch Number: **0008L402** Client: **TNU-HANFORD B99-037** Work Order: **10985-001-001-9999-00** Page: 1

609

	Cust ID:	B103K7	B103K8	B103K8	B103K8	BLK	BLK BS
Sample Information	RFW#:	001	002	002 MS	002 MSD	00LE1081-MB1	00LE1081-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: Triphenylene	75 % fl	89 % fl	70 % fl	93 % fl	92 % fl	77 % fl
Benzo(a)anthracene	0.14 U	0.13 U	97 %	102 %	0.13 U	95 %
Chrysene	1.6 U	1.5 U	97 %	96 %	1.5 U	78 %
Benzo(b)fluoranthrene	0.19 U	0.19 U	100 %	102 %	0.18 U	92 %
Benzo(k)fluoranthrene	0.18 U	0.18 U	100 %	104 %	0.17 U	92 %
Benzo(a)pyrene	0.24 U	0.24 U	95 %	96 %	0.23 U	87 %
Dibenzo(a,h)anthracene	0.31 U	0.31 U	101 %	103 %	0.30 U	69 %
Indeno(1,2,3-cd)pyrene	0.45 U	0.44 U	74 %	72 %	0.43 U	61 * %

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
0008L402

ALL

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: OS
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 8-30-00 Date Due: 9-29-00
Account #:

Refrigerator #		1	3	3	3	3	1		3	3	3	3	3	3	1	3
#/Type Container	Liquid	3g	2g	2g	2g	2g	3g		1P	1P	1P	2g	1P	1g	1g	1g
	Solid															
Volume	Liquid	40	1L	1L	1L	1L	40		500	1L	500	1L	500	500	500	500
	Solid															
Preservatives		HCL	—	—	—	—	—		HNO_3	$NaOH$	—	HCL	—	—	HCL	HNO_3
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA 8260A	BNA	Pest/PCB	Chloro Herb	SVOC HPLC	Alcohols Glycols Ketones	Acid Tr Form	Total Metal ICP	Total CN	Sulfide	Oil + Grease	pH	Carbonyls Formaldehyde	TOC	Merc.
		RECRA LabNet Use Only														
		OL024N	OL025N	OL008H	OHBGX	08310	OGCSC	TC 8-30-00	Met (1)	ICNTO	ISFD	IOGGR	IPH	OLCSC	IOCT	MHGTO
001	B103K7	X	X	X	X	X	X		X	X	X	X	X	X	X	X
002	B103K8	X	X	X	X	X	X		X	X	X	X	X	X	X	X

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
4235 7953 8577/4.6°C
8599/3.8°C *
8588/4.2°C

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, Se,
3. Si, Tl, Sn
4.
5.
6.

Relinquished by	Received by	Date	Time
Leo Ex	[signature]	8/30/00	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

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) pH

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

RECRA LabNet Use Only
0008L402

Custody Transfer Record/Lab Work Request

Page 2 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

CO

Client: TNU- Hanford B99-037

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #:

RECRA Project Manager:

QC: Del: TAT:

Page 1

Date Rec'd: Date Due:

Account #:

Refrigerator #											3		3	3	3	3
#/Type Container	Liquid										1P		1P	1P	1P	1P
	Solid															
Volume	Liquid										500		500	500	500	500
	Solid															
Preservatives											—		—	—	—	H_2SO_4
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb				INORG: Metal	CN	Bacteria		IC Anions	TDS	TSS	Ammonia
RECRA LabNet Use Only											ISPCD		IC①	ITDS	ITSS	INH3N
001	B103K7										X		X	X	X	X
001½	TK 8300 B103K8										X		X	X	X	X

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:

IC① 1. Br, Cl, Fl, NO3, NO2, PO4, SO4

2.

3.

4.

5.

6.

Relinquished by	Received by	Date	Time
[signature]	[signature]	8/30/00	0930

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

Page 1

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-10	Page 2 of 3

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code / Data Turnaround
Fahlberg/Bowers/Johansen	F Roeck 372-9086	WEISS, RL	7N / 45 Days
Project Designation	**Sampling Location**	**SAF No.**	**Air Quality** [ ]
ERDF Leachate Delisting Analysis	ERDF	B99-037	
Ice Chest No.	**Field Logbook No.**	**COA**	**Method of Shipment**
ERC99-058, ERC99-042, ERC96,050	EL ~~1381-3~~ 1517 8-24-00 RF	RERDF22560	Fed EX
Shipped To	**Offsite Property No.**		**Bill of Lading/Air Bill No.**
TMA/RECRA	A00298		4235753-8588, 8577, 8599

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	ZnAc+NaOH to pH >9 Cool	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	HCL to pH <2 Cool 4C	HNO3 to pH <2	HCl Cool 4C
Type of Container	P	P	P	aG	aG	aG	aG	G	P	aGs*
No. of Container(s)	1	1	1	2	2	2	2	2	2	3
Volume	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	40mL
SAMPLE ANALYSIS	Sulfides - 9030	See item (1) in Special Instructions	Total Cyanide - 9010	See item (2) in Special Instructions	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions	oil & Grease - 9070	Gross Alpha, Gross Beta	See item (4) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time									
B103K7	WATER	8-28-00	1005	X		X	X	X	X	X	X		X
B103K8	WATER	8-28-00	1040	X		X	X	X	X	X	X		X

CHAIN OF POSSESSION

Relinquished By / Date/Time	Received By / Date/Time	Sign/Print Names
[illegible] 8-28-00 1200	R. Thoren 8-28-00 1200	
R. Thoren 8-28-00 1245	Stored in Rad 2C 3728 bld 8-28-00 1245	
Removed from Rad 2C 3728 8-29-00 0900	R. Thoren 8-29-00 0900	
R. Thoren 8-29-00 1430	FED EX	
FED EX 8/30/00 0930	[illegible] 8/30/00 0930	

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}
(4) 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 originated in non Rad Controlled area <2000pCi/g NOTA Required

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 00086402

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B99-037-10	Page 3 of 3
Collector: Fahlberg/Bowers/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.: ERC49.058, ERC49.042, ERC46.050	Field Logbook No.: EL ~~1381-3~~ 1517 8.27.00	COA: RERDF22560	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A000298		Bill of Lading/Air Bill No.: 42357953-8588, 8577, 8594	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Preservation	Cool 4C										
Type of Container	Gs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.										

Sample No.	Matrix *	Sample Date	Sample Time										
B103K7	WATER	8-28-00	1005	X									
B103K8	WATER	8-28-00	1040	X									

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

Relinquished By	Date/Time	Received By	Date/Time
[signature]	8-28-00 1200	R Thoren R Thoren	8.28.00 1200
R Thoren R Thoren	8.28.00 1245	Stored in Ref 2C 3728	8.28.00 1245
Removed from Ref 2C 3728	8.29.00 0900	R Thoren R Thoren	8.29.00 0900
R Thoren R Thoren	8.29.00 1430	FED EX	
[signature]	8/30/00 0930	[signature]	8/30/00 0930

SPECIAL INSTRUCTIONS

(1) Alcohols, Glycols, & Ketones - 8015M {1-Butanol, Diethyl ether, Methanol}

Samples originated in non-RAD Controlled area <2000 pCi/g. NO TA Required

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	B99-037-10	Page 1 of 3
Collector: Fahlberg/Bowers/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.: ERC99-056, ERC9904R, ERC46080	Field Logbook No.: EL ~~1301-3~~ 1577 R.F 8.24.00	COA: RERDF22560	Method of Shipment: Fed EX
Shipped To: TMA/RECRA	Offsite Property No.: A00298	Bill of Lading/Air Bill No.: 42357953-8588, 8577, 8599	

POSSIBLE SAMPLE HAZARDS/REMARKS: NONE

Special Handling and/or Storage

Preservation	None	Cool 4C	HCl to pH <2 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	G	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	~~100mL~~ 500 RC 8.24.00	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	pH (Water) - 9040	Carbonyls - 8315 (Formaldehyde)	TOC - 9060	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
B103K7	WATER	8.28.00	1005	X	X	X	X	X	X	X	X	X	X
B103K8	WATER	8.28.00	1040	X	X	X	X	X	X	X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[illegible]	8-28-00 1200	RThoren	8.28.00 1200
RThoren	8.28.00 1245	Stored in Ref 2C 3728 bld	8.28.00 1245
Removed from Ref 2C 3708	8.29.00 0900	RThoren	8.29.00 0900
RThoren	8.29.00 1430	FED EX	
[illegible]	8/30/00 0930	[illegible]	8/30/00 0930
Relinquished By	Date/Time	Received By	Date/Time

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 originated in non Rad Controlled area. <2000 pCi/g. NO TA Required

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
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B00-037
RFW#: 0008L402
SDG/SAF#: H0997/B00-037

W.O.#: 10985-001-001-9999-00
Date Received: 08-30-00

HERBICIDE

The set of samples consisted of two (2) water samples collected on 08-28-00.

