H1042

0054227

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JAN 0 9 2000
EDMC

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1042 was composed of four solid (soil) samples designated under SAF No. B00-029 with a Project Designation of: 100 F Area – Quick Turn.

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 10, and 16, 2000.

OCT 2000
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2.0 ANALYSIS NOTES

2.1 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.2 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.3 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.4 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analyses

The U-238 LCS percent recovery (71%) was below the laboratory protocol limits (80 to 120%) and the 3-sigma limits (76 to 124%), but within BHI's limits of 70 to 130%. No other problems were encountered during the course of the analyses.

2.6 Isotopic Plutonium Analyses

The LCS percent recoveries for Pu-238 (83%) and Pu-239 (87%) were below the 3-sigma limits of 88 to 112% but within the laboratory protocol limits of 80 to 120%. No other problems were encountered during the course of the analyses.

2.7 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.8 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1042

SAMPLE SUMMARY

SDG 7496
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1042

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B108V6	116-F-14 Retention Basin	SOLID		R009126-01	B00-029	B00-029-042	09/20/00 11:08
B108V7	116-F-14 Retention Basin	SOLID		R009126-02	B00-029	B00-029-042	09/20/00 11:16
B108V8	116-F-14 Retention Basin	SOLID		R009126-03	B00-029	B00-029-042	09/20/00 12:40
B108V9	116-F-14 Retention Basin	SOLID		R009126-04	B00-029	B00-029-042	09/20/00 12:49
Method Blank		SOLID		R009126-06	B00-029		
Lab Control Sample		SOLID		R009126-05	B00-029		
Duplicate (R009126-01)	116-F-14 Retention Basin	SOLID		R009126-07	B00-029		09/20/00 11:08

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 10/16/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1042

SDG 7496
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1042

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
7496	B00-029-042	B108V6	SOLID	96.0			09/22/00	2	R009126-01	7496-001
		B108V7	SOLID	93.8			09/22/00	2	R009126-02	7496-002
		B108V8	SOLID	79.6			09/22/00	2	R009126-03	7496-003
		B108V9	SOLID	92.8			09/22/00	2	R009126-04	7496-004
		Method Blank	SOLID						R009126-06	7496-006
		Lab Control Sample	SOLID						R009126-05	7496-005
		Duplicate (R009126-01)	SOLID	96.0			09/22/00	2	R009126-07	7496-007

Lab id TMANC
Protocol Hanford
Version Ver 1.0
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Version 3.06
Report date 10/16/00

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SAMPLE DELIVERY GROUP H1042

SDG 7496
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1042

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	6955-082	5.0	4			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6955-082	5.0	4			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	6955-082	5.0	4			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6955-082	10.0	4			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6955-082	10.0	4			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6955-082	15.0	4			1	1	1/1		
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	6955-082	10.0	4			1	1	1/1		
NI_L	SOLID	Nickel 63 in Soil	6955-082	10.0	4			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 10/16/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1042

WORK SUMMARY

SDG 7496
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1042

CLIENT SAMPLE ID / LOCATION / CUSTODY	MATRIX / SAF No	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B108V6		R009126-01	7496-001	AM		10/06/00	10/16/00	MCM	Americium 241 in Soil
116-F-14 Retention Basin	SOLID	09/20/00	7496-001	C		09/27/00	10/10/00	MCM	Carbon 14 in Soil
B00-029-042	B00-029	09/22/00	7496-001	GAM		10/03/00	10/10/00	MCM	Gamma Scan
			7496-001	NI_L		09/30/00	10/10/00	MCM	Nickel 63 in Soil
			7496-001	PU		10/06/00	10/16/00	MCM	Plutonium, Isotopic in Solids
			7496-001	SR		09/29/00	10/10/00	MCM	Total Strontium in Soil
			7496-001	TC		10/03/00	10/10/00	MCM	Technetium 99 in Soil
			7496-001	U		10/04/00	10/10/00	MCM	Uranium, Isotopic in Soil
B108V7		R009126-02	7496-002	AM		10/06/00	10/16/00	MCM	Americium 241 in Soil
116-F-14 Retention Basin	SOLID	09/20/00	7496-002	C		09/27/00	10/10/00	MCM	Carbon 14 in Soil
B00-029-042	B00-029	09/22/00	7496-002	GAM		09/29/00	10/10/00	MCM	Gamma Scan
			7496-002	NI_L		10/01/00	10/10/00	MCM	Nickel 63 in Soil
			7496-002	PU		10/06/00	10/16/00	MCM	Plutonium, Isotopic in Solids
			7496-002	SR		09/29/00	10/10/00	MCM	Total Strontium in Soil
			7496-002	TC		10/05/00	10/10/00	MCM	Technetium 99 in Soil
			7496-002	U		10/04/00	10/10/00	MCM	Uranium, Isotopic in Soil
B108V8		R009126-03	7496-003	AM		10/10/00	10/16/00	MCM	Americium 241 in Soil
116-F-14 Retention Basin	SOLID	09/20/00	7496-003	C		09/28/00	10/10/00	MCM	Carbon 14 in Soil
B00-029-042	B00-029	09/22/00	7496-003	GAM		10/03/00	10/10/00	MCM	Gamma Scan
			7496-003	NI_L		10/01/00	10/10/00	MCM	Nickel 63 in Soil
			7496-003	PU		10/06/00	10/16/00	MCM	Plutonium, Isotopic in Solids
			7496-003	SR		09/29/00	10/10/00	MCM	Total Strontium in Soil
			7496-003	TC		10/06/00	10/10/00	MCM	Technetium 99 in Soil
			7496-003	U		10/04/00	10/10/00	MCM	Uranium, Isotopic in Soil
B108V9		R009126-04	7496-004	AM		10/06/00	10/16/00	MCM	Americium 241 in Soil
116-F-14 Retention Basin	SOLID	09/20/00	7496-004	C		09/28/00	10/10/00	MCM	Carbon 14 in Soil
B00-029-042	B00-029	09/22/00	7496-004	GAM		09/29/00	10/10/00	MCM	Gamma Scan
			7496-004	NI_L		10/01/00	10/10/00	MCM	Nickel 63 in Soil
			7496-004	PU		10/06/00	10/16/00	MCM	Plutonium, Isotopic in Solids
			7496-004	SR		09/29/00	10/10/00	MCM	Total Strontium in Soil
			7496-004	TC		10/06/00	10/10/00	MCM	Technetium 99 in Soil
			7496-004	U		10/04/00	10/10/00	MCM	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 10/16/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1042

SDG 7496
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1042

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Method Blank			R009126-06	7496-006	AM		10/06/00	10/16/00	MCM	Americium 241 in Soil
		SOLID		7496-006	C		09/27/00	10/10/00	MCM	Carbon 14 in Soil
	B00-029			7496-006	GAM		09/28/00	10/10/00	MCM	Gamma Scan
				7496-006	NI_L		10/01/00	10/10/00	MCM	Nickel 63 in Soil
				7496-006	PU		10/11/00	10/16/00	MCM	Plutonium, Isotopic in Solids
				7496-006	SR		09/29/00	10/10/00	MCM	Total Strontium in Soil
				7496-006	TC		10/04/00	10/10/00	MCM	Technetium 99 in Soil
				7496-006	U		10/03/00	10/10/00	MCM	Uranium, Isotopic in Soil
Lab Control Sample			R009126-05	7496-005	AM		10/10/00	10/16/00	MCM	Americium 241 in Soil
		SOLID		7496-005	C		09/28/00	10/10/00	MCM	Carbon 14 in Soil
	B00-029			7496-005	GAM		09/28/00	10/10/00	MCM	Gamma Scan
				7496-005	NI_L		10/01/00	10/10/00	MCM	Nickel 63 in Soil
				7496-005	PU		10/06/00	10/16/00	MCM	Plutonium, Isotopic in Solids
				7496-005	SR		09/29/00	10/10/00	MCM	Total Strontium in Soil
				7496-005	TC		10/03/00	10/10/00	MCM	Technetium 99 in Soil
				7496-005	U		10/04/00	10/10/00	MCM	Uranium, Isotopic in Soil
Duplicate (R009126-01)			R009126-07	7496-007	AM		10/06/00	10/16/00	MCM	Americium 241 in Soil
116-F-14 Retention Basin		SOLID	09/20/00	7496-007	C		09/27/00	10/10/00	MCM	Carbon 14 in Soil
	B00-029		09/22/00	7496-007	GAM		10/06/00	10/10/00	MCM	Gamma Scan
				7496-007	NI_L		10/01/00	10/10/00	MCM	Nickel 63 in Soil
				7496-007	PU		10/07/00	10/16/00	MCM	Plutonium, Isotopic in Solids
				7496-007	SR		09/29/00	10/10/00	MCM	Total Strontium in Soil
				7496-007	TC		10/03/00	10/10/00	MCM	Technetium 99 in Soil
				7496-007	U		10/04/00	10/10/00	MCM	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 10/16/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1042

SDG 7496
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRC-SBB-207925
Case no SDG H1042

