H0675-TMA/RECRA

0052661

Thermo Retec
W.O. No. N9-12-088-7315

Bechtel Hanford Inc.
SDG H0675

Case Narrative

RECEIVED
FEB 28 2000
EDMC

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H0667 was composed of three solid (soil) samples designated under SAF No. B99-078 with a Project Designation of: 200 Area Source Characterization – 200-CW-1 OU.

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 facsimile on January 19, 2000.

ANALYSIS NOTES

2.1 Total Strontium Analyses

No problems were encountered during the course of the analyses. Total Strontium samples were batched with SDG H0667 (7309).

2.2 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses. Isotopic Thorium samples were batched with SDG H0667 (7309).

2.3 Total Uranium Analyses

No problems were encountered during the course of the analyses. Total Uranium samples were batched with SDG H0667 (7309).

2.4 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses. Isotopic Plutonium samples were batched with SDG H0667 (7309).

2.5 Americium-241 Analyses

No problems were encountered during the course of the analyses. Americium-241 samples were batched with SDG H0667 (7309).

2.6 Gamma Spec Analyses

No problems were encountered during the course of the analyses. Gamma Spec samples were batched with SDG H0667 (7309).

JAN 2000
RECEIVED
Data
Mgmt

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0675

SAMPLE SUMMARY

SDG 7315
Contact Melissa C. Mannion

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0675

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0WN23	B8757	SOLID		N912088-01	B99-078	B99-078-150	12/03/99 08:40
B0WN24	B8757	SOLID		N912088-02	B99-078	B99-078-150	12/03/99 12:35
B0WN25	B8757	SOLID		N912088-03	B99-078	B99-078-150	12/03/99 09:30
Method Blank		SOLID		N912055-04	B99-078		
Lab Control Sample		SOLID		N912055-03	B99-078		
Duplicate (N912088-01)	B8757	SOLID		N912088-06	B99-078		12/03/99 08:40

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 01/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0675

QC SUMMARY

SDG 7315
Contact Melissa C. Mannion

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0675

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
7309		Method Blank	SOLID						N912055-04	7309-004
		Lab Control Sample	SOLID						N912055-03	7309-003
7315	B99-078-150	B0WN23	SOLID	96.9			12/07/99	4	N912088-01	7315-001
		B0WN24	SOLID	79.1			12/07/99	4	N912088-02	7315-002
		B0WN25	SOLID	96.8			12/07/99	4	N912088-03	7315-003
		Duplicate (N912088-01)	SOLID				12/07/99	4	N912088-06	7315-006

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 01/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0675

SDG 7315
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0675

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	6909-146	5.0	1			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6909-146	5.0	1			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6909-146	5.0	1			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6909-146	10.0	3			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6909-146	15.0	1			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6909-146	9.0	1			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 01/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0675

WORK SUMMARY

SDG 7315
Contact Melissa C. Mannion

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0675

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0WN23			N912088-01	7315-001	AM		01/10/00	01/19/00	MCM	Americium 241 in Soil
B8757		SOLID	12/03/99	7315-001	GAM		12/23/99	01/19/00	MCM	Gamma Scan
B99-078-150	B99-078		12/07/99	7315-001	PU		01/07/00	01/19/00	MCM	Plutonium, Isotopic in Solids
				7315-001	SR		01/10/00	01/19/00	MCM	Total Strontium in Soil
				7315-001	TH		01/13/00	01/19/00	MCM	Thorium, Isotopic in Soil
				7315-001	U_T		01/12/00	01/19/00	MCM	Uranium, Total in Soil
B0WN24			N912088-02	7315-002	SR		01/10/00	01/19/00	MCM	Total Strontium in Soil
B8757		SOLID	12/03/99							
B99-078-150	B99-078		12/07/99							
B0WN25			N912088-03	7315-003	SR		01/10/00	01/19/00	MCM	Total Strontium in Soil
B8757		SOLID	12/03/99							
B99-078-150	B99-078		12/07/99							
Method Blank			N912055-04	7309-004	AM		01/10/00	01/15/00	MCM	Americium 241 in Soil
		SOLID		7309-004	GAM		12/23/99	01/15/00	MCM	Gamma Scan
	B99-078			7309-004	PU		01/07/00	01/15/00	MCM	Plutonium, Isotopic in Solids
				7309-004	SR		01/11/00	01/15/00	MCM	Total Strontium in Soil
				7309-004	TH		01/14/00	01/15/00	MCM	Thorium, Isotopic in Soil
				7309-004	U_T		01/12/00	01/15/00	MCM	Uranium, Total in Soil
Lab Control Sample			N912055-03	7309-003	AM		01/08/00	01/15/00	MCM	Americium 241 in Soil
		SOLID		7309-003	GAM		12/23/99	01/15/00	MCM	Gamma Scan
	B99-078			7309-003	PU		01/07/00	01/15/00	MCM	Plutonium, Isotopic in Solids
				7309-003	SR		01/11/00	01/15/00	MCM	Total Strontium in Soil
				7309-003	TH		01/14/00	01/15/00	MCM	Thorium, Isotopic in Soil
				7309-003	U_T		01/12/00	01/15/00	MCM	Uranium, Total in Soil
Duplicate (N912088-01)			N912088-06	7315-006	AM		01/10/00	01/19/00	MCM	Americium 241 in Soil
B8757		SOLID	12/03/99	7315-006	GAM		12/27/99	01/19/00	MCM	Gamma Scan
	B99-078		12/07/99	7315-006	PU		01/07/00	01/19/00	MCM	Plutonium, Isotopic in Solids
				7315-006	SR		01/10/00	01/19/00	MCM	Total Strontium in Soil
				7315-006	TH		01/13/00	01/19/00	MCM	Thorium, Isotopic in Soil
				7315-006	U_T		01/12/00	01/19/00	MCM	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/19/00