The samples and their associated QC samples were extracted on 09-01-00 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 09-05-00. 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. All cooler temperatures have 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. Two (2) of eight (8) blank spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

6. One (1) of sixteen (16) matrix spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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.

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

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 _____ 09-27-00

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

Date

pef\r:\group\data\pest\08L-402.her

RECRA **Sample Discrepancy Report (SDR)** SDR #: 00GC195

Initiator: M. Kobel Batch: 00QL402 Parameter: OHBGX
Date: 9/8/00 Samples: MSD & BS Matrix: Water
Client: TN4 Method: (SW846)/MCAWW/CLP/ Prep Batch: OCLE1077

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)

low spike recoveries in MSD & BS. MS was ok and samples were clean.
* MSD → dinoseb @ 27%
* BS → dicamba @ 39% and dichloroprop @ 48%

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)

report and narrate

4. Project Manager Instructions...signature/date: Janette Johnson 9/8/00

✓ 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: M. Kobel 9/11/00 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: _____

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., 1OU).

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: 09/13/00 20:34

RFW Batch Number: **0008L402** Client: **TNU-HANFORD B99-037** Work Order: 10985001001 Page: 1

005

	Cust ID:	B103K7	B103K7	B103K7	B103K8	PBLKYJ	PBLKYJ BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	00LE1077-MB1	00LE1077-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	44 % fl	84 % fl	77 % fl	73 % fl	94 % fl	54 % fl
Dalapon		5.2 U	98 %	69 %	5.2 U	5.0 U	59 %
Dicamba		2.1 U	66 %	52 %	2.1 U	2.0 U	39 * %
Dichloroprop		5.2 U	73 %	56 %	5.2 U	5.0 U	48 * %
2,4-D		1.0 U	76 %	56 %	1.0 U	1.0 U	49 %
2,4,5-TP (Silvex)		0.52 U	85 %	57 %	0.52 U	0.50 U	53 %
2,4,5-T		0.52 U	84 %	62 %	0.52 U	0.50 U	54 %
2,4-DB		5.2 U	84 %	62 %	5.2 U	5.0 U	54 %
Dinoseb		0.52 U	57 %	27 * %	0.52 U	0.50 U	90 %

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 - Lionville Laboratory
HBGX ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037

DATE RECEIVED: 08/30/00 RFW LOT # :0008L402

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B103K7	001	W	00LE1077	08/28/00	09/01/00	09/05/00
B103K7	001 MS	W	00LE1077	08/28/00	09/01/00	09/05/00
B103K7	001 MSD	W	00LE1077	08/28/00	09/01/00	09/05/00
B103K8	002	W	00LE1077	08/28/00	09/01/00	09/05/00
LAB QC:						
PBLKYJ	MB1	W	00LE1077	N/A	09/01/00	09/05/00
PBLKYJ	MB1 BS	W	00LE1077	N/A	09/01/00	09/05/00

RECRA LabNet Use Only

00084402

Custody Transfer Record/Lab Work Request

Page 1 of 2

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client TRU-Hanford B99-037

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OS

QC Spec Del Std TAT 30 day

Date Rec'd 8-30-00 Date Due 9-29-00

Account #

Refrigerator #		1	3	3	3	3	1		3	3	3	3	3	3	1	3
#/Type Container	Liquid	3a	2a	2a	2a	2a	3a	J	1P	1P	1P	2a	1P	1a	1a	1a
	Solid	J	J	J	J		J					J		J	J	J
Volume	Liquid	40	1L	1L	1L	1L	40		500	1L	500	1L	500	500	500	500
	Solid															
Preservatives		HCl	—	—	—	—	—		H_2SO_4	$NaOH$	—	HCl	—	H_2SO_4	HCl	HNO3

ANALYSES REQUESTED →

	ORGANIC								INORG							
	VOA 8260A	BNA	Pest/PCB	Chlorinated Herb	SVOA HPLC	Alcohols Glycols Ketones	Carbonyls Formaldehyde	Phenol	Total Metal ICP	Total CN	Sulfide	Oil & Grease	pH	Carbonyls Formaldehyde	TOC	Mercury
	↓			↓									↓			
RECRA LabNet Use Only	0A24H	0A25H	0A08H	0HBGX	08310	0CGSC	TCL 8260 0CGSC		Met①	ICAP	ISFD	IOGGR	IPH	0LCSC	IOCT	MHGTO
001 B103K7				W	8/28/00	1005	X	X	X	X	X	X		X	X	X	X	X	X	X
002 B103K8				⊥	⊥	1040	X	X	X	X	X	X		X	X	X	X	X	X	X

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

#4235 7953 8577/14.6°C

8599/3.8°C *

8588/4.2°C

DATE/REVISIONS:

Met① 1. Al, Ag, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K,

2. Mg, Mn, Na, Ni, Sb, V, Zn, As, Pb, Se,

3. Si, Tl, Sn

4.

5.

6.

Relinquished by	Received by	Date	Time
		8/30/00	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

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 (pH)

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:

RECRA LabNet Use Only

0008L402

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

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

Refrigerator #										3		3	3	3	3
#/Type Container	Liquid									1P		1P	1P	1P	1P
	Solid														
Volume	Liquid									500		500	500	500	500
	Solid														
Preservatives										—		—	—	—	H_2SO_4
ANALYSES REQUESTED		ORGANIC: VOA	BNA	Pest/PCB	Herb			INORG: Metal	CN	[illegible]		IC Anions	TDS	TSS	Ammonia
RECRA LabNet Use Only										ISPCD		IC①	ITDS	ITSS	INH3N

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		IC①	ITDS	ITSS	INH3N
001	B103K7						X		X	X	X	X
002	TK 8300 B103K8						X		X	X	X	X

Special Instructions:

DATE/REVISIONS:
IC① 1. Br, Cl, Fl, NO3, NO2, 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	Relinquished by	Received by	Date	Time
[signature]	D. Smith	8/30/00	0930				

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-10	Page 2 of 3

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code / Data Turnaround
Fahlberg/Bowers/Johansen	F Roeck 372-9086	WEISS, RL	7N / 45 Days

Project Designation	Sampling Location	SAF No.	Air Quality
ERDF Leachate Delisting Analysis	ERDF	B99-037	☐

Ice Chest No.	Field Logbook No.	COA	Method of Shipment
ERC99-058, ERC99-042, ERC96,050	EL ~~1381-3~~ 1517 8-24-00	RERDF22560	Fed EX

Shipped To	Offsite Property No.	Bill of Lading/Air Bill No.
TMA/RECRA	A00298	423579 53-8588, 8577, 8599

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	ZnAc+NaOH to pH >9 Cool	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	HCL to pH <2 Cool 4C	HNO3 to pH <2	HCl Cool 4C
Type of Container	P	P	P	aG	aG	aG	aG	G	P	aGs*
No. of Container(s)	1	1	1	2	2	2	2	2	2	3
Volume	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	40mL
SAMPLE ANALYSIS	Sulfides - 9030	See item (1) in Special Instructions	Total Cyanide - 9010	See item (2) in Special Instructions	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions.	oil & Grease - 9070	Gross Alpha; Gross Beta	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B103K7	WATER	8-28-00	1005	X		X	X	X	X	X	X	X
B103K8	WATER	8-28-00	1040	X		X	X	X	X	X	X	X

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
M Fahlberg	8-28-00 1200	R. Thoren	8-28-00 1200
R. Thoren	8-28-00 1245	Stored in Ref 2C 3728 Yd	8-28-00 1245
Removed from Ref 2C 3728	8-24-00 0900	R. Thoren	8-24-00 0900
R. Thoren	8-24-00 1430	FED EX	
FED EX	8/30/00 0930		8/30/00 0930

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)
(4) 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 originated in Rad Controlled area >2000pCi/g
NOTA Required

