H0551-TMA/RECRA

RECEIVED
JAN 27 2000
EDMC

Thermo Nutech
W.O. No. N9-10-005-7225

Bechtel Hanford Inc.
SDG H0551

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0551 is composed of six solid (soil) samples designated under SAF No. B99-041 with a Project Designation of: 100 H Area-Quick Turn.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklists. The results were originally reported to BHI via facsimile on November 1, 1999.

2.0 ANALYSIS NOTES

2.1 Gamma Scan Analyses

No problems were encountered during the course of the analyses.

2.2 Technetium-99 Analyses

No problems were encountered during the course of the analyses though a recount was performed on sample BLWCK0. The results of the original and duplicate analyses were not a good match however both sample results were less than the RDL, also the result for the original analysis was less than the samples' MDA.

2.3 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.4 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses. Recounts were performed on samples B0WCJ0 and B0WCK3.

2.6 Americium-241 Analyses

No problems were encountered during the course of the analyses. A recount was performed on the duplicate.

2.7 Carbon-14 Analyses

No problems were encountered during the course of the analyses. All sample results were less than the RDL.

NOV 1999

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

SAMPLE SUMMARY

SDG 7225
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0WCJ0	105 DR	SOLID		N910005-01	B99-075	B99-075-18	09/27/99 14:05
B0WCJ8	105 DR	SOLID		N910005-02	B99-075	B99-075-18	09/27/99 09:50
B0WCK0	105 DR	SOLID		N910005-03	B99-075	B99-075-19	09/28/99 09:10
B0WCK1	105 DR	SOLID		N910005-04	B99-075	B99-075-19	09/28/99 12:20
B0WCK3	105 DR	SOLID		N910005-05	B99-075	B99-075-19	09/28/99 13:20
B0WCK4	105 DR	SOLID		N910005-06	B99-075	B99-075-20	09/29/99 09:30
Method Blank		SOLID		N909210-04	B99-075		
Method Blank		SOLID		N910005-08	B99-075		
Lab Control Sample		SOLID		N909210-03	B99-075		
Lab Control Sample		SOLID		N910005-07	B99-075		
Duplicate (N910005-01)	105 DR	SOLID		N910005-09	B99-075		09/27/99 14:05

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

QC SUMMARY

SDG 7225
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

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
7224		Method Blank	SOLID						N909210-04	7224-004
		Lab Control Sample	SOLID						N909210-03	7224-003
7225	B99-075-18	B0WCJ0	SOLID	98.4			10/01/99	4	N910005-01	7225-001
		B0WCJ8	SOLID	97.0			10/01/99	4	N910005-02	7225-002
	B99-075-19	B0WCK0	SOLID	92.6			10/01/99	3	N910005-03	7225-003
		B0WCK1	SOLID	97.8			10/01/99	3	N910005-04	7225-004
		B0WCK3	SOLID	97.5			10/01/99	3	N910005-05	7225-005
	B99-075-20	B0WCK4	SOLID	92.9			10/01/99	2	N910005-06	7225-006
		Method Blank	SOLID						N910005-08	7225-008
		Lab Control Sample	SOLID						N910005-07	7225-007
		Duplicate (N910005-01)	SOLID	98.4			10/01/99	4	N910005-09	7225-009

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

SDG 7225
Contact Kevin C. Johnson

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

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	6904-055	5.0	6			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6904-055	5.0	6			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	6904-055	5.0	6			1	1	1/1		
Beta Counting												
TC	SOLID	Technetium 99 in Soil	6904-052	10.0	6			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6904-055	15.0	6			1	1	1/1		X
Liquid Scintillation Counting												
C	SOLID	Carbon 14 in Soil	6904-052	10.0	6			1	1	1/1		
NI_L	SOLID	Nickel 63 in Soil	6904-055	10.0	6			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 11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