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B00-029	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	4			1	1	1	7
C	B00-029	Carbon 14 in Soil	C14_COX_LSC	4			1	1	1	7
GAM	B00-029	Gamma Scan	GAMMA_GS	4			1	1	1	7
NI_L	B00-029	Nickel 63 in Soil	NI63_LSC	4			1	1	1	7
PU	B00-029	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	4			1	1	1	7
SR	B00-029	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	4			1	1	1	7
TC	B00-029	Technetium 99 in Soil	TC99_TR_SEP_LSC	4			1	1	1	7
U	B00-029	Uranium, Isotopic in Soil	UISO_PLATE_AEA	4			1	1	1	7
TOTALS				32			8	8	8	56

Lab id TMANC
Protocol Hanford
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Form DVD-CWS
Version 3.06
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TMA / RICHMOND
SAMPLE DELIVERY GROUP H1042

R009126-06 Method Blank

METHOD BLANK

SDG	7496	Client/Case no	Hanford SDG H1042
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R009126-06	Client sample id	Method Blank
Dept sample id	7496-006	Material/Matrix	SOLID
		SAF No	B00-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	-2.11	2.4	4.1	50	U	C
Nickel 63	13981-37-8	-0.821	1.1	1.9	30	U	NI_L
Total Strontium	SR-RAD	0.032	0.12	0.17	1.0	U	SR
Technetium 99	14133-76-7	0.451	0.26	0.77	20	U	TC
Uranium 233	U-233/234	0.052	0.10	0.20	1.0	U	U
Uranium 235	15117-96-1	0.063	0.13	0.24	1.0	U	U
Uranium 238	U-238	0.026	0.052	0.20	1.0	U	U
Plutonium 238	13981-16-3	0.018	0.061	0.11	1.0	U	PU
Plutonium 239/240	PU-239/240	0.025	0.025	0.047	1.0	U	PU
Americium 241	14596-10-2	-0.016	0.019	0.045	1.0	U	AM
Potassium 40	13966-00-2	U		0.59		U	GAM
Cobalt 60	10198-40-0	U		0.039	0.050	U	GAM
Cesium 137	10045-97-3	U		0.033	0.10	U	GAM
Radium 226	13982-63-3	U		0.066	0.10	U	GAM
Radium 228	15262-20-1	U		0.15	0.20	U	GAM
Europium 152	14683-23-9	U		0.095	0.10	U	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Europium 155	14391-16-3	U		0.097	0.10	U	GAM
Thorium 228	14274-82-9	U		0.050		U	GAM
Thorium 232	TH-232	U		0.15		U	GAM
Uranium 235	15117-96-1	U		0.16		U	GAM
Uranium 238	U-238	U		4.0		U	GAM
Americium 241	14596-10-2	U		0.16		U	GAM

100 F Area - Quick Turn

QC-BLANK #35972

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/16/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1042

R009126-05

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7496

Contact Melissa C. Mannion

Client/Case no Hanford SDG H1042

Case no TRC-SBB-207925

Lab sample id R009126-05

Dept sample id 7496-005

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B00-029

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
Carbon 14	10800	220	27	50		C	11300	450	96	84-116	80-120
Nickel 63	129	3.4	1.9	30		NI_L	133	5.3	97	84-116	80-120
Total Strontium	11.9	0.58	0.21	1.0		SR	11.1	0.44	107	81-119	80-120
Technetium 99	58.9	1.9	0.81	20		TC	54.6	2.2	108	82-118	80-120
Uranium 233	9.71	2.0	0.91	1.0		U	9.28	0.37	105	66-134	80-120
Uranium 235	6.49	1.6	0.44	1.0		U	7.54	0.30	86	67-133	80-120
Uranium 238	7.42	1.6	0.88	1.0		U	10.5	0.42	71	76-124	80-120
Plutonium 238	9.30	0.58	0.028	1.0		PU	11.2	0.45	83	88-112	80-120
Plutonium 239/240	10.3	0.64	0.025	1.0		PU	11.9	0.48	87	88-112	80-120
Americium 241	8.31	0.65	0.078	1.0		AM	9.56	0.38	87	87-113	80-120
Cobalt 60	1.55	0.19	0.10	0.050		GAM	1.52	0.061	102	70-130	80-120
Cesium 137	1.68	0.16	0.13	0.10		GAM	1.66	0.066	101	72-128	80-120

100 F Area - Quick Turn

QC-LCS #35971

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 10/16/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1042

R009126-07 B108V6

DUPLICATE

SDG 7496		Client/Case no Hanford	SDG H1042
Contact Melissa C. Mannion		Case no TRC-SBB-207925	
DUPLICATE	*ORIGINAL*		
Lab sample id R009126-07	Lab sample id R009126-01	Client sample id B108V6	
Dept sample id 7496-007	Dept sample id 7496-001	Location/Matrix 116-F-14 Retention Basin	SOLID
	Received 09/22/00	*Collected* 09/20/00 11:08	
% solids 96.0	% solids 96.0	Custody/SAF No B00-029-042	B00-029

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 TOT	PROT LIMIT
Carbon 14	15.6	2.9	4.1	50	J	C	15.8	2.8	4.1	J	1	44	
Nickel 63	621	7.7	2.2	30		NI_L	637	7.6	2.1		3	21	
Total Strontium	8.89	0.43	0.20	1.0		SR	8.83	0.39	0.16		1	23	
Technetium 99	0.253	0.33	0.86	20	U	TC	0.528	0.20	0.68	U	-		
Uranium 233	0.661	0.23	0.14	1.0	J	U	0.779	0.22	0.11	J	16	67	
Uranium 235	0.022	0.045	0.17	1.0	U	U	0.053	0.071	0.14	U	-		
Uranium 238	0.588	0.23	0.14	1.0	J	U	0.647	0.21	0.11	J	10	76	
Plutonium 238	0.099	0.040	0.032	1.0	J	PU	0.113	0.042	0.040	J	13	83	
Plutonium 239/240	4.09	0.34	0.025	1.0		PU	4.30	0.33	0.028		5	20	
Americium 241	0.878	0.12	0.046	1.0	J	AM	1.11	0.13	0.035		23	29	
Potassium 40	59.4	2.6	1.8			GAM	58.3	3.0	2.1		2	33	
Cobalt 60	22.2	0.42	0.34	0.050		GAM	21.9	0.48	0.38		1	32	
Cesium 137	17.7	0.73	0.80	0.10		GAM	17.4	0.76	0.81		2	33	
Radium 226	U		1.0	0.10	U	GAM	U		1.0	U	-		
Radium 228	U		2.6	0.20	U	GAM	U		2.5	U	-		
Europium 152	908	2.4	1.8	0.10		GAM	908	2.4	1.8		0	32	
Europium 154	90.9	1.8	1.6	0.10		GAM	88.8	1.9	1.6		2	32	
Europium 155	U		3.1	0.10	U	GAM	U		3.3	U	-		
Thorium 228	U		0.64		U	GAM	U		0.63	U	-		
Thorium 232	U		2.6		U	GAM	U		2.5	U	-		
Uranium 235	U		1.6		U	GAM	U		1.6	U	-		
Uranium 238	U		88		U	GAM	U		93	U	-		
Americium 241	U		0.53		U	GAM	U		0.53	U	-		

100 F Area - Quick Turn

QC-DUP#1 35973

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 10/16/00

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1042

R009126-01 B108V6

DATA SHEET

SDG	7496	Client/Case no	Hanford SDG H1042
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R009126-01	Client sample id	B108V6
Dept sample id	7496-001	Location/Matrix	116-F-14 Retention Basin SOLID
Received	09/22/00	Collected	09/20/00 11:08
% solids	96.0	Custody/SAF No	B00-029-042 B00-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	15.8	2.8	4.1	50	J	C
Nickel 63	13981-37-8	637	7.6	2.1	30		NI_L
Total Strontium	SR-RAD	8.83	0.39	0.16	1.0		SR
Technetium 99	14133-76-7	0.528	0.20	0.68	20	U	TC
Uranium 233	U-233/234	0.779	0.22	0.11	1.0	J	U
Uranium 235	15117-96-1	0.053	0.071	0.14	1.0	U	U
Uranium 238	U-238	0.647	0.21	0.11	1.0	J	U
Plutonium 238	13981-16-3	0.113	0.042	0.040	1.0	J	PU
Plutonium 239/240	PU-239/240	4.30	0.33	0.028	1.0		PU
Americium 241	14596-10-2	1.11	0.13	0.035	1.0		AM
Potassium 40	13966-00-2	58.3	3.0	2.1			GAM
Cobalt 60	10198-40-0	21.9	0.48	0.38	0.050		GAM
Cesium 137	10045-97-3	17.4	0.76	0.81	0.10		GAM
Radium 226	13982-63-3	U		1.0	0.10	U	GAM
Radium 228	15262-20-1	U		2.5	0.20	U	GAM
Europium 152	14683-23-9	908	2.4	1.8	0.10		GAM
Europium 154	15585-10-1	88.8	1.9	1.6	0.10		GAM
Europium 155	14391-16-3	U		3.3	0.10	U	GAM
Thorium 228	14274-82-9	U		0.63		U	GAM
Thorium 232	TH-232	U		2.5		U	GAM
Uranium 235	15117-96-1	U		1.6		U	GAM
Uranium 238	U-238	U		93		U	GAM
Americium 241	14596-10-2	U		0.53		U	GAM