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

00086402

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-10	Page 3 of 3

Collector: Fahlberg/Bowers/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 99-058, ERC 99-042, ERC 96-050	Field Logbook No.: EL ~~1381-3~~ 1517 8-28-00 — COA: RERDF22560	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A00298	Bill of Lading/Air Bill No.: 4235753-8588, 8577, 8591	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	Cool 4C										
Type of Container	Gs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.										
Sample No.	Matrix *	Sample Date	Sample Time								
B103K7	WATER	8-28-00	1005	X							
B103K8	WATER	8-28-00	1040	X							

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

Relinquished By	Date/Time	Received By	Date/Time
[illegible]	8-28-00 1200	R Thoren	8.28.00 1200
R Thoren 8.28.00	1245	Stored in RLF 3728 8.28.00	1245
Removed from RLF 3728 8.29.00	0900	R Thoren 8.29.00	0900
R Thoren 8.29.00	1430	FEDEX	
Fed Ex	8/30/00 0930	D. Smith	8/30/00 0830
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Alcohols, Glycols, & Ketones - 8015M (1-Butanol, Diethyl ether, Methanol)

Samples originated in non-RAD Controlled area <2000 pCi/g. NO TA Required

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		B99-037-10	Page 1 of 3
Collector: Fahlberg/Bowers/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.: ERC99-058, ERC99042, ERC46050	Field Logbook No.: R.F EL ~~1381-3~~ 1577 8.24.00	COA: RERDF22560	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA	Offsite Property No.: A000298		Bill of Lading/Air Bill No.: 42357953-8588, 8577, 859	

POSSIBLE SAMPLE HAZARDS/REMARKS: None

Special Handling and/or Storage

Preservation	None	Cool 4C	HCl to pH <2 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	G	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	~~100mL~~ 500 RE 8.24.00	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL
SAMPLE ANALYSIS	pH (Water) - 9040	Carbonyls - 8315 (Formaldehyde)	TOC - 9060	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										
B103K7	WATER	8.28.00	1005	X	X	X	X	X	X	X	X	X	X
B103K8	WATER	8.28.00	1040	X	X	X	X	X	X	X	X	X	X

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By: Johansen Johansen	Date/Time: 8-28-00 1200	Received By: R Thoren R Thoren	Date/Time: 8.28.00 1200
Relinquished By: R Thoren R Thoren	Date/Time: 8.28.00 1245	Received By: Stored in Ref 2C 3728 bld	Date/Time: 8.28.00 1245
Relinquished By: Removed from Ref 2C 3728	Date/Time: 8.29.00 0900	Received By: R Thoren R Thoren	Date/Time: 8.29.00 0900
Relinquished By: R Thoren R Thoren	Date/Time: 8.29.00 1430	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 8/30/00 0930	Received By: [signature]	Date/Time: 8/30/00 / 0930
Relinquished By	Date/Time	Received By	Date/Time

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 originated in non Rad Controlled area. <2000 pCi/g. NO TA Required

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 ENVIRONMENTAL INC.
Chemical and Environmental Measurement Information

NOV 2000
RECEIVED

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B00-037
RFW#: 0008L402
SDG/SAF#: H0997/B00-037

W.O.#: 10985-001-001-9999-00
Date Received: 08-30-00

PESTICIDE

The set of samples consisted of two (2) water samples collected on 08-28-00.

The samples and their associated QC samples were extracted on 09-01-00 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 09-11-00. 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. All cooler temperatures have been recorded on the chain-of-custodies.
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. The blank spike, matrix spike and matrix spike duplicate surrogate recoveries were double spiked, the results have been adjusted accordingly. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
5. The blank spike and matrix spikes were not spiked, rather they were double surrogated. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
6. All initial calibrations associated with this data set were within acceptance criteria.
7. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
8. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-23-00
Date

pef\r:\group\data\pest\08L-402.pcb

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.

01

RECRA **Sample Discrepancy Report (SDR)** SDR #: 60GC214

Initiator: Pastor Batch: 60081402 Parameter: 060814
Date: 9/27/00 Samples: All Matrix: water
Client: TVA Method: SW846/MCAWW/CLP/ Prep Batch: 00LE1078

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)

The samples were double surrogated instead of spiked so there are no MS/MSD or BS recoveries.

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:
All sample surrogates were ok + no hits were found. Recommend re-calculating MS/MSD + BS surrogates to include the doubling.

4. Project Manager Instructions...signature/date: Brenda Johnson 10/4/00

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
✓ Client Contacted: Date/Person Rick Meiss 10/4/00
__ Add
__ Cancel

5. Final Action...signature/date: Billie Pastor 10/11/00 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: _____

02

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: 10/11/00 15:16

RFW Batch Number: **0008L402** Client: **TNU-HANFORD B99-037** Work Order: 10985001001 Page: 1

	Cust ID:	B103K7	B103K7	B103K7	B103K8	PBLKYT	PBLKYT BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	00LE1078-MB1	00LE1078-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	73 %	76 %	66 %	63 %	59 %	64 %
	Tetrachloro-m-xylene	90 %	90 %	92 %	82 %	78 %	74 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		0.052 U	0.10 U	0.11 U	0.052 U	0.050 U	0.050 U
Beta-BHC		0.052 U	0.10 U	0.11 U	0.052 U	0.050 U	0.050 U
Delta-BHC		0.052 U	0.10 U	0.11 U	0.052 U	0.050 U	0.050 U
gamma-BHC (Lindane)		0.052 U	NS %	NS %	0.052 U	0.050 U	NS %
Heptachlor		0.052 U	NS %	NS %	0.052 U	0.050 U	NS %
Aldrin		0.052 U	NS %	NS %	0.052 U	0.050 U	NS %
Heptachlor epoxide		0.052 U	0.10 U	0.11 U	0.052 U	0.050 U	0.050 U
Endosulfan I		0.052 U	0.10 U	0.11 U	0.052 U	0.050 U	0.050 U
Dieldrin		0.10 U	NS %	NS %	0.10 U	0.10 U	NS %
4,4'-DDE		0.10 U	0.20 U	0.21 U	0.10 U	0.10 U	0.10 U
Endrin		0.10 U	NS %	NS %	0.10 U	0.10 U	NS %
Endosulfan II		0.10 U	0.20 U	0.21 U	0.10 U	0.10 U	0.10 U
4,4'-DDD		0.10 U	0.20 U	0.21 U	0.10 U	0.10 U	0.10 U
Endosulfan sulfate		0.10 U	0.20 U	0.21 U	0.10 U	0.10 U	0.10 U
4,4'-DDT		0.10 U	NS %	NS %	0.10 U	0.10 U	NS %
Methoxychlor		0.52 U	1.0 U	1.1 U	0.52 U	0.50 U	0.50 U
Endrin ketone		0.10 U	0.20 U	0.21 U	0.10 U	0.10 U	0.10 U
Endrin aldehyde		0.10 U	0.20 U	0.21 U	0.10 U	0.10 U	0.10 U
alpha-Chlordane		0.052 U	0.10 U	0.11 U	0.052 U	0.050 U	0.050 U
gamma-Chlordane		0.052 U	0.10 U	0.11 U	0.052 U	0.050 U	0.050 U
Toxaphene		5.2 U	10 U	11 U	5.2 U	5.0 U	5.0 U
Aroclor-1016		1.0 U	2.0 U	2.1 U	1.0 U	1.0 U	1.0 U
Aroclor-1221		2.1 U	4.0 U	4.3 U	2.1 U	2.0 U	2.0 U
Aroclor-1232		1.0 U	2.0 U	2.1 U	1.0 U	1.0 U	1.0 U
Aroclor-1242		1.0 U	2.0 U	2.1 U	1.0 U	1.0 U	1.0 U
Aroclor-1248		1.0 U	2.0 U	2.1 U	1.0 U	1.0 U	1.0 U
Aroclor-1254		1.0 U	2.0 U	2.1 U	1.0 U	1.0 U	1.0 U
Aroclor-1260		1.0 U	2.0 U	2.1 U	1.0 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

10-17-00

Recra LabNet - Lionville Laboratory
PEST/PCB ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037

DATE RECEIVED: 08/30/00 RFW LOT # :0008L402

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B103K7	001	W	00LE1078	08/28/00	09/01/00	09/11/00
B103K7	001 MS	W	00LE1078	08/28/00	09/01/00	09/11/00
B103K7	001 MSD	W	00LE1078	08/28/00	09/01/00	09/11/00
B103K8	002	W	00LE1078	08/28/00	09/01/00	09/11/00
LAB QC:						
PBLKYT	MB1	W	00LE1078	N/A	09/01/00	09/11/00
PBLKYT	MB1 BS	W	00LE1078	N/A	09/01/00	09/11/00

RECRA LabNet Use Only

00084402

Custody Transfer Record/Lab Work Request

Page 1 of 2

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TRU-Hanford B99-037
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: QS
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 8-30-00 Date Due: 9-29-00
Account #:

Refrigerator #		1	3	3	3	3	1		3	3	3	3	3	3	1	3
#/Type Container	Liquid	3a J	2a J	2a J	2a J	2a J	3a J	J	1P	1P	1P	2a J	1P	1a J	1a J	1a J
	Solid															
Volume	Liquid	40	1L	1L	1L	1L	40		500	1L	500	1L	500	500	500	500
	Solid															
Preservatives		HCL	—	—	—	—	—		H_2SO_4	NaOH	—	HCL	—	—	HCL	HNO3

ANALYSES REQUESTED → ORGANIC: VOA 8260A; BNA; Pest/PCB; ChlorHerb; SVOA HPLC; Alcohols Glycols Ketones Acetates Form. INORG: Total Metal ICP; Total CN; Sulfide; Oil & Grease; pH; Carbonyls Formaldehyde; TOC; Merc.