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SAMPLE DELIVERY GROUP H0675

SDG 7315
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0675

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B99-078	Americium 241 in Soil	AM/CMPLATE	1			1	1	1	4
GAM	B99-078	Gamma Scan	GAMMAHI	1			1	1	1	4
PU	B99-078	Plutonium, Isotopic in Solids	PUPLATE	1			1	1	1	4
SR	B99-078	Total Strontium in Soil	SRTOTAL	3			1	1	1	6
TH	B99-078	Thorium, Isotopic in Soil	THPLATE	1			1	1	1	4
U_T	B99-078	Uranium, Total in Soil	UKPA	1			1	1	1	4
TOTALS				8			6	6	6	26

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/19/00

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0675

N912055-04 Method Blank

METHOD BLANK

SDG	7315	Client/Case no	Hanford	SDG	H0675
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	N912055-04	Client sample id	Method Blank		
Dept sample id	7309-004	Material/Matrix		SOLID	
		SAF No	B99-078		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0	0.001	0.002	1.0	U	U_T
Plutonium 238	13981-16-3	-0.011	0.011	0.051	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.005	0.011	0.040	1.0	U	PU
Americium 241	14596-10-2	-0.022	0.045	0.10	1.0	U	AM
Total Strontium	SR-RAD	-0.064	0.15	0.21	1.0	U	SR
Thorium 228	14274-82-9	0.019	0.095	0.18	1.0	U	TH
Thorium 230	14269-63-7	0.209	0.13	0.18	1.0	J	TH
Thorium 232	TH-232	-0.010	0.038	0.091	1.0	U	TH
Potassium 40	13966-00-2	U		2.7		U	GAM
Cobalt 60	10198-40-0	U		0.099	0.050	U	GAM
Cesium 137	10045-97-3	U		0.089	0.10	U	GAM
Europium 152	14683-23-9	U		0.22	0.10	U	GAM
Europium 154	15585-10-1	U		0.27	0.10	U	GAM
Europium 155	14391-16-3	U		0.17	0.10	U	GAM
Radium 226	13982-63-3	U		0.18	0.10	U	GAM
Radium 228	15262-20-1	U		0.41	0.20	U	GAM
Thorium 228	14274-82-9	U		0.17		U	GAM
Thorium 232	TH-232	U		0.41		U	GAM
Americium 241	14596-10-2	U		0.067		U	GAM
Uranium 238	U-238	U		9.4		U	GAM
Uranium 235	15117-96-1	U		0.27		U	GAM

200 Area Source Chara. - 200-CW-1 OU

QC-BLANK #32880

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0675

N912055-03 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7315 Client/Case no Hanford SDG H0675

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

Lab sample id N912055-03 Client sample id Lab Control Sample

Dept sample id 7309-003 Material/Matrix SOLID

SAF No B99-078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Uranium (ug/g)	34.2	4.2	0.021	1.0		U_T	33.0	1.3	104	76-124	80-120
Plutonium 238	10.3	0.67	0.027	1.0		PU	11.3	0.45	91	87-113	80-120
Plutonium 239/240	10.8	0.70	0.046	1.0		PU	11.9	0.48	91	87-113	80-120
Americium 241	9.38	0.58	0.084	1.0		AM	9.58	0.38	98	87-113	80-120
Total Strontium	11.4	0.58	0.28	1.0		SR	11.2	0.45	102	82-118	
Thorium 228	0.036	0.12	0.21	1.0	U	TH					
Thorium 230	19.8	1.3	0.21	1.0		TH	20.4	0.82	97	87-113	
Thorium 232	0.036	0.071	0.13	1.0	U	TH					
Cobalt 60	1.33	0.20	0.096	0.050		GAM	1.43	0.057	93	70-130	80-120
Cesium 137	1.43	0.19	0.13	0.10		GAM	1.50	0.060	95	71-129	80-120

200 Area Source Chara. - 200-CW-1 OU

QC-LCS #32879

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0675

N912088-06 B0WN23

DUPLICATE

SDG	7315	Client/Case no	Hanford SDG H0675
Contact	Melissa C. Mannion	Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL	
Lab sample id	N912088-06	Lab sample id	N912088-01
Dept sample id	7315-006	Dept sample id	7315-001
		Received	12/07/99
		% solids	96.9
Client sample id	B0WN23		
Location/Matrix	B8757 SOLID		
Collected	12/03/99 08:40		
Custody/SAF No	B99-078-150 B99-078		