100 F Area - Quick Turn

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/16/00

TMA / RICHMOND

SAMPLE DELIVERY GROUP H1042

R009126-02 B108V7

DATA SHEET

SDG	7496	Client/Case no	Hanford SDG H1042
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R009126-02	Client sample id	B108V7
Dept sample id	7496-002	Location/Matrix	116-F-14 Retention Basin SOLID
Received	09/22/00	Collected	09/20/00 11:16
% solids	93.8	Custody/SAF No	B00-029-042 B00-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	22.6	2.9	3.9	50	J	C
Nickel 63	13981-37-8	1260	13	2.6	30		NI_L
Total Strontium	SR-RAD	6.60	0.33	0.16	1.0		SR
Technetium 99	14133-76-7	0.613	0.25	0.86	20	U	TC
Uranium 233	U-233/234	0.991	0.27	0.14	1.0	J	U
Uranium 235	15117-96-1	0.044	0.044	0.17	1.0	U	U
Uranium 238	U-238	0.757	0.23	0.14	1.0	J	U
Plutonium 238	13981-16-3	0.085	0.037	0.037	1.0	J	PU
Plutonium 239/240	PU-239/240	3.60	0.29	0.023	1.0		PU
Americium 241	14596-10-2	0.767	0.11	0.077	1.0	J	AM
Potassium 40	13966-00-2	U		2.9		U	GAM
Cobalt 60	10198-40-0	34.3	0.48	0.34	0.050		GAM
Cesium 137	10045-97-3	18.4	0.69	0.74	0.10		GAM
Radium 226	13982-63-3	0.635	0.54	0.79	0.10	U	GAM
Radium 228	15262-20-1	U		2.3	0.20	U	GAM
Europium 152	14683-23-9	798	2.2	1.6	0.10		GAM
Europium 154	15585-10-1	79.7	1.6	1.4	0.10		GAM
Europium 155	14391-16-3	U		3.2	0.10	U	GAM
Thorium 228	14274-82-9	U		0.56		U	GAM
Thorium 232	TH-232	U		2.3		U	GAM
Uranium 235	15117-96-1	U		1.4		U	GAM
Uranium 238	U-238	U		88		U	GAM
Americium 241	14596-10-2	U		0.56		U	GAM

100 F Area - Quick Turn

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/16/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1042

R009126-03 B108V8

DATA SHEET

SDG	7496	Client/Case no	Hanford SDG H1042
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R009126-03	Client sample id	B108V8
Dept sample id	7496-003	Location/Matrix	116-F-14 Retention Basin SOLID
Received	09/22/00	Collected	09/20/00 12:40
% solids	79.6	Custody/SAF No	B00-029-042 B00-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	169	5.5	4.3	50		C
Nickel 63	13981-37-8	3470	35	4.3	30		NI_L
Total Strontium	SR-RAD	77.8	2.5	0.36	1.0		SR
Technetium 99	14133-76-7	0.666	0.15	0.46	20	J	TC
Uranium 233	U-233/234	1.38	0.32	0.16	1.0		U
Uranium 235	15117-96-1	0.282	0.16	0.15	1.0	J	U
Uranium 238	U-238	0.731	0.24	0.13	1.0	J	U
Plutonium 238	13981-16-3	1.01	0.51	0.69	1.0		PU
Plutonium 239/240	PU-239/240	40.7	6.1	0.23	1.0		PU
Americium 241	14596-10-2	8.07	0.55	0.059	1.0		AM
Potassium 40	13966-00-2	876	50	33			GAM
Cobalt 60	10198-40-0	328	12	9.3	0.050		GAM
Cesium 137	10045-97-3	169	15	19	0.10		GAM
Radium 226	13982-63-3	U		31	0.10	U	GAM
Radium 228	15262-20-1	U		72	0.20	U	GAM
Europium 152	14683-23-9	18100	80	57	0.10		GAM
Europium 154	15585-10-1	1880	53	44	0.10		GAM
Europium 155	14391-16-3	U		70	0.10	U	GAM
Thorium 228	14274-82-9	U		22		U	GAM
Thorium 232	TH-232	U		72		U	GAM
Uranium 235	15117-96-1	U		54		U	GAM
Uranium 238	U-238	U		2600		U	GAM
Americium 241	14596-10-2	U		16		U	GAM

100 F Area - Quick Turn

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/16/00

TMA/RICHMOND
SAMPLE DELIVERY GROUP H1042

R009126-04 B108V9

DATA SHEET

SDG	7496	Client/Case no	Hanford SDG H1042
Contact	Melissa C. Mannion	Contract	TRC-SBB-207925
Lab sample id	R009126-04	Client sample id	B108V9
Dept sample id	7496-004	Location/Matrix	116-F-14 Retention Basin SOLID
Received	09/22/00	Collected	09/20/00 12:49
% solids	92.8	Custody/SAF No	B00-029-042 B00-029

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	1.96	2.5	4.1	50	U	C
Nickel 63	13981-37-8	2.05	1.4	2.2	30	U	NI_L
Total Strontium	SR-RAD	0.011	0.11	0.16	1.0	U	SR
Technetium 99	14133-76-7	0.672	0.32	0.55	20	J	TC
Uranium 233	U-233/234	0.528	0.20	0.12	1.0	J	U
Uranium 235	15117-96-1	0.058	0.078	0.15	1.0	U	U
Uranium 238	U-238	0.496	0.20	0.12	1.0	J	U
Plutonium 238	13981-16-3	0	0.008	0.029	1.0	U	PU
Plutonium 239/240	PU-239/240	0.008	0.023	0.046	1.0	U	PU
Americium 241	14596-10-2	2.02	0.17	0.030	1.0		AM
Potassium 40	13966-00-2	13.0	0.78	0.21			GAM
Cobalt 60	10198-40-0	0.055	0.026	0.028	0.050		GAM
Cesium 137	10045-97-3	0.101	0.029	0.032	0.10		GAM
Radium 226	13982-63-3	0.566	0.052	0.050	0.10		GAM
Radium 228	15262-20-1	0.727	0.14	0.14	0.20		GAM
Europium 152	14683-23-9	1.20	0.055	0.051	0.10		GAM
Europium 154	15585-10-1	0.119	0.092	0.11	0.10		GAM
Europium 155	14391-16-3	U		0.076	0.10	U	GAM
Thorium 228	14274-82-9	0.836	0.055	0.049			GAM
Thorium 232	TH-232	0.727	0.14	0.14			GAM
Uranium 235	15117-96-1	U		0.085		U	GAM
Uranium 238	U-238	U		3.0		U	GAM
Americium 241	14596-10-2	U		0.033		U	GAM

100 F Area - Quick Turn

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/16/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1042

Test	AM
Matrix	SOLID
SDG	7496
Contact	Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRC-SBB-207925
Contract	SDG H1042

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241
Preparation batch 6955-082					
B108V6	R009126-01			7496-001	1.11
B108V7	R009126-02			7496-002	0.767 J
B108V8	R009126-03			7496-003	8.07
B108V9	R009126-04			7496-004	2.02
BLK (QC ID=35972)	R009126-06			7496-006	U
LCS (QC ID=35971)	R009126-05			7496-005	ok
Duplicate (R009126-01)	R009126-07			7496-007	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0
100 F Area - Quick Turn					

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 6955-082	2σ prep error 5.0 %				Reference Lab Notebook 6955 pg. 082											
B108V6	R009126-01			0.035	0.500			84		959			16	10/05/00	10/06	SS-027
B108V7	R009126-02			0.077	0.500			79		959			16	10/05/00	10/06	SS-029
B108V8	R009126-03			0.059	0.500			65		1065			20	10/05/00	10/10	SS-034
B108V9	R009126-04			0.030	0.500			103		959			16	10/05/00	10/06	SS-032
BLK (QC ID=35972)	R009126-06			0.045	0.500			82		959				10/05/00	10/06	SS-034
LCS (QC ID=35971)	R009126-05			0.078	0.500			53		1065				10/05/00	10/10	SS-035
Duplicate (R009126-01) (QC ID=35973)	R009126-07			0.046	0.500			73		959			16	10/05/00	10/06	SS-035
Nominal values and limits from method				1.0	0.500			20-105		700	100		180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/16/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1042

Test AM	Matrix SOLID
SDG 7496	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1042	

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-060	Soil Preparation, rev 2
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 3
	CP-940	Plutonium Separation and Purification, rev 2
	CP-960	Americium-Curium Purification, Large Aliquot, rev 4
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD	MDA	0.053	±	0.038
FOR 7 SAMPLES	YIELD	77	±	32

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/16/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1042

Test PU Matrix SOLID
SDG 7496
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1042