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	8240H	8250H	8080H	OHPCBX	08310	OCLSC	TCB300	8260C	Met(1)	ICNTD	ISFD	IAGGR	IPH	OLCSC	IOCT	MHGTD
001	B103K7			W	8/29/00	1005	X	X	X	X	X	X			X	X	X	X	X	X	X	X
002	B103K8			⊥	⊥	1040	X	X	X	X	X	X			X	X	X	X	X	X	X	X

Special Instructions: Saf B99-037
Run Matrix QC
#4235 7953-8577/4.6°C
⊥ ⊥ 8599/3.8°C *
8588/4.2°C

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, Se,
3. Si, Tl, Sn
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 (pH)

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'd Y or N
Cooler Temp. * °C

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

Relinquished by	Received by	Date	Time
[illegible] Ex	[illegible]	8/30/00	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

RECRA LabNet Use Only
0008L402

Custody Transfer Record/Lab Work Request

Page 2 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNU- Hanford B99-037

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #:

RECRA Project Manager:

QC: Del: TAT:

Date Rec'd: Date Due:

Account #:

Page 1

Refrigerator #											3		3	3	3	3
#/Type Container	Liquid										1P		1P	1P	1P	1P
	Solid															
Volume	Liquid										500		500	500	500	500
	Solid															
Preservatives											—		—	—	—	H_2SO_4
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb				INORG: Metal	CN	[illegible]		IC Anions	TDS	TSS	Ammonia
		RECRA LabNet Use Only									ISPCD		IC①	ITDS	ITSS	INH3N
Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected										
001	B103K7										X		X	X	X	X
002	TK 830 B103K8										X		X	X	X	X

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:

IC① 1. Br, Cl, Fl, NO3, NO2, PO4, SO4

2.

3.

4.

5.

6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	8/30/00	0930

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

Page 1

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-10	Page 2 of 3

Collector: Fahlberg/Bowers/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.: ERC99-058, ERC99-042, ERC96,050	Field Logbook No.: EL ~~1381-3~~ 1517 8-24-00 — COA: RERDF22560	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA	Offsite Property No.: A00298	Bill of Lading/Air Bill No.: 423571453-8588, 8577, 8599	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	ZnAc+NaOH to pH >9 Cool	HNO_3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	HCL to pH <2 Cool 4C	HNO_3 to pH <2	HCl Cool 4C
Type of Container	P	P	P	aG	aG	aG	aG	G	P	aGs*
No. of Container(s)	1	1	1	2	2	2	2	2	2	3
Volume	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	40mL
SAMPLE ANALYSIS	Sulfides - 9030	See item (1) in Special Instructions.	Total Cyanide - 9010	See item (2) in Special Instructions.	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions.	oil & Grease - 9070	Gross Alpha; Gross Beta	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B103K7	WATER	8-28-00	1005	X		X	X	X	X	X	X		X
B103K8	WATER	8-28-00	1040	X		X	X	X	X	X	X		X

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

Relinquished By	Date/Time	Received By	Date/Time
M Fahlberg M Fahlberg	8-28-00 1200	R. Thoren	8-28-00 1200
R. Thoren	8-28-00 1245	Stored in Ref 2C 3728bld	8-28-00 1245
Removed from Ref 2C 3728	8-24-00 0900	R. Thoren	8-24-00 0900
R. Thoren R. Thoren	8-24-00 1430	FED EX	
FED EX	8/30/00 0930		

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}
(4) 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 originated in non Rad controlled area <2000pCi/g
NOTA Required

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

00086402

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-10	Page 3 of 3

Collector Fahlberg/Bowers/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. ERC99-058, ERC99-042, ERC96-050	**Field Logbook No.** EL ~~1381-3~~ 1517 8-28-00	**COA** RERDF22560	**Method of Shipment** Fed EX
Shipped To TMA/RECRA RECRA	**Offsite Property No.** A00298		**Bill of Lading/Air Bill No.** 4235753-8568, 8577, 8579

Price Code 7N **Data Turnaround** 45 Days **Air Quality** ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	Cool 4C										
Type of Container	Gs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.										
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**								
B103K7	WATER	8-28-00	1005	X							
B103K8	WATER	8-28-00	1040	X							

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

Relinquished By	Date/Time	Received By	Date/Time
Matthew Bowers	8-28-00 1200	R Thoren	8.28.00 1200
R Thoren	8.28.00 1245	Stored in R-11 2C 3728	8.28.00 1245
Removed from R-11 2C 3728	8.29.00 0900	R Thoren	8.29.00 0900
R Thoren	8.24.00 1430	FEDEX	
Fed Ex	8/30/00 0930	D. Smith	8/30/00 0830

SPECIAL INSTRUCTIONS

(1) Alcohols, Glycols, & Ketones - 8015M (1-Butanol, Diethyl ether, Methanol)

Samples originated in non-RAD Controlled area <2000 pCi/g. NO TA Required

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	B99-037-10	Page 1 of 3
Collector: Fahlberg/Bowers/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.: ERC99-058, ERC9904R, ERC4605D	Field Logbook No.: EL ~~1381-3~~ 1577 R.F 8.24.00; COA: RERDF22560	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA	Offsite Property No.: A0P0298	Bill of Lading/Air Bill No.: 42357953-8588, 8577, 859	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	None	Cool 4C	HCl to pH <2 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	G	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	~~100mL~~ 500 RC 8.24.00	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	pH (Water) - 9040	Carbonyls - 8315 (Formaldehyde)	TOC - 9060	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.
B103K7	WATER	8.28.00	1005	X	X	X	X	X	X	X	X	X	X
B103K8	WATER	8.28.00	1040	X	X	X	X	X	X	X	X	X	X

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

Relinquished By	Date/Time	Received By	Date/Time
M Bowers/J Johansen	8-28-00 1200	R Thoren	8.28.00 1200
R Thoren	8.28.00 1245	Stored in Ref 2C 3728 bld	8.28.00 1245
Removed from Ref 2C 3728	8.29.00 0900	R Thoren	8.29.00 0900
R Thoren	8.29.00 1430	FED EX	
FED EX	8/30/00 0930	D J Smith	8/30/00 0930

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 originated in non Rad Controlled area. <2000 pCi/g. NO TA Required

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
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

NOV 2000
RECEIVED

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-037
RFW #: 0008L402
SDG/SAF #: H0997/B99-037

W.O. #: 10985-001-001-9999-00
Date Received: 08-30-2000

SEMIVOLATILE

Two (2) water samples were collected on 08-28-2000.

The samples and their associated QC samples were extracted on 09-01-2000 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270C for Appendix IX Semivolatile target compounds on 09-26-2000.

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 temperatures upon receipt have been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis were met.
3. Non-target compounds were detected in the samples.
4. One (1) of thirty-six (36) surrogate recoveries was outside EPA QC limits. However, EPA CLP surrogate recovery criteria were met (i.e., no more than one outlier per fraction {acid and base neutral} and no recoveries less than 10%).
5. Two (2) of eleven (11) blank spike recoveries were outside EPA QC limits.
6. All matrix spike recoveries were within EPA QC limits.
7. The method blank contained the common laboratory contaminant Bis (2-Ethylhexyl)phthalate at a level less than the CRQL.
8. A spectral search was conducted for the compounds 0,0,0-Triethylphosphorothioate, 1-Acetyl-2-thiourea, 2,5-Diaminotoluene, and 2-Cyclohexyl-4,6-Dinitrophenol; these compounds were not identified in the samples.
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
V.P./Laboratory General Manager
Lionville Laboratory

11-10-00
Date

som&pef\gorup\data\bna\tnu-hanford-08-402.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 6 pages.