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Total Uranium (ug/g)	0.661	0.078	0.002	1.0	J	U_T	0.654	0.077	0.002	J	1	31
Plutonium 238	-0.004	0.022	0.044	1.0	U	PU	0.009	0.018	0.037	U	-	
Plutonium 239/240	0.018	0.022	0.028	1.0	U	PU	0.006	0.012	0.023	U	-	
Americium 241	0.037	0.045	0.057	1.0	U	AM	0.007	0.026	0.051	U	-	
Total Strontium	10.5	0.42	0.22	1.0		SR	11.2	0.45	0.24		6	23
Thorium 228	0.655	0.18	0.20	1.0	J	TH	0.505	0.15	0.18	J	26	62
Thorium 230	0.531	0.16	0.16	1.0	JB	TH	0.530	0.15	0.14	JB	0	63
Thorium 232	0.407	0.12	0.068	1.0	J	TH	0.504	0.14	0.064	J	21	62
Potassium 40	11.1	1.8	1.1			GAM	10.5	1.6	0.58		6	46
Cobalt 60	U		0.11	0.050	U	GAM	U		0.10	U	-	
Cesium 137	U		0.090	0.10	U	GAM	U		0.10	U	-	
Europium 152	U		0.21	0.10	U	GAM	U		0.21	U	-	
Europium 154	U		0.30	0.10	U	GAM	U		0.27	U	-	
Europium 155	U		0.21	0.10	U	GAM	U		0.23	U	-	
Radium 226	0.435	0.15	0.16	0.10		GAM	0.370	0.18	0.20		16	93
Radium 228	0.576	0.33	0.36	0.20		GAM	U		0.71	U	21	185
Thorium 228	0.522	0.12	0.15			GAM	0.330	0.10	0.13		45	64
Thorium 232	0.576	0.33	0.36			GAM	U		0.71	U	21	185
Americium 241	U		0.22		U	GAM	U		0.24	U	-	
Uranium 238	U		11		U	GAM	U		10	U	-	
Uranium 235	U		0.33		U	GAM	U		0.36	U	-	

200 Area Source Chara. - 200-CW-1 OU

QC-DUP#1 33143

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0675

N912088-01 B0WN23

DATA SHEET

SDG	7315	Client/Case no	Hanford	SDG H0675	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	N912088-01	Client sample id	B0WN23		
Dept sample id	7315-001	Location/Matrix	B8757	SOLID	
Received	12/07/99	Collected	12/03/99 08:40		
% solids	96.9	Custody/SAF No	B99-078-150	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.654	0.077	0.002	1.0	J	U_T
Plutonium 238	13981-16-3	0.009	0.018	0.037	1.0	U	PU
Plutonium 239/240	PU-239/240	0.006	0.012	0.023	1.0	U	PU
Americium 241	14596-10-2	0.007	0.026	0.051	1.0	U	AM
Total Strontium	SR-RAD	11.2	0.45	0.24	1.0		SR
Thorium 228	14274-82-9	0.505	0.15	0.18	1.0	J	TH
Thorium 230	14269-63-7	0.530	0.15	0.14	1.0	JB	TH
Thorium 232	TH-232	0.504	0.14	0.064	1.0	J	TH
Potassium 40	13966-00-2	10.5	1.6	0.58			GAM
Cobalt 60	10198-40-0	U		0.10	0.050	U	GAM
Cesium 137	10045-97-3	U		0.10	0.10	U	GAM
Europium 152	14683-23-9	U		0.21	0.10	U	GAM
Europium 154	15585-10-1	U		0.27	0.10	U	GAM
Europium 155	14391-16-3	U		0.23	0.10	U	GAM
Radium 226	13982-63-3	0.370	0.18	0.20	0.10		GAM
Radium 228	15262-20-1	U		0.71	0.20	U	GAM
Thorium 228	14274-82-9	0.330	0.10	0.13			GAM
Thorium 232	TH-232	U		0.71		U	GAM
Americium 241	14596-10-2	U		0.24		U	GAM
Uranium 238	U-238	U		10		U	GAM
Uranium 235	15117-96-1	U		0.36		U	GAM

200 Area Source Chara. - 200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0675

N912088-02 B0WN24

DATA SHEET

SDG	7315	Client/Case no	Hanford SDG H0675
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N912088-02	Client sample id	B0WN24
Dept sample id	7315-002	Location/Matrix	B8757 SOLID
Received	12/07/99	Collected	12/03/99 12:35
% solids	79.1	Custody/SAF No	B99-078-150 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	1.42	0.19	0.19	1.0		SR

200 Area Source Chara. - 200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0675

N912088-03 B0WN25

DATA SHEET

SDG	7315	Client/Case no	Hanford SDG H0675
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N912088-03	Client sample id	B0WN25
Dept sample id	7315-003	Location/Matrix	B8757 SOLID
Received	12/07/99	Collected	12/03/99 09:30
% solids	96.8	Custody/SAF No	B99-078-150 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	8.44	0.46	0.24	1.0		SR

200 Area Source Chara. - 200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0675

Test AM	Matrix SOLID
SDG 7315	
Contact Melissa C. Mannion	

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0675	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6909-146						
B0WN23	N912088-01			7315-001	U	
BLK (QC ID=32880)	N912055-04			7309-004	U	
LCS (QC ID=32879)	N912055-03			7309-003	ok	
Duplicate (N912088-01)	N912088-06			7315-006	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200 Area Source Chara. - 200-CW-1 OU						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6909-146	2σ prep error 5.0 %			Reference Lab Notebook 6909 pg. 146												
B0WN23	N912088-01			0.051	0.500			47		728			38	01/05/00	01/10	SS-003
BLK (QC ID=32880)	N912055-04			0.10	0.500			60		711				01/08/00	01/10	SS-036
LCS (QC ID=32879)	N912055-03			0.084	0.500			76		1063				01/08/00	01/08	SS-040
Duplicate (N912088-01) (QC ID=33143)	N912088-06			0.057	0.500			44		728			38	01/05/00	01/10	SS-005
Nominal values and limits from method				1.0	0.500			20-105		700	100		180			