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 6955-082						
B108V6	R009126-01			7496-001	0.113 J	4.30
B108V7	R009126-02			7496-002	0.085 J	3.60
B108V8	R009126-03			7496-003	1.01	40.7
B108V9	R009126-04			7496-004	U	U
BLK (QC ID=35972)	R009126-06			7496-006	U	U
LCS (QC ID=35971)	R009126-05			7496-005	LOW	LOW
Duplicate (R009126-01)	R009126-07			7496-007	ok J	ok
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0
100 F Area - Quick Turn						

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 6955-082	2σ prep error 5.0 %			Reference Lab Notebook 6955 pg. 082												
B108V6	R009126-01			0.040	0.500			78		959			16	10/03/00	10/06	SS-036
B108V7	R009126-02			0.037	0.500			83		959			16	10/03/00	10/06	SS-038
B108V8	R009126-03			0.69	0.500			94		961			16	10/03/00	10/06	SS-043
B108V9	R009126-04			0.046	0.500			66		961			16	10/03/00	10/06	SS-044
BLK (QC ID=35972)	R009126-06			0.11	0.500			37		1002				10/03/00	10/11	SS-034
LCS (QC ID=35971)	R009126-05			0.028	0.500			99		961				10/03/00	10/06	SS-045
Duplicate (R009126-01) (QC ID=35973)	R009126-07			0.032	0.500			91		741			17	10/03/00	10/07	SS-031
Nominal values and limits from method				1.0	0.500			20-105		50	100		180			

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	CP-060	Soil Preparation, rev 2
	CP-940	Plutonium Separation and Purification, rev 2
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.14 ± 0.49
YIELD 78 ± 43

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/16/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1042

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Test U Matrix SOLID
SDG 7496
Contact Melissa C. Mannion

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1042

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1+3	2σ	2+3	2σ
Preparation batch 6955-082											
B108V6	R009126-01			7496-001	0.779 J	U	0.647 J	120	52	8	11
B108V7	R009126-02			7496-002	0.991 J	U	0.757 J	131	53	6	6
B108V8	R009126-03			7496-003	1.38	0.282 J	0.731 J	189	76	39	25
B108V9	R009126-04			7496-004	0.528 J	U	0.496 J	106	59	12	16
BLK (QC ID=35972)	R009126-06			7496-006	U	U	U				
LCS (QC ID=35971)	R009126-05			7496-005	ok	ok	LOW				
Duplicate (R009126-01)	R009126-07			7496-007	ok J	- U	ok J	112	59	4	8
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
100 F Area - Quick Turn							Averages	132		14	

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 6955-082 2σ prep error 5.0 % Reference Lab Notebook 6955 pg. 082																
B108V6	R009126-01			0.14	0.500			87		174			14	09/28/00	10/04	SS-031
B108V7	R009126-02			0.17	0.500			76		174			14	09/28/00	10/04	SS-032
B108V8	R009126-03			0.16	0.500			80		174			14	09/28/00	10/04	SS-033
B108V9	R009126-04			0.15	0.500			81		174			14	09/28/00	10/04	SS-034
BLK (QC ID=35972)	R009126-06			0.24	0.500			69		162				09/28/00	10/03	SS-023
LCS (QC ID=35971)	R009126-05			0.91	0.500			29		174				09/28/00	10/04	SS-035
Duplicate (R009126-01) (QC ID=35973)	R009126-07			0.17	0.500			69		174			14	09/28/00	10/04	SS-036
Nominal values and limits from method				1.0	0.500			20-105		150	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-911	Uranium in Water and Dissolved Sample by Extraction Chromatography, rev 2
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.28 ± 0.56
YIELD 70 ± 39

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/16/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1042

Test SR Matrix SOLID
SDG 7496
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1042

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 6955-082					
B108V6	R009126-01			7496-001	8.83
B108V7	R009126-02			7496-002	6.60
B108V8	R009126-03			7496-003	77.8
B108V9	R009126-04			7496-004	U
BLK (QC ID=35972)	R009126-06			7496-006	U
LCS (QC ID=35971)	R009126-05			7496-005	ok
Duplicate (R009126-01)	R009126-07			7496-007	ok
Nominal values and limits from method				RDLs (pCi/g)	1.0
100 F Area - Quick Turn					

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 6955-082	2σ prep error 10.0 % Reference Lab Notebook 6955 pg. 082															
B108V6	R009126-01			0.16	1.00			94		174			9	09/27/00	09/29	GRB-218
B108V7	R009126-02			0.16	1.00			98		145			9	09/27/00	09/29	GRB-230
B108V8	R009126-03			0.36	1.00			97		400			9	09/27/00	09/29	GRB-219
B108V9	R009126-04			0.16	1.00			99		400			9	09/27/00	09/29	GRB-220
BLK (QC ID=35972)	R009126-06			0.17	1.00			92		400				09/27/00	09/29	GRB-222
LCS (QC ID=35971)	R009126-05			0.21	1.00			95		400				09/27/00	09/29	GRB-221
Duplicate (R009126-01) (QC ID=35973)	R009126-07			0.20	1.00			99		174			9	09/27/00	09/29	GRB-217
Nominal values and limits from method				1.0	1.00			30-105		100			180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	CP-502	Strontium in Solids, rev 2
	CP-519	Strontium Planchet Demounting and Preparation for 90Y Decontamination, rev 2

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.20 ± 0.14
YIELD 96 ± 5

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/16/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1042

Test TC Matrix SOLID
SDG 7496
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1042

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99
Preparation batch 6955-082					
B108V6	R009126-01			7496-001	U
B108V7	R009126-02			7496-002	U
B108V8	R009126-03			7496-003	0.666 J
B108V9	R009126-04			7496-004	0.672 J
BLK (QC ID=35972)	R009126-06			7496-006	U
LCS (QC ID=35971)	R009126-05			7496-005	ok
Duplicate (R009126-01)	R009126-07			7496-007	- U
Nominal values and limits from method				RDLs (pCi/g)	20
100 F Area - Quick Turn					

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 6955-082	2σ prep error 10.0 % Reference Lab Notebook 6955 pg. 082															
B108V6	R009126-01			0.68	1.03			50		101			13	09/28/00	10/03	GRB-202
B108V7	R009126-02			0.86	1.01			39		101			15	09/28/00	10/05	GRB-230
B108V8	R009126-03			0.46	1.08			65		112			16	09/28/00	10/06	GRB-218
B108V9	R009126-04			0.55	1.01			60		112			16	09/28/00	10/06	GRB-219
BLK (QC ID=35972)	R009126-06			0.77	1.00			46		101				09/28/00	10/04	GRB-203
LCS (QC ID=35971)	R009126-05			0.81	1.00			47		101				09/28/00	10/03	GRB-208
Duplicate (R009126-01) (QC ID=35973)	R009126-07			0.86	1.03			40		101			13	09/28/00	10/03	GRB-223
Nominal values and limits from method				20	1.00			20-105		50			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/16/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1042

Test	TC
Matrix	SOLID
SDG	7496
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRC-SBB-207925
Contract	SDG H1042

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-060	Soil Preparation, rev 2
	CP-021	Preparation of Tc-99m Tracer, rev 0
	CP-002	Q.C. Preparation, rev 2
	CP-003	Tracing, rev 2
	CP-542	Technetium-99 Purification (Soil) by Extraction Chromatography, rev 0
	CP-008	Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD	MDA	0.71	±	0.31
FOR 7 SAMPLES	YIELD	50	±	19

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/16/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1042

Test GAM Matrix SOLID	Client Hanford
SDG 7496	Contract TRC-SBB-207925
Contact Melissa C. Mannion	Contract SDG H1042

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6955-082						
B108V6	R009126-01			7496-001	21.9	17.4
B108V7	R009126-02			7496-002	34.3	18.4
B108V8	R009126-03			7496-003	328	169
B108V9	R009126-04			7496-004	0.055	0.101
BLK (QC ID=35972)	R009126-06			7496-006	U	U
LCS (QC ID=35971)	R009126-05			7496-005	ok	ok
Duplicate (R009126-01)	R009126-07			7496-007	ok	ok
Nominal values and limits from method				RDLs (pCi/g)	0.050	0.10
100 F Area - Quick Turn						

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 6955-082 2σ prep error 15.0 % Reference Lab Notebook 6955 pg. 082																
B108V6	R009126-01			2.7	665					206			13	09/28/00	10/03	02,01,00
B108V7	R009126-02			2.3	625					240			9	09/28/00	09/29	02,01,00
B108V8	R009126-03			92	152					130			13	09/28/00	10/03	JR,01,01
B108V9	R009126-04			0.078	727					200			9	09/28/00	09/29	MB,07,00
BLK (QC ID=35972)	R009126-06			0.067	152					548				09/28/00	09/28	JR,05,00
LCS (QC ID=35971)	R009126-05			0.10	152					209				09/28/00	09/28	01,03,00
Duplicate (R009126-01) (QC ID=35973)	R009126-07			3.1	665					200			16	09/28/00	10/06	01,01,00
Nominal values and limits from method				0.050	152					100			180			

PROCEDURES	REFERENCE	GAMMA_GS
	CP-060	Soil Preparation, rev 2
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 2

AVERAGES ± 2 SD	MDA	14	± 69
FOR 7 SAMPLES	YIELD		±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/16/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1042