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

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

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

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

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

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

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

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

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

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

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

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, Appendix IX List — Report Date: 10/15/00 15:34

RFW Batch Number: **0008L402** — Client: **TNU-HANFORD B99-037** — Work Order: 10985001001 — Page: 1a

	Cust ID:	B103K7	B103K7	B103K7	B103K8	SBLKZG	SBLKZG BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	00LE1080-MB1	00LE1080-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	Nitrobenzene-d5	98 %	88 %	96 %	84 %	61 %	92 %
	2-Fluorobiphenyl	103 %	98 %	101 %	92 %	72 %	96 %
	p-Terphenyl-d14	134 %	134 %	142 * %	130 %	113 %	133 %
	Phenol-d5	88 %	77 %	89 %	80 %	60 %	83 %
	2-Fluorophenol	100 %	85 %	90 %	78 %	58 %	35 %
	2,4,6-Tribromophenol	98 %	95 %	105 %	90 %	57 %	22 %
Phenol		10 U	59 %	66 %	11 U	10 U	62 %
bis(2-Chloroethyl)ether		10 U	20 U	22 U	11 U	10 U	10 U
2-Chlorophenol		10 U	61 %	66 %	11 U	10 U	43 %
1,3-Dichlorobenzene		10 U	20 U	22 U	11 U	10 U	10 U
1,4-Dichlorobenzene		10 U	51 %	54 %	11 U	10 U	53 %
Benzyl alcohol		10 U	20 U	22 U	11 U	10 U	10 U
1,2-Dichlorobenzene		10 U	20 U	22 U	11 U	10 U	10 U
2-Methylphenol		10 U	20 U	22 U	11 U	10 U	10 U
bis(2-Chloroisopropyl)ether		10 U	20 U	22 U	11 U	10 U	10 U
4-Methylphenol		10 U	20 U	22 U	11 U	10 U	10 U
N-Nitroso-Di-n-propylamine		10 U	50 %	56 %	11 U	10 U	51 %
Hexachloroethane		10 U	20 U	22 U	11 U	10 U	10 U
Nitrobenzene		10 U	20 U	22 U	11 U	10 U	10 U
Isophorone		10 U	20 U	22 U	11 U	10 U	10 U
2-Nitrophenol		10 U	20 U	22 U	11 U	10 U	10 U
2,4-Dimethylphenol		10 U	20 U	22 U	11 U	10 U	10 U
Benzoic acid		26 U	50 U	54 U	26 U	25 U	25 U
bis(2-Chloroethoxy)methane		10 U	20 U	22 U	11 U	10 U	10 U
2,4-Dichlorophenol		10 U	20 U	22 U	11 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	58 %	61 %	11 U	10 U	58 %
Naphthalene		10 U	20 U	22 U	11 U	10 U	10 U
4-Chloroaniline		10 U	20 U	22 U	11 U	10 U	10 U
Hexachlorobutadiene		10 U	20 U	22 U	11 U	10 U	10 U
4-Chloro-3-methylphenol		10 U	67 %	75 %	11 U	10 U	65 %
2-Methylnaphthalene		10 U	20 U	22 U	11 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	20 U	22 U	11 U	10 U	10 U

*= Outside of EPA CLP QC limits.

Cust ID:	B103K7	B103K7	B103K7	B103K8	SBLKZG	SBLKZG BS
RFW#:	001	001 MS	001 MSD	002	00LE1080-MB1	00LE1080-MB1
2,4,6-Trichlorophenol	10 U	20 U	22 U	11 U	10 U	10 U
2,4,5-Trichlorophenol	26 U	50 U	54 U	26 U	25 U	25 U
2-Chloronaphthalene	10 U	20 U	22 U	11 U	10 U	10 U
2-Nitroaniline	26 U	50 U	54 U	26 U	25 U	25 U
Dimethylphthalate	10 U	20 U	22 U	11 U	10 U	10 U
Acenaphthylene	10 U	20 U	22 U	11 U	10 U	10 U
2,6-Dinitrotoluene	10 U	20 U	22 U	11 U	10 U	10 U
3-Nitroaniline	26 U	50 U	54 U	26 U	25 U	25 U
Acenaphthene	10 U	64 %	70 %	11 U	10 U	66 %
2,4-Dinitrophenol	26 U	50 U	54 U	26 U	25 U	25 U
4-Nitrophenol	26 U	64 %	75 %	26 U	25 U	8 * %
Dibenzofuran	10 U	20 U	22 U	11 U	10 U	10 U
2,4-Dinitrotoluene	10 U	65 %	73 %	11 U	10 U	67 %
Diethylphthalate	10 U	20 U	22 U	11 U	10 U	10 U
4-Chlorophenyl-phenylether	10 U	20 U	22 U	11 U	10 U	10 U
Fluorene	10 U	20 U	22 U	11 U	10 U	10 U
4-Nitroaniline	26 U	50 U	54 U	26 U	25 U	25 U
4,6-Dinitro-2-methylphenol	26 U	50 U	54 U	26 U	25 U	25 U
N-Nitrosodiphenylamine (1)	10 U	20 U	22 U	11 U	10 U	10 U
4-Bromophenyl-phenylether	10 U	20 U	22 U	11 U	10 U	10 U
Hexachlorobenzene	10 U	20 U	22 U	11 U	10 U	10 U
Pentachlorophenol	26 U	36 %	37 %	26 U	25 U	0 * %
Phenanthrene	10 U	20 U	22 U	11 U	10 U	10 U
Anthracene	10 U	20 U	22 U	11 U	10 U	10 U
Di-n-Butylphthalate	10 U	20 U	22 U	11 U	10 U	10 U
Fluoranthene	10 U	20 U	22 U	11 U	10 U	10 U
Pyrene	10 U	76 %	83 %	11 U	10 U	79 %
Butylbenzylphthalate	10 U	20 U	22 U	11 U	10 U	10 U
3,3'-Dichlorobenzidine	10 U	20 U	22 U	11 U	10 U	10 U
Benzo(a)anthracene	10 U	20 U	22 U	11 U	10 U	10 U
Chrysene	10 U	20 U	22 U	11 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	2 JB	4 JB	3 JB	8 JB	1 J	1 JB
Di-n-Octyl phthalate	10 U	20 U	22 U	11 U	10 U	10 U
Benzo(b)fluoranthene	10 U	20 U	22 U	11 U	10 U	10 U
Benzo(k)fluoranthene	10 U	20 U	22 U	11 U	10 U	10 U
Benzo(a)pyrene	10 U	20 U	22 U	11 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10 U	20 U	22 U	11 U	10 U	10 U
Dibenzo(a,h)anthracene	10 U	20 U	22 U	11 U	10 U	10 U
Benzo(g,h,i)perylene	10 U	20 U	22 U	11 U	10 U	10 U
1,4-Dioxane	10 U	20 U	22 U	11 U	10 U	10 U

*= Outside of EPA CLP QC limits.