PROCEDURES	REFERENCE	AM/CMPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-960	Americium-Curium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD				
FOR 4 SAMPLES	MDA	0.073	±	0.046
	YIELD	57	±	29

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0675

Test PU Matrix SOLID
SDG 7315
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0675

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6909-146								
B0WN23	N912088-01			7315-001	U		U	
BLK (QC ID=32880)	N912055-04			7309-004	U		U	
LCS (QC ID=32879)	N912055-03			7309-003	ok		ok	
Duplicate (N912088-01)	N912088-06			7315-006	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	
200 Area Source Chara. - 200-CW-1 OU								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6909-146 2σ prep error 5.0 % Reference Lab Notebook 6909 pg. 146																
B0WN23	N912088-01			0.037	0.500			86		870			35	01/07/00	01/07	SS-061
BLK (QC ID=32880)	N912055-04			0.051	0.500			53		896				01/07/00	01/07	SS-016
LCS (QC ID=32879)	N912055-03			0.046	0.500			95		853				01/07/00	01/07	SS-058
Duplicate (N912088-01) (QC ID=33143)	N912088-06			0.044	0.500			73		870			35	01/06/00	01/07	SS-062
Nominal values and limits from method				1.0	0.500			20-105		10	100		180			

PROCEDURES	REFERENCE	PUPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	0.044	±	0.012
FOR 4 SAMPLES	YIELD	77	±	36

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0675

Test TH	Matrix SOLID
SDG 7315	
Contact Melissa C. Mannion	

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0675	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6909-146							
B0WN23	N912088-01			7315-001	0.505 J	0.530 J	0.504 J
BLK (QC ID=32880)	N912055-04			7309-004	U	0.209 J	U
LCS (QC ID=32879)	N912055-03			7309-003	No data U	ok	No data U
Duplicate (N912088-01)	N912088-06			7315-006	ok J	ok J	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0
200 Area Source Chara. - 200-CW-1 OU							

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6909-146	2σ prep error 5.0 %				Reference Lab Notebook 6909 pg. 146											
B0WN23	N912088-01			0.18	0.250			87		626			41	01/07/00	01/13	SS-039
BLK (QC ID=32880)	N912055-04			0.18	0.250			81		626				01/14/00	01/14	SS-036
LCS (QC ID=32879)	N912055-03			0.21	0.250			65		626				01/14/00	01/14	SS-035
Duplicate (N912088-01) (QC ID=33143)	N912088-06			0.20	0.250			85		625			41	01/07/00	01/13	SS-040
Nominal values and limits from method				1.0	0.250			20-105		200			180			

PROCEDURES	REFERENCE	THPLATE
	EP-000	Data Entry and Document Preparation, rev 0
	EP-001	Q.C. Preparation, rev 0
	EP-003	Tracing, rev 0
	EP-008	Heavy Elements Electroplating, rev 0
	EP-070	Soil Dissolution, rev 0
	RP-901	Thorium Purification - Small Aliquot, rev 0

AVERAGES ± 2 SD	MDA	0.19	± 0.030
FOR 4 SAMPLES	YIELD	80	± 20

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0675

Test SR Matrix SOLID
SDG 7315
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0675

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 6909-146					
B0WN23	N912088-01			7315-001	11.2
B0WN24	N912088-02			7315-002	1.42
B0WN25	N912088-03			7315-003	8.44
BLK (QC ID=32880)	N912055-04			7309-004	U
LCS (QC ID=32879)	N912055-03			7309-003	ok
Duplicate (N912088-01)	N912088-06			7315-006	ok
Nominal values and limits from method				RDLs (pCi/g)	1.0
200 Area Source Chara. - 200-CW-1 OU					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6909-146	2σ prep error 10.0 % Reference Lab Notebook 6909 pg. 146															
B0WN23	N912088-01			0.24	1.00			66		400			38	01/07/00	01/10	GRB-223
B0WN24	N912088-02			0.19	1.00			70		200			38	01/07/00	01/10	GRB-219
B0WN25	N912088-03			0.24	1.00			64		179			38	01/07/00	01/10	GRB-224
BLK (QC ID=32880)	N912055-04			0.21	1.00			79		400				01/11/00	01/11	GRB-221
LCS (QC ID=32879)	N912055-03			0.28	1.00			81		400				01/11/00	01/11	GRB-220
Duplicate (N912088-01) (QC ID=33143)	N912088-06			0.22	1.00			72		400			38	01/07/00	01/10	GRB-227
Nominal values and limits from method				1.0	1.00					100			180			

PROCEDURES	REFERENCE	SRTOTAL
	RP-500	Strontium - Initial Separation, rev 0
	RP-519	Strontium-89,90 Demounting and Yttrium Purification, rev 0

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.23 ± 0.062
YIELD 72 ± 14

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0675

Test GAM Matrix SOLID	Client Hanford
SDG 7315	Contract TRB-SBB-207925
Contact Melissa C. Mannion	Case no SDG H0675