Test C	Matrix SOLID
SDG 7496	
Contact Melissa C. Mannion	

METHOD SUMMARY

CARBON 14 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract TRC-SBB-207925	
Contract SDG H1042	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 6955-082						
B108V6	R009126-01			7496-001	15.8	J
B108V7	R009126-02			7496-002	22.6	J
B108V8	R009126-03			7496-003	169	
B108V9	R009126-04			7496-004	U	
BLK (QC ID=35972)	R009126-06			7496-006	U	
LCS (QC ID=35971)	R009126-05			7496-005	ok	
Duplicate (R009126-01)	R009126-07			7496-007	ok	J

Nominal values and limits from method RDLs (pCi/g) 50

100 F Area - Quick Turn

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 6955-082	2σ prep error 10.0 % Reference Lab Notebook 6955 pg. 082															
B108V6	R009126-01			4.1	0.208			100		100			7	09/27/00	09/27	LSC-005
B108V7	R009126-02			3.9	0.216			100		100			7	09/27/00	09/27	LSC-005
B108V8	R009126-03			4.3	0.200			100		100			8	09/27/00	09/28	LSC-005
B108V9	R009126-04			4.1	0.207			100		100			8	09/27/00	09/28	LSC-005
BLK (QC ID=35972)	R009126-06			4.1	0.200			100		100				09/27/00	09/27	LSC-005
LCS (QC ID=35971)	R009126-05			27	0.200			100		3				09/27/00	09/28	LSC-005
Duplicate (R009126-01) (QC ID=35973)	R009126-07			4.1	0.203			100		100			7	09/27/00	09/27	LSC-005
Nominal values and limits from method				50	0.200					25			180			

PROCEDURES	REFERENCE	C14_COX_LSC
	CP-060	Soil Preparation, rev 2
	CP-251	Tritium/Carbon-14 Oxidation, rev 2

AVERAGES ± 2 SD	MDA	7.4	± 17
FOR 7 SAMPLES	YIELD	100	± 0

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/16/00

Test NI L Matrix SOLID
SDG 7496
Contact Melissa C. Mannion

TMA/RICHMOND

SAMPLE DELIVERY GROUP H1042

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRC-SBB-207925
Contract SDG H1042

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63
Preparation batch 6955-082					
B108V6	R009126-01			7496-001	637
B108V7	R009126-02			7496-002	1260
B108V8	R009126-03			7496-003	3470
B108V9	R009126-04			7496-004	U
BLK (QC ID=35972)	R009126-06			7496-006	U
LCS (QC ID=35971)	R009126-05			7496-005	ok
Duplicate (R009126-01)	R009126-07			7496-007	ok
Nominal values and limits from method				RDLs (pCi/g)	30
100 F Area - Quick Turn					

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 6955-082 2σ prep error 10.0 % Reference Lab Notebook 6955 pg. 082																
B108V6	R009126-01			2.1	0.500			85		100			10	09/28/00	09/30	LSC-005
B108V7	R009126-02			2.6	0.500			85		68			11	09/28/00	10/01	LSC-005
B108V8	R009126-03			4.3	0.500			83		24			11	09/28/00	10/01	LSC-005
B108V9	R009126-04			2.2	0.500			83		100			11	09/28/00	10/01	LSC-005
BLK (QC ID=35972)	R009126-06			1.9	0.500			93		100				09/28/00	10/01	LSC-005
LCS (QC ID=35971)	R009126-05			1.9	0.500			93		100				09/28/00	10/01	LSC-005
Duplicate (R009126-01) (QC ID=35973)	R009126-07			2.2	0.500			80		100			11	09/28/00	10/01	LSC-005
Nominal values and limits from method				30	0.500			30-105		10			180			

PROCEDURES	REFERENCE	NI63_LSC
	CP-060	Soil Preparation, rev 2
	RP-431	Nickel-63 Purification, rev 0

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 2.5 ± 1.7
YIELD 86 ± 10

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/16/00

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-029-042	Page 1 of 1

Collector: R. Nielson	Company Contact: Mike Stankovich	Telephone No.: 531-7620	Project Coordinator: TRENT, SJ	Price Code: 2E	Data Turnaround: 15 Day
Project Designation: 100 F Area - Quick Turn	Sampling Location: 116-F-14 Retention Basin H1042 (7496)		SAF No.: B00-029	Air Quality ☐	
Ice Chest No.: ERC 99-023 (1 of 1)	Field Logbook No.: EL-1535	COA: R16F142600	Method of Shipment: Federal Express		
Shipped To: TMA/RECRA Thermo	Offsite Property No.: RSR # 106579		Bill of Lading/Air Bill No.: 4235 7953		

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	None	None	None	None	None			
Type of Container	aG	aG	aG	aG	aG	P	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	60mL	60mL	60mL	60mL	500mL	120 ml			
SAMPLE ANALYSIS	Chromium Hex - 7196	PCBs - 8082	See item (1) in Special Instructions.	Isotopic Uranium; Isotopic Plutonium; Americium-241	Nickel-63; Strontium-89,90 -- Total Sr; Carbon-14; Technetium-99	See item (2) in Special Instructions.	See item (2) in special instructions			TCETD
Sample No. / Matrix * / Sample Date / Sample Time										
B108V6 / SOIL / 9-20-00 / 1108				X	X	X				B1019
B108V7 / SOIL / 9-20-00 / 1116				X	X	X				
B108V8 / SOIL / 9-20-00 / 1240				X	X		X			
B108V9 / SOIL / 9-20-00 / 1249				X	X	X				

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Sign/Print Names	Date/Time
Relinquished By	R. Nielson	9/20/00 1553	Received By: stored in RW 9/20/00 Ref # 1A	9/20/00 1553
Relinquished By	Removed from Ref #1A 3728	9-21-00 0730	Received By: R Thorey	9-21-00 0730
Relinquished By: RT 9-21-00	R Thorey	9-21-00 0730	Received By: FEDEX	9-21-00
Relinquished By: Fed Ex		9-22-00 9:30	Received By: [illegible]	9-22-00 9:30
Relinquished By			Received By	
Relinquished By			Received By	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Chromium, Lead}; Mercury - 7471 - (CV), Cobalt
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 9/20/00
Collector not available to relinquish samples on 9/20/00 for shipment.
RT 9-21-00

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

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

BHI-EE-011 (10/99)

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 9-22-00 9:30

CoC No. B00-029-047

Container I.D. No. ERC99-03 Requested TAT (Days) [redacted] 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: 4
7. Number of containers per sample: _____ (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 9-22-00
14. Received by [signature] Date: 9-22-00 Time: 9:30

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

OCT 2000
RECEIVED

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B00-029
RFW# : 0009L723
SDG# : H1042
SAF# : B00-029

W.O. # : 10985-001-001-9999-00
Date Received: 09-22-00

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 3 soil 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.

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 (MS) recovery for Insoluble Chromium VI was within the 75-125% control limits, however MS recovery for Soluble Chromium VI was below the control limits.

8. The replicate analysis for Percent Solids was within the 20% Relative Percent Difference (RPD) control limit, however replicate analysis for Chromium VI was outside the control limit; replicate results for Chromium VI were below 10 times the reporting limit.

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

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

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

10/30/00
Date

njp\i09-723

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

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

Other: **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 10/11/00

CLIENT: TNU-HANFORD B00-029

RECRA LOT #: 0009L723

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B108V6	% Solids	96.9	%	0.01	1.0
		Chromium VI	0.76	MG/KG	0.41	1.0
-002	B108V7	% Solids	94.3	%	0.01	1.0
		Chromium VI	9.5	MG/KG	0.42	1.0
-004	B108V9	% Solids	93.7	%	0.01	1.0
		Chromium VI	0.47	MG/KG	0.43	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/11/00

CLIENT: TNU-HANFORD B00-029 RECRA LOT #: 0009L723

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LVI054-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0

5

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 10/11/00

CLIENT: TNU-HANFORD B00-029 RECRA LOT #: 0009L723

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-004	B108V9	Soluble Chromium VI	3.1	0.47	4.3	60.6	1.0
		Insoluble Chromium VI	1290	0.47	1240	104.2	100
BLANK10	00LVI054-MB1	Soluble Chromium VI	4.3	0.40u	4.0	108.5	1.0
		Insoluble Chromium VI	1140	0.40u	1160	98.5	100

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 10/11/00

CLIENT: TNU-HANFORD B00-029 RECRA LOT #: 0009L723

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B108V6	% Solids	96.9	95.4	1.6	1.0
-004REP	B108V9	Chromium VI	0.47	0.71	39.7	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-029

DATE RECEIVED: 09/22/00 RFW LOT # :0009L723

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B108V6						
% SOLIDS	001	S	00L%S155	09/20/00	10/02/00	10/03/00
% SOLIDS	001 REP	S	00L%S155	09/20/00	10/02/00	10/03/00
CHROMIUM VI	001	S	00LVI054	09/20/00	10/04/00	10/04/00
B108V7						
% SOLIDS	002	S	00L%S155	09/20/00	10/02/00	10/03/00
CHROMIUM VI	002	S	00LVI054	09/20/00	10/04/00	10/04/00
B108V9						
% SOLIDS	004	S	00L%S155	09/20/00	10/02/00	10/03/00
CHROMIUM VI	004	S	00LVI054	09/20/00	10/04/00	10/04/00
CHROMIUM VI	004 REP	S	00LVI054	09/20/00	10/04/00	10/04/00
CHROMIUM VI	004 MS	S	00LVI054	09/20/00	10/04/00	10/04/00
CHROMIUM VI	004 MSD	S	00LVI054	09/20/00	10/04/00	10/04/00