	Cust ID:	B103K7	B103K7	B103K7	B103K8	SBLKZG	SBLKZG BS
	RFW#:	001	001 MS	001 MSD	002	00LE1080-MB1	00LE1080-MB1
Methyl methacrylate		10 U	20 U	22 U	11 U	10 U	10 U
Pyridine		10 U	20 U	22 U	11 U	10 U	10 U
N-Nitrosodimethylamine		10 U	20 U	22 U	11 U	10 U	10 U
Ethyl methacrylate		10 U	20 U	22 U	11 U	10 U	10 U
2-Picoline		10 U	20 U	22 U	11 U	10 U	10 U
N-Nitrosomethylethylamine		10 U	20 U	22 U	11 U	10 U	10 U
Methyl methanesulfonate		10 U	20 U	22 U	11 U	10 U	10 U
N-Nitrosodiethylamine		10 U	20 U	22 U	11 U	10 U	10 U
Ethyl methanesulfonate		10 U	20 U	22 U	11 U	10 U	10 U
Aniline		10 U	20 U	22 U	11 U	10 U	10 U
Pentachloroethane		10 U	20 U	22 U	11 U	10 U	10 U
3-Methylphenol		10 U	20 U	22 U	11 U	10 U	10 U
N-Nitrosopyrrolidine		10 U	20 U	22 U	11 U	10 U	10 U
Acetophenone		10 U	20 U	22 U	11 U	10 U	10 U
N-Nitrosomorpholine		10 U	20 U	22 U	11 U	10 U	10 U
o-Toluidine		10 U	20 U	22 U	11 U	10 U	10 U
N-Nitrosopiperidine		51 U	100 U	110 U	53 U	50 U	50 U
a,a-Dimethylphenethylamine		10 U	20 U	22 U	11 U	10 U	10 U
2,6-Dichlorophenol		10 U	20 U	22 U	11 U	10 U	10 U
Hexachloropropene		10 U	20 U	22 U	11 U	10 U	10 U
p-Phenylenediamine		10 U	20 U	22 U	11 U	10 U	10 U
N-Nitroso-di-n-butylamine		10 U	20 U	22 U	11 U	10 U	10 U
Safrole		10 U	20 U	22 U	11 U	10 U	10 U
1,2,4,5-Tetrachlorobenzene		10 U	20 U	22 U	11 U	10 U	10 U
Isosafrole		10 U	20 U	22 U	11 U	10 U	10 U
1,4-Naphthoquinone		10 U	20 U	22 U	11 U	10 U	10 U
1,3-Dinitrobenzene		10 U	20 U	22 U	11 U	10 U	10 U
Pentachlorobenzene		10 U	20 U	22 U	11 U	10 U	10 U
1-Naphthylamine		10 U	20 U	22 U	11 U	10 U	10 U
2-Naphthylamine		10 U	20 U	22 U	11 U	10 U	10 U
2,3,4,6-Tetrachlorophenol		10 U	20 U	22 U	11 U	10 U	10 U
1,3,5-Trinitrobenzene		10 U	20 U	22 U	11 U	10 U	10 U
Diallate		10 U	20 U	22 U	11 U	10 U	10 U
Phenacetin		10 U	20 U	22 U	11 U	10 U	10 U
Diphenylamine		10 U	20 U	22 U	11 U	10 U	10 U
5-Nitro-o-toluidine		10 U	20 U	22 U	11 U	10 U	10 U
4-Aminobiphenyl		10 U	20 U	22 U	11 U	10 U	10 U
Pronamide		10 U	20 U	22 U	11 U	10 U	10 U
2-sec-Butyl-4,6-dinitrophenol		51 U	100 U	110 U	53 U	50 U	50 U
Pentachloronitrobenzene		51 U	100 U	110 U	53 U	50 U	50 U

*= Outside of EPA CLP QC limits.

Cust ID:	B103K7	B103K7	B103K7	B103K8	SBLKZG	SBLKZG BS
RFW#:	001	001 MS	001 MSD	002	00LE1080-MB1	00LE1080-MB1
4-Nitroquinoline-1-oxide	20 U	40 U	44 U	21 U	20 U	20 U
Methapyrilene	10 U	20 U	22 U	11 U	10 U	10 U
Aramite	20 U	40 U	44 U	21 U	20 U	20 U
Chlorobenzilate	10 U	20 U	22 U	11 U	10 U	10 U
p-Dimethylaminoazobenzene	10 U	20 U	22 U	11 U	10 U	10 U
3,3'-Dimethylbenzidine	10 U	20 U	22 U	11 U	10 U	10 U
2-Acetylaminofluorene	10 U	20 U	22 U	11 U	10 U	10 U
7,12-Dimethylbenz(a)anthracene	10 U	20 U	22 U	11 U	10 U	10 U
Hexachlorophene	100 U	200 U	220 U	110 U	100 U	100 U
3-Methylcholanthrene	10 U	20 U	22 U	11 U	10 U	10 U
1,2-Diphenylhydrazine	10 U	20 U	22 U	11 U	10 U	10 U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B103K7

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 0008L402-001

Sample wt/vol: 980 (g/mL) ML Lab File ID: D092613

Level: (low/med) LOW Date Received: 08/30/00

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 09/01/00

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/00

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 4 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	4652-44-2	C2-CARBAMIC ACID,METHYLESTER	8.03	2	JN
2.		ALKANE/DIMETHYLNAPHTHALENE	15.43	3	J
3.		UNKNOWN	17.63	4	J
4.	314-40-9	BROMACIL	21.15	10	JN

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B103K8

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 0008L402-002

Sample wt/vol: 950 (g/mL) ML Lab File ID: D092616

Level: (low/med) LOW Date Received: 08/30/00

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 09/01/00

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/00

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 3 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		ALKANE/DIMETHYLNAPHTHALENE	15.42	2	J
2.		UNKNOWN	17.62	4	J
3.	314-40-9	BROMACIL	21.15	10	JN

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKZG

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-037

Matrix: (soil/water) WATER Lab Sample ID: 00LE1080-MB1

Sample wt/vol: 1000 (g/mL) ML Lab File ID: D092610

Level: (low/med) LOW Date Received: 09/01/00

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 09/01/00

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/26/00

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/L

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

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037

DATE RECEIVED: 08/30/00 RFW LOT # :0008L402

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B103K7	001	W	00LE1080	08/28/00	09/01/00	09/26/00
B103K7	001 MS	W	00LE1080	08/28/00	09/01/00	09/26/00
B103K7	001 MSD	W	00LE1080	08/28/00	09/01/00	09/26/00
B103K8	002	W	00LE1080	08/28/00	09/01/00	09/26/00
LAB QC:						
SBLKZG	MB1	W	00LE1080	N/A	09/01/00	09/26/00
SBLKZG	MB1 BS	W	00LE1080	N/A	09/01/00	09/26/00

RECRA LabNet Use Only

00084402

Custody Transfer Record/Lab Work Request

Page 1 of 2

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client TRU-Hanford B99-037

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager QS

QC Spec Del Std TAT 30 day

Date Rec'd 8-30-00 Date Due 9-29-00

Account #

Refrigerator #		1	3	3	3	3	1		3	3	3	3	3	3	1	3
#/Type Container	Liquid	3aj	2aj	2aj	2aj	2aj	3aj	1j	1P	1P	1P	2aj	1P	1aj	1aj	1aj
	Solid	J	J	J	J		J					J		J	J	J
Volume	Liquid	40	1L	1L	1L	1L	40		500	1L	500	1L	500	500	500	500
	Solid															
Preservatives		HCl	—	—	—	—	—		H_2SO_4	$NaOH$	—	HCl	—	—	HCl	HNO_3

ANALYSES REQUESTED → ORGANIC: VOA 8260A; BNA; Pest/PCB; ChlorHerb; SVOA HPLC; Alcohols Glycols Ketones Acetates; Form; INORG: Total Metal ICP; Total CN; STARS; Oil + Grease; PH; Carbonyls + Formaldehyde; TOC; Merc.

RECRA LabNet Use Only: 0LC4Y; 0LC5N; 0LC6H; OHRGK; 08310; 0GCSC; TCB3000 GCSSC; Met(1); ICNTD; ISFD; IOGGR; IPH; OLCSC; IOCT; MHGTD

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (Y) 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	B103K7			W	8/28/00	1005
	002	B103K8			L	L	1040

Special Instructions: Saf B99-037

Run Matrix QC

4235 7953 8577/4.6°C

8599/3.8°C *

8588/4.2°C

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, Sr,

3. Si, Tl, Sn

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 (pH)

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
Fed Ex		8/30/00	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

13

RECRA LabNet Use Only
0008L402

Custody Transfer Record/Lab Work Request

Page 2 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNU- Hanford B99-037

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #:

RECRA Project Manager:

QC: Del: TAT:

Date Rec'd: Date Due:

Account #:

Page 1

Refrigerator #											3		3	3	3	3
#/Type Container	Liquid										1P		1P	1P	1P	1P
	Solid															
Volume	Liquid										500		500	500	500	500
	Solid															
Preservatives											—		—	—	—	H_2SO_4
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb				INORG: Metal	CN	[illegible]		IC Anions	TDS	TSS	Ammonia
		RECRA LabNet Use Only									ISPCD		IC①	ITDS	ITSS	INH3N
001	B103K7										X		X	X	X	X
002	TK 8300W B103K8										X		X	X	X	X

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:

IC① 1. Br, Cl, Fl, NO3, NO2, PO4, SO4

2.

3.

4.

5.