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6909-146								
B0WN23	N912088-01			7315-001	U		U	
BLK (QC ID=32880)	N912055-04			7309-004	U		U	
LCS (QC ID=32879)	N912055-03			7309-003	ok		ok	
Duplicate (N912088-01)	N912088-06			7315-006	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.10	
200 Area Source Chara. - 200-CW-1 OU								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6909-146 2σ prep error 15.0 % Reference Lab Notebook 6909 pg. 146																
B0WN23	N912088-01			0.27	196					115			20	12/21/99	12/23	JR,03,00
BLK (QC ID=32880)	N912055-04			0.18	171					118				12/21/99	12/23	JR,07,00
LCS (QC ID=32879)	N912055-03			0.096	171					118				12/21/99	12/23	JR,01,00
Duplicate (N912088-01) (QC ID=33143)	N912088-06			0.22	196					128			24	12/21/99	12/27	JR,03,00
Nominal values and limits from method				0.050	171					100			180			

PROCEDURES	REFERENCE	GAMMAHI
	EP-060	Soil Preparation, rev 0
	EP-100	Ge(Li) Preparation for Environmental Samples, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES	MDA	0.19	± 0.15
	YIELD		±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/19/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0675

Test U T	Matrix SOLID
SDG 7315	
Contact Melissa C. Mannion	

METHOD SUMMARY

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0675	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 6909-146					
B0WN23	N912088-01			7315-001	0.654 J
BLK (QC ID=32880)	N912055-04			7309-004	U
LCS (QC ID=32879)	N912055-03			7309-003	ok
Duplicate (N912088-01)	N912088-06			7315-006	ok J
Nominal values and limits from method				RDLs (ug/g)	1.0
200 Area Source Chara. - 200-CW-1 OU					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6909-146	2σ prep error 9.0 %				Reference Lab Notebook 6909 pg. 146											
B0WN23	N912088-01			0.002	0.0500								40	01/12/00	01/12	KPA-001
BLK (QC ID=32880)	N912055-04			0.002	0.0500									01/12/00	01/12	KPA-001
LCS (QC ID=32879)	N912055-03			0.021	0.0500									01/12/00	01/12	KPA-001
Duplicate (N912088-01) (QC ID=33143)	N912088-06			0.002	0.0500								40	01/12/00	01/12	KPA-001
Nominal values and limits from method				1.0	0.0500								180			

PROCEDURES	REFERENCE	UKPA
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-044	Preparation of Total Uranium by Kinetic Phosphorimetry, rev 1
	EP-928	Total Uranium by Kinetic Phosphorimetry, rev 0

AVERAGES ± 2 SD	MDA 0.007	± 0.019
FOR 4 SAMPLES	YIELD	±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/19/00

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-150	Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: ~~200-B pond~~ D8757	SAF No.: B99-078	
Ice Chest No.: ERC96-087	Field Logbook No.: EL-1511-1	COA: B20CW1671C	Method of Shipment: Fed Ex
Shipped To: TMA/~~BECRA~~	Offsite Property No.: A000058	Bill of Lading/Air Bill No.: 4235795532535	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	None	None								
Type of Container	aG	aG	aG								
No. of Container(s)	1	1	1								
Volume	250mL	250mL	250 ml								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item 3 below								

Sample No.	Matrix *	Sample Date	Sample Time										
✓ BOWN23	Soil	12-3-99	0840		X				347 cpm				
✓ BOWN25	S	12-3-99	0930			X			429 cpm				
✓ BOWN24	S	12-3-99	1235			X			171 cpm				

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: Doug Bowers	Received By: Rob H / A	12-3-99/1445
Relinquished By: Rob H / A	Received By: R. Nielson	12-6-99 0915
Relinquished By: R. Nielson	Received By: Fed Ex	12-6-99
Relinquished By: FedEx	Received By: M. Goldenberg	12-7-99 10:00
Relinquished By:	Received By:	
Relinquished By:	Received By:	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Copper, Nickel, Thallium, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 – Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241
(3) Sr only (total) M.M. 12/10/99 verified by phone w/ J. Konn

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 Inc Date/Time received 12-7-99 10:00

CoC No. B99-078-150

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

INSPECTION

1. Custody seals on shipping container intact? Yes [ ] No [✓] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [ ] No [✓] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 3
7. Number of containers per sample: 1 (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 M. Goldenberg Date: 12-7-99 Time: 10:00

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
LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9912L944
SDG# : H0675
SAF# : B99-078

W.O. # : 10985-001-001-9999-00
Date Received: 12-07-99

INORGANIC CASE NARRATIVE

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

2. The sample was 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.

4. The cooler temperature was recorded on the chain-of-custody.

5. The method blank for Chromium VI was within method criteria.

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

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

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.

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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

JAN 2000
RECEIVED
Data
Log In

1-24-00
Date

njp\it2-944

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.

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

Recra LabNet Philadelphia

WET CHEMISTRY
METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

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

Other: **Method:**

Other: **Method**

Recra LabNet Philadelphia
METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/21/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9912L944

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	BOWN23	% Solids	96.8	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/21/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9912L944

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LVI088-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/21/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9912L944

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WN23	Soluble Chromium VI	4.3	0.41u	4.1	100	1.0
		Insoluble Chromium VI	1190	0.41u	1180	101.1	100
BLANK10	99LVI088-MB1	Soluble Chromium VI	4.0	0.40u	4.0	99.8	1.0
		Insoluble Chromium VI	1090	0.40u	1160	93.8	100

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/21/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9912L944

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	BOWN23	% Solids	96.8	96.7	0.072	1.0
		Chromium VI	0.41u	0.41u	NC	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 12/07/99 RFW LOT # :9912L944