LAB QC:

CHROMIUM VI	MB1	S	00LVI054	N/A	10/04/00	10/04/00
CHROMIUM VI	MB1 BS	S	00LVI054	N/A	10/04/00	10/04/00
CHROMIUM VI	MB1 BSD	S	00LVI054	N/A	10/04/00	10/04/00

RECRA LabNet Use Only

0009L723

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (9) P/PCB Met Dig Perrone

RECRA LabNet

Client INU-Hanford B00-029

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OS

QC Spec Del Std TAT 15 day

Date Rec'd 9-22-00 Date Due 10-7-00

Account #

Refrigerator #				4					4					4			
#Type Container	Liquid																
	Solid			1AG					1AG					1AG			
Volume	Liquid																
	Solid			60					60					60			
Preservatives				—					—					—			
ANALYSES REQUESTED		ORGANIC							INORG					Hex Chrom			
		VOA	BNA	Pest/PCB	Herb				Metal	CN							
		RECRA LabNet Use Only															
				OPCB					Met (1)					ICP10			

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	OPCB	Met (1)					ICP10
001	B108V6			S	9/20/00	1108	1	1					1
002	7					1116	1	1					1
003	8					1240	1	1	TR 9-28-00				1
004	9					1249	1	1					1

Special Instructions: Saf B00-029

Run Matrix QC

DATE/REVISIONS:

Met (1) 1. As, Cr, Pb, Hg, Co

9-28-00 2. #003 cancelled

3.

4.

5.

6.

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # Sue Bebod

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. 3.4 °C

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	9/22/00	0925

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITE	

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

NOTES:

RECRA LabNet Use Only

0009L723

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TNU-Hanford B00-029

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999.00

Project Contact/Phone #:

RECRA Project Manager: OS

QC: Spec Del: Std TAT: 15 day

Date Rec'd: 9.22.00 Date Due: 10-7-00

Account #:

Refrigerator #				4					4					4			
#/Type Container	Liquid																
	Solid			1AG					1AG					1AG			
Volume	Liquid																
	Solid			60					60					60			
Preservatives				—					—					—			
ANALYSES REQUESTED		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN				Hex Chrom			
				RECRA LabNet Use Only													
				OPCB					Met (1)					TCRLD			

MATRIX CODES: SO - 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	OPCB	Met (1)	TCRLD
001	B108V6			S	9/20/00	1108	1	1	1
002	7					1116	1	1	1
003	8					1240	1	1	1
004	9					1249	1	1	1

Special Instructions: Saf B00-029

Run Matrix QC

DATE/REVISIONS:

Met (1) 1. As, Cr, Pb, Hg, Co

2.

3.

4.

5.

6.

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # [illegible]

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. 3.4 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	9/22/00	0925

Relinquished by	Received by	Date	Time
COMPOSITE	ORIGINAL		

0004L723

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-029-042	Page 1 of 1

Collector: R. Nielson	Company Contact: Mike Stankovich	Telephone No.: 531-7620	Project Coordinator: TRENT, SJ
Price Code: 2F	Data Turnaround: 15 Day	Air Quality ☐	
Project Designation: 100 F Area - Quick Turn	Sampling Location: 116-F-14 Retention Basin	SAF No.: B00-029	
Ice Chest No.: ERC99-023 (1 of 1)	Field Logbook No.: EL-1535	COA: R16F142600	Method of Shipment: Federal Express
Shipped To: TMA/RECRA RECRA	Offsite Property No.: RSR# 106637	Bill of Lading/Air Bill No.: NA	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	None	None	None	None	None				
Type of Container	aG	aG	aG	aG	aG	P	aG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	60mL	60mL	60mL	60mL	60mL	500mL	120 ml				
SAMPLE ANALYSIS	Chromium Hex - 7196	PCBs - 8082	See item (1) in Special Instructions.	Isotopic Uranium; Isotopic Plutonium; Americium-241	Nickel-63; Strontium-89,90 -- Total Sr; Carbon-14; Technetium-99	See item (2) in Special Instructions.	See item (2) in Special Instructions			TIETO	

Sample No.	Matrix *	Sample Date	Sample Time										
B108V6	SOIL	9-20-00	1108	X	X	X						B1019	
B108V7	SOIL	9-20-00	1116	X	X	X							
B108V8	SOIL	9-20-00	1240	X	X	X							
B108V9	SOIL	9-20-00	1249	X	X	X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson / R. Nielson	9/20/00 1553	Stored in Ref #1A	9/20/00 1553
Renee Dixon / Ref 1A 3728	9-21-00 0730	R Thoren	9-21-00 0730
R Thoren	9-21-00 0730	FEDEX	
FedEx	9/22/00 0925	[illegible]	9-22-00 0920

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Chromium, Lead}; Mercury - 7471 - (CV), Cobalt
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Temp 3.4

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 9/20/00 Collector not available to relinquish samples on 9/21/00 for shipment.

RT 9-21-01

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

OCT 2000
RECEIVED

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B00-029
RFW#: 0009L723
SDG/SAF#: H1042/B00-029

W.O.#: 10985-001-001-9999-00
Date Received: 09-22-00

METALS CASE NARRATIVE

1. This narrative covers the analyses of 3 soil 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. 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), 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) recovery for Mercury was outside the 75-125% control limits (216%). A serial dilution was performed for Mercury. Refer to the Inorganics Accuracy Report.

11. The duplicate analysis for Chromium was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision 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 13 pages.

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

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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-25-00
Date

jjw/m09-723

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 0009L723

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A __3010A __3015 __3020A X 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	X 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	X 6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	X 6010B		__200.7				__99
Copper	__6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	X 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]	X 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 10/11/00

CLIENT: TNU-HANFORD B00-029 RECRA LOT #: 0009L723

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B108V6	Arsenic, Total	3.2	MG/KG	0.32	1.0
		Cobalt, Total	7.3	MG/KG	0.08	1.0
		Chromium, Total	118	MG/KG	0.09	1.0
		Mercury, Total	5.0	MG/KG	0.17	10.0
		Lead, Total	18.8	MG/KG	0.20	1.0
-002	B108V7	Arsenic, Total	3.6	MG/KG	0.33	1.0
		Cobalt, Total	6.7	MG/KG	0.08	1.0
		Chromium, Total	271	MG/KG	0.09	1.0
		Mercury, Total	9.3	MG/KG	0.18	10.0
		Lead, Total	24.7	MG/KG	0.20	1.0
-004	B108V9	Arsenic, Total	3.1	MG/KG	0.33	1.0
		Cobalt, Total	8.4	MG/KG	0.08	1.0
		Chromium, Total	13.0	MG/KG	0.09	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	4.8	MG/KG	0.20	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/11/00

CLIENT: TNU-HANFORD B00-029 RECRA LOT #: 0009L723

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L1607-MB1	Arsenic, Total	0.34 u	MG/KG	0.34	1.0
		Cobalt, Total	0.08 u	MG/KG	0.08	1.0
		Chromium, Total	0.09 u	MG/KG	0.09	1.0
		Lead, Total	0.21 u	MG/KG	0.21	1.0
BLANK1	00C0329-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 10/11/00

CLIENT: TNU-HANFORD B00-029 RECRA LOT #: 0009L723

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B108V6	Arsenic, Total	186	3.2	189	96.3	1.0
		Cobalt, Total	54.9	7.3	47.3	100.6	1.0
		Chromium, Total	142	118	18.9	123.8*	1.0
		Mercury, Total	5.9	5.0	0.17	532.5*	10.0
		Lead, Total	63.6	18.8	47.3	94.7	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 10/11/00

CLIENT: TNU-HANFORD B00-029 RECRA LOT #: 0009L723

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B108V6	Arsenic, Total	3.2	3.5	9.0	1.0
		Cobalt, Total	7.3	8.2	11.6	1.0
		Chromium, Total	118	150	23.5	1.0
		Mercury, Total	5.0	5.7	13.1	10.0
		Lead, Total	18.8	21.6	13.9	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/11/00

CLIENT: TNU-HANFORD B00-029 RECRA LOT #: 0009L723

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L1607-LC1	Arsenic, LCS	979	1000	MG/KG	97.9
		Cobalt, LCS	257	250	MG/KG	102.7
		Chromium, LCS	51.2	50.0	MG/KG	102.4
		Lead, LCS	253	250	MG/KG	101.3
LCS1	00C0329-LC1	Mercury, LCS	0.75	0.7	MG/KG	106.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-029