6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	8/30/00	0930

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 Presented 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

Page 1

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-10	Page 2 of 3

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code / Data Turnaround
Fahlberg/Bowers/Johansen	F Roeck 372-9086	WEISS, RL	7N / 45 Days
Project Designation	**Sampling Location**	**SAF No.**	**Air Quality** ☐
ERDF Leachate Delisting Analysis	ERDF	B99-037	
Ice Chest No.	**Field Logbook No.** / **COA**	**Method of Shipment**	
ERC99-058, ERC99-042, ERC96,050	EL ~~13813~~ 1517 8-24-00 / RERDF22560	Fed EX	
Shipped To	**Offsite Property No.**	**Bill of Lading/Air Bill No.**	
TMA/RECRA	A00298	423574 53-8588, 8577, 8599	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	ZnAc+NaOH to pH >9 Cool	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	HCL to pH <2 Cool 4C	HNO3 to pH <2	HCl Cool 4C
Type of Container	P	P	P	aG	aG	aG	aG	G	P	aGs*
No. of Container(s)	1	1	1	2	2	2	2	2	2	3
Volume	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	40mL
SAMPLE ANALYSIS	Sulfides - 9030	See item (1) in Special Instructions	Total Cyanide - 9010	See item (2) in Special Instructions	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions.	oil & Grease - 9070	Gross Alpha; Gross Beta	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B103K7	WATER	8-28-00	1005	X		X	X	X	X	X	X		X
B103K8	WATER	8-28-00	1040	X		X	X	X	X	X	X		X

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

Relinquished By	Date/Time	Received By	Date/Time
[illegible]	8-28-00 1200	R Thoren	8-28-00 1200
R Thoren	8-28-00 1245	Stored in Ref 2C 3728 Vd	8-28-00 1245
Removed from Ref 2C 3728	8-29-00 0900	R Thoren	8-29-00 0900
R Thoren	8-29-00 1430	FED EX	
FED EX	8/30/00 0930	[illegible]	8/30/00 0930
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}
(4) 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 originated in non Rad controlled area <2000pCi/g
NOTA Required

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

00086402

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B99-037-10	Page 3 of 3
Collector: Fahlberg/Bowers/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.: ERC49.058, ERC49.042, ERC46.050	Field Logbook No.: EL ~~1381-3~~ 1517 8.28.00	COA: RERDF22560	Method of Shipment: Fed EX	
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A000298		Bill of Lading/Air Bill No.: 4235 7953-8588, 8577, 859	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Preservation	Cool 4C									
Type of Container	Gs*									
No. of Container(s)	3									
Volume	40mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.									

Sample No.	Matrix *	Sample Date	Sample Time										
B103K7	WATER	8-28-00	1005	X									
B103K8	WATER	8-28-00	1040	X									

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By: [signature]	Date/Time: 8-28-00 1200	Received By: R Thoren R Thoren	Date/Time: 8.28.00 1200
Relinquished By: R Thoren R Thoren	Date/Time: 8.28.00 1245	Received By: Stored in Ruf 2C 3728	Date/Time: 8.28.00 1245
Relinquished By: Removed from Ruf 2C 3728	Date/Time: 8.29.00 0900	Received By: R Thoren R Thoren	Date/Time: 8.29.00 0900
Relinquished By: R Thoren R Thoren	Date/Time: 8.29.00 1430	Received By: FED EX	Date/Time:
Relinquished By: [signature]	Date/Time: 8/30/00 0930	Received By: [signature]	Date/Time: 8/30/00 0930
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

(1) Alcohols, Glycols, & Ketones - 8015M (1-Butanol, Diethyl ether, Methanol)

Samples originated in non-RAD Controlled area <2000 pCi/g. NO TA Required

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		B99-037-10	Page 1 of 3
Collector Fahlberg/Bowers/Johansen	Company Contact F Roeck	Telephone No. 372-9086	Project Coordinator WEISS, RL	Price Code 7N Air Quality ☐
Project Designation ERDF Leachate Delisting Analysis	Sampling Location ERDF		SAF No. B99-037	Data Turnaround 45 Days
Ice Chest No. ERC99-058, ERC99042, ERC46050	Field Logbook No. R.F EL ~~1381-3~~ 1577 8.24.00	COA RERDF22560	Method of Shipment Fed EX	
Shipped To TMA/RECRA	Offsite Property No. A000298		Bill of Lading/Air Bill No. 42357953-8588, 8577, 859	

POSSIBLE SAMPLE HAZARDS/REMARKS

None

Special Handling and/or Storage

Preservation	None	Cool 4C	HCl to pH <2 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	G	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	~~100mL~~ 500 RF 8.24.00	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL
SAMPLE ANALYSIS	pH (Water) - 9040	Carbonyls - 8315 (Formaldehyde)	TOC - 9060	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										
B103K7	WATER	8.28.00	1005	X	X	X	X	X	X	X	X	X	X
B103K8	WATER	8.28.00	1040	X	X	X	X	X	X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Johansen Johansen	Date/Time: 8-28-00 1200	Received By: R Thoren R Thoren	Date/Time: 8.28.00 1200
Relinquished By: R Thoren R Thoren	Date/Time: 8.28.00 1245	Received By: Stored in Ref 2C 3728 bld	Date/Time: 8.28.00 1245
Relinquished By: Removed from Ref 2C 3708	Date/Time: 8.29.00 0900	Received By: R Thoren R Thoren	Date/Time: 8.29.00 0900
Relinquished By: R Thoren R Thoren	Date/Time: 8.29.00 1430	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 8/30/00 0930	Received By: [signature]	Date/Time: 8/30/00 / 0930
Relinquished By	Date/Time	Received By	Date/Time

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 originated in non Rad Controlled area. <2000 pCi/g. NO TA Required

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
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

NOV 2000
RECEIVED

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-037
RFW #: 0008L402
SDG/SAF #: H0997/B99-037

W.O. #: [illegible]0985-001-001-9900-00
Date Received: 08-30-2000

GC/MS VOLATILE

Two (2) water samples were collected on 08-28-2000.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260B for client specified Volatile target compounds on 09-08-2000.

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. The samples were analyzed within required holding time.

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

4. All surrogate recoveries were within EPA QC limits.

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

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

7. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than 2x the CRQL.

8. A spectral search was conducted for the compounds 2,3-Dichloro-1-propanol, 1,3-Dichloro-2-propanol, 1,3-Butadiene, 1-Butanol, Allyl Alcohol, Crotenaldehyde, Dichloropropanol, Isopropylbenzene and Tetrahydrofuran; these compounds were not identified in the samples.

9. These samples were acidified to ≤ pH2. Acidification of water samples usually eliminates the presence of the compound 2-Chloroethylvinylether.

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."

By _____ 11-08-00

J. Michael Taylor
V.P./Laboratory General Manager
Lionville Laboratory

Date

som\group\data\voa\tnu-hanford-08-402.doc

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

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

GLOSSARY OF VOA DATA

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.

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.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, Appendix IX List — Report Date: 11/06/00 09:35

RFW Batch Number: **0008L402** Client: **TNU-HANFORD B99-037** Work Order: 10985001001 Page: 1a

	Cust ID:	B103K7	B103K8	B103K8	B103K8	VBLKRN	VBLKRN BS
Sample Information	RFW#:	001	002	002 MS	002 MSD	00LVX235-MB1	00LVX235-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	103 %	106 %	102 %	102 %	96 %	104 %
	Toluene-d8	102 %	100 %	98 %	102 %	97 %	104 %
	Bromofluorobenzene	97 %	95 %	99 %	99 %	95 %	99 %
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		4 JB	5 B	5 JB	5 JB	5 J	13 B
Acetone		10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide		5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene		5 U	5 U	85 %	85 %	5 U	86 %
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	5 U	105 %	103 %	5 U	108 %
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	5 U	94 %	93 %	5 U	94 %
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: **0008L402** Client: **TNU-HANFORD B99-037** Work Order: 10985001001 Page: 1b

	Cust ID:	B103K7	B103K8	B103K8	B103K8	VBLKRN	VBLKRN BS
	RFW#:	001	002	002 MS	002 MSD	00LVX235-MB1	00LVX235-MB1
1,1,2,2-Tetrachloroethane		5 U	5 U	5 U	5 U	5 U	5 U
Toluene		5 U	5 U	94 %	94 %	5 U	96 %
Chlorobenzene		5 U	5 U	98 %	98 %	5 U	102 %
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		6	6	5	6	5 U	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
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-037