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WN23						
% SOLIDS	001	S	99L%S163	12/03/99	12/13/99	12/14/99
% SOLIDS	001 REP	S	99L%S163	12/03/99	12/13/99	12/14/99
CHROMIUM VI	001	S	99LVI088	12/03/99	12/13/99	12/14/99
CHROMIUM VI	001 REP	S	99LVI088	12/03/99	12/13/99	12/14/99
CHROMIUM VI	001 MS	S	99LVI088	12/03/99	12/13/99	12/14/99
CHROMIUM VI	001 MSD	S	99LVI088	12/03/99	12/13/99	12/14/99

LAB QC:

CHROMIUM VI	MB1	S	99LVI088	N/A	12/13/99	12/14/99
CHROMIUM VI	MB1 BS	S	99LVI088	N/A	12/13/99	12/14/99
CHROMIUM VI	MB1 BSD	S	99LVI088	N/A	12/13/99	12/14/99

RECRA LabNet Use Only

99121944

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #: ~~Yes~~ 12/7/99
RECRA Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 12/7/99 Date Due: 1/6/00
Account #:

Refrigerator #								3	3								
#/Type Container	Liquid								1								
	Solid							←	1g								
Volume	Liquid																
	Solid							←	250								
Preservatives																	
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN							
		RECRA LabNet Use Only															
								ICP6	Met①								

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected														
S - Soil	001	BOWN23	X	X	S	12/3/99	0840							✓	✓						
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:

COMPOSITE WASTE

DATE/REVISIONS:

Met ① = As, Ba, Cd, Cr, Pb, Se, Ag, Sb,
2. Be, Cu, Ni, Al, V, Zn, HG
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. 4.7 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
* 423579532524

Relinquished by	Received by	Date	Time
FedEx	Johnson	12/7/99	1000

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			
Collector Bowers/Trice	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ	Price Code 8N Air Quality ☐
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location ~~200-B-pond~~ B8757		SAF No. B99-078	Data Turnaround 45 Days
Ice Chest No. ERC 99-003	Field Logbook No. EL-1511-1	COA B20CW1671C	Method of Shipment Fed Ex	4.7
Shipped To TMA/RECRA	Offsite Property No. A000057		Bill of Lading/Air Bill No. 4235 1953 2524	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	None									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	250mL	250mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.									

Sample No.	Matrix *	Sample Date	Sample Time										
BOWN23	Soil	12-3-99	0840	X				3-47cm					

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Date/Time Doug Bowers 12-3-99/1440	Received By A.P. / A Date/Time 12-3-99/1440		
Relinquished By Date/Time Ref H/A 12/6/99 0915	Received By Date/Time 0915		
Relinquished By Date/Time (100)	Received By Date/Time Fed ex		
Relinquished By Date/Time Fed ex	Received By Date/Time Jameson 12/7/99 1000		
Relinquished By Date/Time	Received By Date/Time		
Relinquished By Date/Time	Received By Date/Time		

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Copper, Nickel, Thallium, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

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

JAN 2000
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9912L944
SDG/SAF# : H0675/B99-078

W.O.# : 10985-001-001-9999-00
Date Received: 12-07-99

METALS CASE NARRATIVE

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

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

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

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

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (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) 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) recovery for 1 analyte was outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
BOWN23	Antimony	100	98.2

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 14 pages.

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.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

1-24-00
Date

mld/m12-944

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9912L944

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A __3010A __3015 __3020A ✓3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	✓6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	✓6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	✓6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	__7470A [3]	✓7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	✓6010B	__7841 [5]	__200.7	__279.2__200.9			__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	✓6010B		__200.7				__99
Zinc	✓6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

L-WI-033/M-11/99

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/24/00

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9912L944

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WN23	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	1.9	MG/KG	0.24	1.0
		Barium, Total	65.5	MG/KG	0.02	1.0
		Beryllium, Total	0.21	MG/KG	0.03	1.0
		Cadmium, Total	0.21	MG/KG	0.04	1.0
		Chromium, Total	9.9	MG/KG	0.06	1.0
		Copper, Total	13.9	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.0	MG/KG	0.09	1.0
		Lead, Total	2.4	MG/KG	0.19	1.0
		Antimony, Total	0.19 u	MG/KG	0.19	1.0
		Selenium, Total	1.2	MG/KG	0.37	1.0
		Thallium, Total	0.39	MG/KG	0.39	1.0
		Vanadium, Total	42.0	MG/KG	0.05	1.0
		Zinc, Total	40.0	MG/KG	0.05	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/24/00

CLIENT: TNU-HANFORD B99-078 *RECRA LOT #: 9912L944*

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0876-MB1	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	0.27 u	MG/KG	0.27	1.0
		Barium, Total	0.02 u	MG/KG	0.02	1.0
		Beryllium, Total	0.03 u	MG/KG	0.03	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.07 u	MG/KG	0.07	1.0
		Copper, Total	0.05 u	MG/KG	0.05	1.0
		Nickel, Total	0.10 u	MG/KG	0.10	1.0
		Lead, Total	0.21 u	MG/KG	0.21	1.0
		Antimony, Total	0.21 u	MG/KG	0.21	1.0
		Selenium, Total	0.41 u	MG/KG	0.41	1.0
		Thallium, Total	0.43 u	MG/KG	0.43	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.05 u	MG/KG	0.05	1.0
BLANK1	99C0396-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 01/24/00