DATE RECEIVED: 09/22/00 RFW LOT # :0009L723

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B108V6						
ARSENIC, TOTAL	001	S	99L1607	09/20/00	10/06/00	10/07/00
ARSENIC, TOTAL	001 REP	S	99L1607	09/20/00	10/06/00	10/07/00
ARSENIC, TOTAL	001 MS	S	99L1607	09/20/00	10/06/00	10/07/00
COBALT, TOTAL	001	S	99L1607	09/20/00	10/06/00	10/07/00
COBALT, TOTAL	001 REP	S	99L1607	09/20/00	10/06/00	10/07/00
COBALT, TOTAL	001 MS	S	99L1607	09/20/00	10/06/00	10/07/00
CHROMIUM, TOTAL	001	S	99L1607	09/20/00	10/06/00	10/07/00
CHROMIUM, TOTAL	001 REP	S	99L1607	09/20/00	10/06/00	10/07/00
CHROMIUM, TOTAL	001 MS	S	99L1607	09/20/00	10/06/00	10/07/00
MERCURY, TOTAL	001	S	00C0329	09/20/00	10/09/00	10/10/00
MERCURY, TOTAL	001 REP	S	00C0329	09/20/00	10/09/00	10/10/00
MERCURY, TOTAL	001 MS	S	00C0329	09/20/00	10/09/00	10/10/00
LEAD, TOTAL	001	S	99L1607	09/20/00	10/06/00	10/07/00
LEAD, TOTAL	001 REP	S	99L1607	09/20/00	10/06/00	10/07/00
LEAD, TOTAL	001 MS	S	99L1607	09/20/00	10/06/00	10/07/00
B108V7						
ARSENIC, TOTAL	002	S	99L1607	09/20/00	10/06/00	10/07/00
COBALT, TOTAL	002	S	99L1607	09/20/00	10/06/00	10/07/00
CHROMIUM, TOTAL	002	S	99L1607	09/20/00	10/06/00	10/07/00
MERCURY, TOTAL	002	S	00C0329	09/20/00	10/09/00	10/10/00
LEAD, TOTAL	002	S	99L1607	09/20/00	10/06/00	10/07/00
B108V9						
ARSENIC, TOTAL	004	S	99L1607	09/20/00	10/06/00	10/07/00
COBALT, TOTAL	004	S	99L1607	09/20/00	10/06/00	10/07/00
CHROMIUM, TOTAL	004	S	99L1607	09/20/00	10/06/00	10/07/00
MERCURY, TOTAL	004	S	00C0329	09/20/00	10/09/00	10/10/00
LEAD, TOTAL	004	S	99L1607	09/20/00	10/06/00	10/07/00

LAB QC:

ARSENIC LABORATORY	LC1 BS	S	99L1607	N/A	10/06/00	10/07/00

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-029

DATE RECEIVED: 09/22/00 RFW LOT # :0009L723

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TOTAL	MB1	S	99L1607	N/A	10/06/00	10/07/00
COBALT LABORATORY	LC1 BS	S	99L1607	N/A	10/06/00	10/07/00
COBALT, TOTAL	MB1	S	99L1607	N/A	10/06/00	10/07/00
CHROMIUM LABORATORY	LC1 BS	S	99L1607	N/A	10/06/00	10/07/00
CHROMIUM, TOTAL	MB1	S	99L1607	N/A	10/06/00	10/07/00
MERCURY LABORATORY	LC1 BS	S	00C0329	N/A	10/09/00	10/10/00
MERCURY, TOTAL	MB1	S	00C0329	N/A	10/09/00	10/10/00
LEAD LABORATORY	LC1 BS	S	99L1607	N/A	10/06/00	10/07/00
LEAD, TOTAL	MB1	S	99L1607	N/A	10/06/00	10/07/00

RECRA LabNet Use Only

0009L723

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (9) P/PCB Met Dig Perrone

RECRA LabNet

Client TNU-Hanford B00-029

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC Spec Del Std TAT 15 day

Date Rec'd 9-22-00 Date Due 10-7-00

Account #

Refrigerator #				4					4					4		
#/Type Container	Liquid															
	Solid			1AG					1AG					1AG		
Volume	Liquid															
	Solid			60					60					60		
Preservatives				—					—					—		
ANALYSES REQUESTED →		ORGANIC							INORG					Hex Chrom		
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
RECRA LabNet Use Only				OPCB					Met(1)					ICP(1)		

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OPCB	Met(1)		ICP(1)
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	B108V6			S	9/20/00	1108	1	1		1
	002	7					1116	1	1		1
	003	8					1240	1	1	TR 9-28-00	1
	004	9					1249	1	1		1

Special Instructions: SAF B00-029

Run Matrix QC

DATE/REVISIONS:

Met(1) 1. As, Cr, Pb, Hg, Co

9-28-00 2. #003 cancelled

3.

4.

5.

6.

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	9/22/00	0925

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 # See Below
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'd (Y) or N

Cooler Temp. 3.4 C

0009L723

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-029-042	Page 1 of 1

Collector: R. Nielson	Company Contact: Mike Stankovich — Telephone No.: 531-7620	Project Coordinator: TRENT, SJ	Price Code: 2F — Data Turnaround: 15 Day
Project Designation: 100 F Area - Quick Turn	Sampling Location: 116-F-14 Retention Basin	SAF No.: B00-029	Air Quality ☐
Ice Chest No.: ERC99-023 (1 of 1)	Field Logbook No.: EL-1535 — COA: R16F142600	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA	Offsite Property No.: RSR# 106637	Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SAMPLE ANALYSIS												
Preservation				Cool 4C	Cool 4C	None	None	None	None	None		
Type of Container				aG	aG	aG	aG	aG	P	aG		
No. of Container(s)				1	1	1	1	1	1	1		
Volume				60mL	60mL	60mL	60mL	60mL	500mL	120 ml		
				Chromium Hex - 7196	PCBs - 8082	See item (1) in Special Instructions.	Isotopic Uranium; Isotopic Plutonium; Americium-241	Nickel-63; Strontium-89,90 -- Total Sr; Carbon-14; Technetium-99	See item (2) in Special Instructions.	See item (2) in special instructions		
Sample No.	Matrix *	Sample Date	Sample Time									TIETO
B108V6	SOIL	9-20-00	1108	X	X	X						B10119
B108V7	SOIL	9-20-00	1116	X	X	X						
B108V8	SOIL	9-20-00	1240	X	X	X						
B108V9	SOIL	9-20-00	1249	X	X	X						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson / R. Nielson	9/20/00 1553	Stored in Ref #1A	9/20/00 1553
Remained from Ref 1A 3728	9-21-00 0730	R Thoren	9-21-00 0730
R Thoren	9-21-00 0730		
	9/22/00 0925		9-22-00 0920

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV), Cobalt
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Temp 3.4

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 9/20/00 Collector not available to relinquish samples on 9/21/00 for shipment.

RT 9-21-00

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

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

BHI-EE-011 (10/99)

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

OCT 2000
RECEIVED

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B00-029
RFW#: 0009L723
SDG/SAF#: H1042/B00-029

W.O.#: 10985-001-001-9999-00
Date Received: 09-22-00

PCB

The set of samples consisted of three (3) soil samples collected on 09-20-00.

The samples and their associated QC samples were extracted on 09-25-00, 10-03-00 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 10-07,10,11-00. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

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

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

2. All required holding times for extraction and analysis have been met.

3. The samples and their associated QC samples received a sulfuric acid and sulfur cleanup.

4. All method blanks were below the reporting limits for all target compounds.

5. Four (4) of twenty-two (22) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

6. All blank spike recoveries were within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

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

9. 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 10 pages.

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 _____ 10-24-00

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

Date

pef\r:\group\data\pest\09L-723.pcb

RECRA **Sample Discrepancy Report (SDR)** SDR #: 00GC231

Initiator: M. Kobel Batch: 00091723 Parameter: PCB
Date: 10/12/00 Samples: 002 Matrix: Soil
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: 00LE1206

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)

high surrogates in sample 002; TCX @ 138% and DCB @ 161%. This sample was clean.