DATE RECEIVED: 08/30/00 RFW LOT # :0008L402

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B103K7	001	W	00LVX235	08/28/00	N/A	09/08/00
B103K8	002	W	00LVX235	08/28/00	N/A	09/08/00
B103K8	002 MS	W	00LVX235	08/28/00	N/A	09/08/00
B103K8	002 MSD	W	00LVX235	08/28/00	N/A	09/08/00
LAB QC:						
VBLKRN	MB1	W	00LVX235	N/A	N/A	09/08/00
VBLKRN	MB1 BS	W	00LVX235	N/A	N/A	09/08/00

RECRA LabNet Use Only
0008L402

ALL

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: OS
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 8-30-00 Date Due: 9-29-00
Account #:

Refrigerator #		1	3	3	3	3	1		3	3	3	3	3	3	1	3
#/Type Container	Liquid	3g	2g	2g	2g	2g	3g		1P	1P	1P	2g	1P	1g	1g	1g
	Solid															
Volume	Liquid	40	1L	1L	1L	1L	40		500	1L	500	1L	500	500	500	500
	Solid															
Preservatives		HCL	—	—	—	—	—		H_2NO_3	H_2O	—	HCL	—	Carbonyls + Formaldehyde	HCL	HNO_3
ANALYSES REQUESTED		ORGANIC: VOA 8260A	BNA	Pest/PCB	Chloro Herb	SVOC HPLC	Alcohols Glycols Ketones	Acid Tc Form	INORG: Total Metal ICP	Total CN	Sulfide	Oil + Grease	pH	Carbonyls + Formaldehyde	TOC	Merc.
		RECRA LabNet Use Only														
		OL024N	OL025N	OL008H	OHBGX	08310	OGCSC	TC 8300	Met (1)	ICNTO	ISFD	IOGGR	IPH	OLCSC	IOCT	MHGTO
001	B103K7	X	X	X	X	X	X		X	X	X	X	X	X	X	X
002	B103K8	X	X	X	X	X	X		X	X	X	X	X	X	X	X

MATRIX CODES:
S - Soil
SB - 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
4235 7953 8577/4.6°C
8599/3.8°C *
8588/4.2°C

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, Se,
3. Si, Tl, Sn
4.
5.
6.

Relinquished by	Received by	Date	Time
[signature]	[signature]	8/30/00	0930

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

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) pH

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

RECRA LabNet Use Only
0008L402

Custody Transfer Record/Lab Work Request

Page 2 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

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

Page 1

Refrigerator #											3		3	3	3	3
#/Type Container	Liquid										1P		1P	1P	1P	1P
	Solid															
Volume	Liquid										500		500	500	500	500
	Solid															
Preservatives											—		—	—	—	H_2SO_4
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb				INORG: Metal	CN	Conductivity		IC Anions	TDS	TSS	Ammonia
		RECRA LabNet Use Only									ISPCD		IC(1)	ITDS	ITSS	INH3N
Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected										
001	B103K7										X		X	X	X	X
002	TK 8300 B103K8										X		X	X	X	X

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, Fl, NO3, NO2, PO4, SO4
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
[signature]	[signature]	8/30/00	0930

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

Page 2

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-037-10	Page 2 of 3

Collector Fahlberg/Bowers/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. ERC99-058, ERC99-042, ERC96,050	Field Logbook No. EL ~~13813~~ 1517	8-24-00	COA RERDF22560	Method of Shipment Fed EX	
Shipped To TMA/RECRA	Offsite Property No. A00298			Bill of Lading/Air Bill No. 42357453-8588, 8577, 8599	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	ZnAc+NaOH to pH >9 Cool	HNO3 to pH <2	NaOH to pH >= 12 Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	HCL to pH <2 Cool 4C	HNO3 to pH <2	HCl Cool 4C
Type of Container	P	P	P	aG	aG	aG	aG	G	P	aGs*
No. of Container(s)	1	1	1	2	2	2	2	2	2	3
Volume	500mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	1000mL	40mL
SAMPLE ANALYSIS	Sulfides - 9030	See item (1) in Special Instructions	Total Cyanide - 9010	See item (2) in Special Instructions	Chloro-Herbicides - EPA8151	Pest/PCBs - 8081	See item (3) in Special Instructions	oil & Grease - 9070	Gross Alpha; Gross Beta	See item (4) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time									
B103K7	WATER	8-28-00	1005	X		X	X	X	X	X	X		X
B103K8	WATER	8-28-00	1040	X		X	X	X	X	X	X		X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
[illegible]	8-28-00 1200	R. Thoren	8-28-00 1200
R. Thoren	8-28-00 1245	Stored in Ref 2C 3728 Vol	8-28-00 1245
Removed from Ref 2C 3728	8-24-00 0900	R. Thoren	8-24-00 0900
R. Thoren	8-24-00 1430	FED EX	
FED EX	8/30/00 0930	[illegible]	8/30/00 0930

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}
(4) 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 originated in non Rad Controlled area <2000pCi/g
NOTA Required

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	00086402

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B99-037-10	Page 3 of 3
Collector Fahlberg/Bowers/Johansen	Company Contact F Roeck	Telephone No. 372-9086	Project Coordinator WEISS, RL	Price Code 7N Air Quality ☐
Project Designation ERDF Leachate Delisting Analysis	Sampling Location ERDF		SAF No. B99-037	Data Turnaround 45 Days
Ice Chest No. ERC49.058, ERC49.042, ERC46.050	Field Logbook No. EL ~~1381-3~~ 1517 8.28.00	COA RERDF22560	Method of Shipment Fed EX	
Shipped To TMA/RECRA RECRA	Offsite Property No. A000298		Bill of Lading/Air Bill No. 42357953-8588, 8577, 8594	

POSSIBLE SAMPLE HAZARDS/REMARKS

NONE

Special Handling and/or Storage

Preservation	Cool 4C										
Type of Container	Gs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions										

Sample No.	Matrix *	Sample Date	Sample Time										
B103K7	WATER	8-28-00	1005	X									
B103K8	WATER	8-28-00	1040	X									

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By [signature]	Date/Time 8-28-00 1200	Received By R Thoren R Thoren	Date/Time 8.28.00 1200
Relinquished By R Thoren R Thoren	Date/Time 8.28.00 1245	Received By Stored in Ruf 2C 3728	Date/Time 8.28.00 1245
Relinquished By Removed from Ruf 2C 3728	Date/Time 8.29.00 0900	Received By R Thoren R Thoren	Date/Time 8.29.00 0900
Relinquished By R Thoren R Thoren	Date/Time 8.29.00 1430	Received By FED EX	Date/Time
Relinquished By [signature]	Date/Time 8/30/00 0930	Received By [signature]	Date/Time 8/30/00 0930
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Alcohols, Glycols, & Ketones - 8015M (1-Butanol, Diethyl ether, Methanol)

Samples originated in non-RAD Controlled area <2000 pCi/g. NO TA Required

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	B99-037-10	Page 1 of 3

Collector Fahlberg/Bowers/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. ERC99-058, ERC9904Z, ERC4605D	**Field Logbook No.** EL ~~1301-3~~ 1577 R.F 8.24.00 **COA** RERDF22560	**Method of Shipment** Fed EX	
Shipped To TMA/RECRA	**Offsite Property No.** A00298	**Bill of Lading/Air Bill No.** 42357953-8588, 8577, 8599	

POSSIBLE SAMPLE HAZARDS/REMARKS
NONE

Special Handling and/or Storage

Preservation	None	Cool 4C	HCl to pH <2 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	G	P	P	P	P	P	P
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	~~100mL~~ 500 RC 8.24.00	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL	500mL

SAMPLE ANALYSIS

				pH (Water) - 9040	Carbonyls - 8315 (Formaldehyde)	TOC - 9060	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										
B103K7	WATER	8.28.00	1005	X	X	X	X	X	X	X	X	X	X
B103K8	WATER	8.28.00	1040	X	X	X	X	X	X	X	X	X	X

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
Fahlberg/Bowers/Johansen	8-28-00 1200	RThoren	8.28.00 1200
RThoren	8.28.00 1245	Stored in Ref 2C 372866	8.28.00 1245
Removed from Ref 2C 3708	8.29.00 0900	RThoren	8.29.00 0900
RThoren	8.29.00 1430	FED EX	
FED EX	8/30/00 0930		

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 originated in non Rad Controlled area. <2000 pCi/g. NO TA Required

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

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