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9912L944

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	BOWN23	Silver, Total	3.0	0.07u	3.3	90.9	1.0
		Arsenic, Total	116	1.9	130	87.5	1.0
		Barium, Total	185	65.5	130	92.0	1.0
		Beryllium, Total	3.0	0.21	3.3	84.4	1.0
		Cadmium, Total	3.2	0.21	3.3	90.7	1.0
		Chromium, Total	21.6	9.9	13.0	90.0	1.0
		Copper, Total	28.3	13.9	16.3	88.3	1.0
		Mercury, Total	0.16	0.02u	0.17	95.2	1.0
		Nickel, Total	38.1	8.0	32.5	92.6	1.0
		Lead, Total	31.6	2.4	32.5	89.8	1.0
		Antimony, Total	17.9	0.19u	32.5	55.1	1.0
		Selenium, Total	110	1.2	130	83.5	1.0
		Thallium, Total	119	0.39	130	91.0	1.0
		Vanadium, Total	70.3	42.0	32.5	87.1	1.0
		Zinc, Total	68.8	40.0	32.5	88.6	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 01/24/00

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9912L944

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WN23	Silver, Total	0.07u	0.08u	NC	1.0
		Arsenic, Total	1.9	2.1	10.0	1.0
		Barium, Total	65.5	59.1	10.3	1.0
		Beryllium, Total	0.21	0.22	2.6	1.0
		Cadmium, Total	0.21	0.20	1.5	1.0
		Chromium, Total	9.9	9.8	1.0	1.0
		Copper, Total	13.9	13.3	4.4	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	8.0	8.5	6.1	1.0
		Lead, Total	2.4	3.0	22.2	1.0
		Antimony, Total	0.19u	0.21u	NC	1.0
		Selenium, Total	1.2	1.2	0.00	1.0
		Thallium, Total	0.39	0.42u	NC	1.0
		Vanadium, Total	42.0	41.7	0.72	1.0
		Zinc, Total	40.0	41.6	3.9	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/24/00

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9912L944

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0876-LC1	Silver, LCS	49.3	50.0	MG/KG	98.6
		Arsenic, LCS	945	1000	MG/KG	94.5
		Barium, LCS	491	500	MG/KG	98.2
		Beryllium, LCS	23.5	25.0	MG/KG	94.0
		Cadmium, LCS	24.2	25.0	MG/KG	96.8
		Chromium, LCS	49.8	50.0	MG/KG	99.6
		Copper, LCS	123	125	MG/KG	98.3
		Nickel, LCS	193	200	MG/KG	96.3
		Lead, LCS	241	250	MG/KG	96.5
		Antimony, LCS	288	300	MG/KG	96.0
		Selenium, LCS	918	1000	MG/KG	91.8
		Thallium, LCS	987	1000	MG/KG	98.7
		Vanadium, LCS	255	250	MG/KG	101.9
		Zinc, LCS	95.5	100	MG/KG	95.5
LCS1	99C0396-LC1	Mercury, LCS	0.90	1.0	MG/KG	90.1

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 12/07/99 RFW LOT # :9912L944

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WN23						
SILVER, TOTAL	001	S	99L0876	12/03/99	01/10/00	01/13/00
SILVER, TOTAL	001 REP	S	99L0876	12/03/99	01/10/00	01/13/00
SILVER, TOTAL	001 MS	S	99L0876	12/03/99	01/10/00	01/13/00
ARSENIC, TOTAL	001	S	99L0876	12/03/99	01/10/00	01/13/00
ARSENIC, TOTAL	001 REP	S	99L0876	12/03/99	01/10/00	01/13/00
ARSENIC, TOTAL	001 MS	S	99L0876	12/03/99	01/10/00	01/13/00
BARIUM, TOTAL	001	S	99L0876	12/03/99	01/10/00	01/13/00
BARIUM, TOTAL	001 REP	S	99L0876	12/03/99	01/10/00	01/13/00
BARIUM, TOTAL	001 MS	S	99L0876	12/03/99	01/10/00	01/13/00
BERYLLIUM, TOTAL	001	S	99L0876	12/03/99	01/10/00	01/14/00
BERYLLIUM, TOTAL	001 REP	S	99L0876	12/03/99	01/10/00	01/14/00
BERYLLIUM, TOTAL	001 MS	S	99L0876	12/03/99	01/10/00	01/14/00
CADMIUM, TOTAL	001	S	99L0876	12/03/99	01/10/00	01/13/00
CADMIUM, TOTAL	001 REP	S	99L0876	12/03/99	01/10/00	01/13/00
CADMIUM, TOTAL	001 MS	S	99L0876	12/03/99	01/10/00	01/13/00
CHROMIUM, TOTAL	001	S	99L0876	12/03/99	01/10/00	01/13/00
CHROMIUM, TOTAL	001 REP	S	99L0876	12/03/99	01/10/00	01/13/00
CHROMIUM, TOTAL	001 MS	S	99L0876	12/03/99	01/10/00	01/13/00
COPPER, TOTAL	001	S	99L0876	12/03/99	01/10/00	01/13/00
COPPER, TOTAL	001 REP	S	99L0876	12/03/99	01/10/00	01/13/00
COPPER, TOTAL	001 MS	S	99L0876	12/03/99	01/10/00	01/13/00
MERCURY, TOTAL	001	S	99C0396	12/03/99	12/21/99	12/22/99
MERCURY, TOTAL	001 REP	S	99C0396	12/03/99	12/21/99	12/22/99
MERCURY, TOTAL	001 MS	S	99C0396	12/03/99	12/21/99	12/22/99
NICKEL, TOTAL	001	S	99L0876	12/03/99	01/10/00	01/13/00
NICKEL, TOTAL	001 REP	S	99L0876	12/03/99	01/10/00	01/13/00
NICKEL, TOTAL	001 MS	S	99L0876	12/03/99	01/10/00	01/13/00
LEAD, TOTAL	001	S	99L0876	12/03/99	01/10/00	01/13/00
LEAD, TOTAL	001 REP	S	99L0876	12/03/99	01/10/00	01/13/00
LEAD, TOTAL	001 MS	S	99L0876	12/03/99	01/10/00	01/13/00
ANTIMONY, TOTAL	001	S	99L0876	12/03/99	01/10/00	01/13/00
ANTIMONY, TOTAL	001 REP	S	99L0876	12/03/99	01/10/00	01/13/00
ANTIMONY, TOTAL	001 MS	S	99L0876	12/03/99	01/10/00	01/13/00
SELENIUM, TOTAL	001	S	99L0876	12/03/99	01/10/00	01/13/00
SELENIUM, TOTAL	001 REP	S	99L0876	12/03/99	01/10/00	01/13/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 12/07/99 RFW LOT # :9912L944