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: report 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: 10/12/00

✓ 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: Mich Kobel Other Explanation:

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

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

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

L-WI-006/E-08/00

Recra LabNet Philadelphia

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

PCBs by GC

Report Date: 10/20/00 12:33

RFW Batch Number: **0009L723** Client: **TNU-HANFORD B00-029** Work Order: 10985001001 Page: 1

90

	Cust ID:	B108V6	B108V6	B108V6	B108V7	B108V9	B108V9
Sample Information	RFW#:	001	001 MS	001 MSD	002	004	004 MS
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	45 %	62 %	42 %	138 * %	85 %	98 %
	Decachlorobiphenyl	112 %	124 * %	94 %	161 * %	88 %	99 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		34 U	50 U	52 U	35 U	36 U	97 U
Aroclor-1221		69 U	100 U	100 U	71 U	71 U	190 U
Aroclor-1232		34 U	50 U	52 U	35 U	36 U	97 U
Aroclor-1242		34 U	50 U	52 U	35 U	36 U	97 U
Aroclor-1248		34 U	50 U	52 U	35 U	36 U	97 U
Aroclor-1254		34 U	145 %	108 %	35 U	36 U	89 %
Aroclor-1260		34 U	50 U	52 U	35 U	36 U	97 U

	Cust ID:	B108V9	PBLKAY	PBLKAY BS	PBLKBU	PBLKBU BS
Sample Information	RFW#:	004 MSD	00LE1206-MB1	00LE1206-MB1	00LE1255-MB1	00LE1255-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	88 %	52 %	45 %	85 %	85 %
	Decachlorobiphenyl	90 %	132 * %	106 %	88 %	92 %
		fl	fl	fl	fl	fl
Aroclor-1016		130 U	33 U	33 U	33 U	33 U
Aroclor-1221		260 U	67 U	67 U	67 U	67 U
Aroclor-1232		130 U	33 U	33 U	33 U	33 U
Aroclor-1242		130 U	33 U	33 U	33 U	33 U
Aroclor-1248		130 U	33 U	33 U	33 U	33 U
Aroclor-1254		83 %	33 U	115 %	33 U	84 %
Aroclor-1260		130 U	33 U	33 U	33 U	33 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

gw 10-20-00

Recra LabNet - Lionville Laboratory
PCB ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-029

DATE RECEIVED: 09/22/00 RFW LOT # :0009L723

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B108V6	001	S	00LE1206	09/20/00	09/25/00	10/07/00
B108V6	001 MS	S	00LE1206	09/20/00	09/25/00	10/07/00
B108V6	001 MSD	S	00LE1206	09/20/00	09/25/00	10/07/00
B108V7	002	S	00LE1206	09/20/00	09/25/00	10/07/00
B108V9	004	S	00LE1255	09/20/00	10/03/00	10/11/00
B108V9	004 MS	S	00LE1255	09/20/00	10/03/00	10/11/00
B108V9	004 MSD	S	00LE1255	09/20/00	10/03/00	10/11/00

LAB QC:

PBLKAY	MB1	S	00LE1206	N/A	09/25/00	10/07/00
PBLKAY	MB1 BS	S	00LE1206	N/A	09/25/00	10/07/00
PBLKBU	MB1	S	00LE1255	N/A	10/03/00	10/10/00
PBLKBU	MB1 BS	S	00LE1255	N/A	10/03/00	10/11/00

gw 10-26-00

RECRA LabNet Use Only

0009L723

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (9) P/PCB Met Dig Perrone

RECRA LabNet

Client TNU-Hanford B00-029

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OS

QC Spec Del Std TAT 15 day

Date Rec'd 9-22-00 Date Due 10-7-00

Account #

Refrigerator #				4					4					4			
#/Type Container	Liquid																
	Solid			1AG					1AG					1AG			
Volume	Liquid																
	Solid			60					60					60			
Preservatives				—					—					—			
ANALYSES REQUESTED →				ORGANIC					INORG					Hex Chrom			
				VOA	BNA	Pest/PCB	Herb		Metal	CN							
				RECRA LabNet Use Only													
						OPCB			Met (1)					ICP/O			

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	B108V6			S	9/20/00	1108			1					1				1	
002	7					1116			1					1				1	
003	8					~~1240~~			1					1	TL 9-28-00			1	
004	9					1249			1					1				1	

Special Instructions: SAF B00-029

Run Matrix QC

DATE/REVISIONS:
Met (1) 1. As, Cr, Pb, Hg, Co
9-28-00 2. #003 cancelled
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'l Y or N
Cooler Temp. 3.4 °C

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

Relinquished by	Received by	Date	Time
Fed Ex	K. Fleming	9/22/00	0925

Relinquished by	Received by	Date	Time
COMPOSITE		ORIGINAL	

0009L723

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-029-042	Page 1 of 1

Collector: R. Nielson	Company Contact: Mike Stankovich; Telephone No.: 531-7620	Project Coordinator: TRENT, SJ	Price Code: 25; Data Turnaround: 15 Day
Project Designation: 100 F Area - Quick Turn	Sampling Location: 116-F-14 Retention Basin	SAF No.: B00-029	Air Quality ☐
Ice Chest No.: ERC99-023 (1 of 1)	Field Logbook No.: EL-1535; COA: R16F142600	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA RECRA	Offsite Property No.: RSR# 106637	Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SAMPLE ANALYSIS												
Preservation				Cool 4C	Cool 4C	None	None	None	None	None		
Type of Container				sG	sG	sG	sG	sG	P	aG		
No. of Container(s)				1	1	1	1	1	1	1		
Volume				60mL	60mL	60mL	60mL	60mL	500mL	120 ml		
				Chromium Hex - 7196	PCBs - 8082	See item (1) in Special Instructions.	Isotopic Uranium; Isotopic Plutonium; Americium-241	Nickel-63; Strontium-89,90 -- Total Sr; Carbon-14; Technetium-99	See item (2) in Special Instructions.	See item (2) in Special instructions		TIETO
Sample No.	Matrix *	Sample Date	Sample Time									
B108V6	SOIL	9-20-00	1108	X	X	X						B1019
B108V7	SOIL	9-20-00	1116	X	X	X						
B108V8	SOIL	9-20-00	1240	X	X	X						
B108V9	SOIL	9-20-00	1249	X	X	X						

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Nielson / R. Nielson	Date/Time: 9/20/00 1553	Received By: Stored in Ref #1A 9/20/00	Date/Time: 9/20/00 1553
Relinquished By: Removed from Ref 1A 3728 9-21-00	Date/Time: 0730	Received By: R Thoren 9-21-00	Date/Time: 0730
Relinquished By: R Thoren 9-21-00	Date/Time: 0730	Received By: FEDEX	Date/Time:
Relinquished By: FedEx	Date/Time: 9/22/00 0925	Received By: [illegible] 9-22-00	Date/Time: 0920
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - (CV), Cobalt
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Temp 3.4

Samples stored in Ref.# 1A at the 3728 Shipping Facility on 9/20/00. Collector not available to relinquish samples on 9/21/00 for shipment.

RT 9-21-00

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

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

BHI-EE-011 (10/99)

100

FedEx. USA Airbill 822771885238

0215

1 From This portion can be removed for Recipient's records.

Date 9-21-00 FedEx Tracking Number 822771885238

Sender's Name G.O. BONESS Phone 509 376-7627

Company WASTE MANAGEMENT TECHNICAL SERVICES/U.S. DOE

Address 2355 STEVENS DR MS G1-14 (EMERGENCY CONTACT 1-888-766-0771)

Dept./Floor/Suite/Room

City RICHLAND State WA ZIP 99352

2 Your Internal Billing Reference R16F142600 RADIOACTIVE MATERIAL, EXCEPTED PACKAGE-LIMITED QUANTITY OF MATERIAL RWMI-4206 EMERGENCY RESPONSE GUIDE #161 ATTACHED

3 To Recipient's Name ORLETTE JOHNSON Phone 610 280-3012

Company RECRA LAB NET

Address 208 WELSH POOL ROAD

To "HOLD" at FedEx location, print FedEx address. We cannot deliver to P.O. boxes or P.O. ZIP codes.

Dept./Floor/Suite/Room

City LIONVILLE State PA ZIP 19341-1333

RECIPIENT: PEEL HERE

8227 7188 5238

0151692651

4a Express Package Service — Packages up to 150 lbs. Delivery commitment may be later in some areas.

- [x] FedEx Priority Overnight Next business morning
- [ ] FedEx Standard Overnight Next business afternoon
- [ ] FedEx First Overnight Earliest next business morning delivery to select locations
- [ ] FedEx 2Day* Second business day
- [ ] FedEx Express Saver* Third business day

* FedEx Envelope/Letter Rate not available. Minimum charge: One-pound rate

4b Express Freight Service — Packages over 150 lbs. Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* Next business day
- [ ] FedEx 2Day Freight Second business day
- [ ] FedEx 3Day Freight Third business day

* Call for Confirmation:

5 Packaging — * Declared value limit $500

- [ ] FedEx Envelope/Letter*
- [ ] FedEx Pak*
- [x] Other Pkg. Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling — Include FedEx address in Section 3.

- [ ] SATURDAY Delivery Available for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] SUNDAY Delivery Available for FedEx Priority Overnight to select ZIP codes
- [ ] HOLD Weekday at FedEx Location Not available with FedEx First Overnight
- [ ] HOLD Saturday at FedEx Location Available for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? One box must be checked.

- [ ] No
- [ ] Yes As per attached Shipper's Declaration
- [x] Yes Shipper's Declaration not required
- [ ] Dry Ice Dry Ice, 9, UN 1845 ____ x ____ kg
- [ ] Cargo Aircraft Only

Dangerous Goods cannot be shipped in FedEx packaging.

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below.

- [ ] Sender Acct. No. in Section 1 will be billed
- [ ] Recipient
- [x] Third Party
- [ ] Credit Card
- [ ] Cash/Check
- [ ] Obtain Recip. Acct. No.

1803

Total Packages: 1 Total Weight: 44 Total Charges: Credit Card Auth.

*Our liability is limited to $100 unless you declare a higher value. See the FedEx Service Guide for details.

8 Release Signature — Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

Questions? Call 1·800·Go·FedEx® (800-463-3339)

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