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001 MS	S	99L0876	12/03/99	01/10/00	01/13/00
THALLIUM, TOTAL	001	S	99L0876	12/03/99	01/10/00	01/13/00
THALLIUM, TOTAL	001 REP	S	99L0876	12/03/99	01/10/00	01/13/00
THALLIUM, TOTAL	001 MS	S	99L0876	12/03/99	01/10/00	01/13/00
VANADIUM, TOTAL	001	S	99L0876	12/03/99	01/10/00	01/13/00
VANADIUM, TOTAL	001 REP	S	99L0876	12/03/99	01/10/00	01/13/00
VANADIUM, TOTAL	001 MS	S	99L0876	12/03/99	01/10/00	01/13/00
ZINC, TOTAL	001	S	99L0876	12/03/99	01/10/00	01/13/00
ZINC, TOTAL	001 REP	S	99L0876	12/03/99	01/10/00	01/13/00
ZINC, TOTAL	001 MS	S	99L0876	12/03/99	01/10/00	01/13/00

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
SILVER, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
ARSENIC LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
ARSENIC, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
BARIUM LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
BARIUM, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
BERYLLIUM LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/14/00
BERYLLIUM, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/14/00
CADMIUM LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
CADMIUM, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
CHROMIUM LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
CHROMIUM, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
COPPER LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
COPPER, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
MERCURY LABORATORY	LC1 BS	S	99C0396	N/A	12/21/99	12/22/99
MERCURY, TOTAL	MB1	S	99C0396	N/A	12/21/99	12/22/99
NICKEL LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
NICKEL, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
LEAD LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
LEAD, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
ANTIMONY LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
ANTIMONY, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
SELENIUM LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
SELENIUM, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
THALLIUM LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 12/07/99 RFW LOT # :9912L944

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
THALLIUM, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
VANADIUM LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
VANADIUM, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00
ZINC LABORATORY	LC1 BS	S	99L0876	N/A	01/10/00	01/12/00
ZINC, TOTAL	MB1	S	99L0876	N/A	01/10/00	01/12/00

RECRA LabNet Use Only

99121944

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #: ~~12/17/99~~
RECRA Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 12/7/99 Date Due: 1/6/00
Account #:

Refrigerator #								3	3							
#/Type Container	Liquid								1							
	Solid							←	1q							
Volume	Liquid															
	Solid							←	250							
Preservatives																
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb				INORG: Metal	CN						

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						ICP6	Met①							
001	BOWN23	X	X	S	12/3/99	0840							✓	✓							

Special Instructions:

COMPOSITE WASTE

DATE/REVISIONS:
Met ① = As, Ba, Cd, Cr, Pb, Se, Ag, Sb,
2. Be, Cu, Ni, Tl, V, Zn, HG
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered
Airbill # ~~X~~
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. 4.7 °C

Relinquished by	Received by	Date	Time
FedEx	Jonson	12/7/99	1000

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: #423579532524

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		
Collector: Bowers/Trice	Company Contact: Chris Cearlock — Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: ~~200 B pond~~ B8757	SAF No.: B99-078	Air Quality ☐
Ice Chest No.: ERC 99-003	Field Logbook No.: EL-1511-1 — COA: B20CW1671C	Method of Shipment: Fed Ex	4.7
Shipped To: TMA/RECRA	Offsite Property No.: A000057	Bill of Lading/Air Bill No.: 4235 7953 2524	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	None									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	250mL	250mL									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.									

Sample No.	Matrix *	Sample Date	Sample Time										
BOWN23	Soil	12-3-99	0840	X				347cm					

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By	Date/Time
Relinquished By: Doug Bowers	12-3-99/1440	Received By: R.P. 1A	12-3-99/1440
Relinquished By: Ref 1A	12/6/99 0915	Received By: [illegible]	0915
Relinquished By: [illegible]	12/6/99 1100	Received By: Fed Ex	
Relinquished By: Fedex		Received By: Aaron	12/7/99 1000
Relinquished By		Received By	
Relinquished By		Received By	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Copper, Nickel, Thallium, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 – Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

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)