WORK SUMMARY

SDG 7225
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0WCJ0			N910005-01	7225-001	AM		10/26/99	11/01/99	NJV	Americium 241 in Soil
105 DR		SOLID	09/27/99	7225-001	C		10/21/99	11/01/99	NJV	Carbon 14 in Soil
B99-075-18	B99-075		10/01/99	7225-001	GAM		10/21/99	11/01/99	NJV	Gamma Scan
				7225-001	NI_L		10/22/99	11/01/99	NJV	Nickel 63 in Soil
				7225-001	PU		10/26/99	11/01/99	NJV	Plutonium, Isotopic in Solids
				7225-001	TC		10/18/99	11/01/99	NJV	Technetium 99 in Soil
				7225-001	U		10/19/99	11/01/99	NJV	Uranium, Isotopic in Soil
B0WCJ8			N910005-02	7225-002	AM		10/26/99	11/01/99	NJV	Americium 241 in Soil
105 DR		SOLID	09/27/99	7225-002	C		10/22/99	11/01/99	NJV	Carbon 14 in Soil
B99-075-18	B99-075		10/01/99	7225-002	GAM		10/18/99	11/01/99	NJV	Gamma Scan
				7225-002	NI_L		10/22/99	11/01/99	NJV	Nickel 63 in Soil
				7225-002	PU		10/26/99	11/01/99	NJV	Plutonium, Isotopic in Solids
				7225-002	TC		10/18/99	11/01/99	NJV	Technetium 99 in Soil
				7225-002	U		10/16/99	11/01/99	NJV	Uranium, Isotopic in Soil
B0WCK0			N910005-03	7225-003	AM		10/26/99	11/01/99	NJV	Americium 241 in Soil
105 DR		SOLID	09/28/99	7225-003	C		10/22/99	11/01/99	NJV	Carbon 14 in Soil
B99-075-19	B99-075		10/01/99	7225-003	GAM		10/18/99	11/01/99	NJV	Gamma Scan
				7225-003	NI_L		10/22/99	11/01/99	NJV	Nickel 63 in Soil
				7225-003	PU		10/26/99	11/01/99	NJV	Plutonium, Isotopic in Solids
				7225-003	TC		10/20/99	11/01/99	NJV	Technetium 99 in Soil
				7225-003	U		10/16/99	11/01/99	NJV	Uranium, Isotopic in Soil
B0WCK1			N910005-04	7225-004	AM		10/26/99	11/01/99	NJV	Americium 241 in Soil
105 DR		SOLID	09/28/99	7225-004	C		10/22/99	11/01/99	NJV	Carbon 14 in Soil
B99-075-19	B99-075		10/01/99	7225-004	GAM		10/18/99	11/01/99	NJV	Gamma Scan
				7225-004	NI_L		10/22/99	11/01/99	NJV	Nickel 63 in Soil
				7225-004	PU		10/26/99	11/01/99	NJV	Plutonium, Isotopic in Solids
				7225-004	TC		10/19/99	11/01/99	NJV	Technetium 99 in Soil
				7225-004	U		10/16/99	11/01/99	NJV	Uranium, Isotopic in Soil
B0WCK3			N910005-05	7225-005	AM		10/26/99	11/01/99	NJV	Americium 241 in Soil
105 DR		SOLID	09/28/99	7225-005	C		10/22/99	11/01/99	NJV	Carbon 14 in Soil
B99-075-19	B99-075		10/01/99	7225-005	GAM		10/21/99	11/01/99	NJV	Gamma Scan
				7225-005	NI_L		10/22/99	11/01/99	NJV	Nickel 63 in Soil
				7225-005	PU		10/26/99	11/01/99	NJV	Plutonium, Isotopic in Solids
				7225-005	TC		10/19/99	11/01/99	NJV	Technetium 99 in Soil
				7225-005	U		10/18/99	11/01/99	NJV	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

SDG 7225
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0WCK4			N910005-06	7225-006	AM		10/26/99	11/01/99	NJV	Americium 241 in Soil
105 DR		SOLID	09/29/99	7225-006	C		10/22/99	11/01/99	NJV	Carbon 14 in Soil
B99-075-20	B99-075		10/01/99	7225-006	GAM		10/19/99	11/01/99	NJV	Gamma Scan
				7225-006	NI_L		10/22/99	11/01/99	NJV	Nickel 63 in Soil
				7225-006	PU		10/26/99	11/01/99	NJV	Plutonium, Isotopic in Solids
				7225-006	TC		10/19/99	11/01/99	NJV	Technetium 99 in Soil
				7225-006	U		10/16/99	11/01/99	NJV	Uranium, Isotopic in Soil
Method Blank			N909210-04	7224-004	C		10/21/99	10/28/99	NJV	Carbon 14 in Soil
		SOLID		7224-004	TC		10/19/99	10/21/99	NJV	Technetium 99 in Soil
	B99-075									
Method Blank			N910005-08	7225-008	AM		10/26/99	11/01/99	NJV	Americium 241 in Soil
		SOLID		7225-008	GAM		10/20/99	11/01/99	NJV	Gamma Scan
	B99-075			7225-008	NI_L		10/23/99	11/01/99	NJV	Nickel 63 in Soil
				7225-008	PU		10/26/99	11/01/99	NJV	Plutonium, Isotopic in Solids
				7225-008	U		10/16/99	11/01/99	NJV	Uranium, Isotopic in Soil
Lab Control Sample			N909210-03	7224-003	C		10/22/99	10/28/99	NJV	Carbon 14 in Soil
		SOLID		7224-003	TC		10/18/99	10/21/99	NJV	Technetium 99 in Soil
	B99-075									
Lab Control Sample			N910005-07	7225-007	AM		10/26/99	11/01/99	NJV	Americium 241 in Soil
		SOLID		7225-007	GAM		10/21/99	11/01/99	NJV	Gamma Scan
	B99-075			7225-007	NI_L		10/22/99	11/01/99	NJV	Nickel 63 in Soil
				7225-007	PU		10/26/99	11/01/99	NJV	Plutonium, Isotopic in Solids
				7225-007	U		10/16/99	11/01/99	NJV	Uranium, Isotopic in Soil
Duplicate (N910005-01)			N910005-09	7225-009	AM		10/28/99	11/01/99	NJV	Americium 241 in Soil
105 DR		SOLID	09/27/99	7225-009	C		10/21/99	11/01/99	NJV	Carbon 14 in Soil
	B99-075		10/01/99	7225-009	GAM		10/20/99	11/01/99	NJV	Gamma Scan
				7225-009	NI_L		10/23/99	11/01/99	NJV	Nickel 63 in Soil
				7225-009	PU		10/26/99	11/01/99	NJV	Plutonium, Isotopic in Solids
				7225-009	TC		10/19/99	11/01/99	NJV	Technetium 99 in Soil
				7225-009	U		10/16/99	11/01/99	NJV	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

SDG 7225
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B99-075	Americium 241 in Soil	AM/CMPLATE	6			1	1	1	9
C	B99-075	Carbon 14 in Soil	C14COXLSC	6			1	1	1	9
GAM	B99-075	Gamma Scan	GAMMAHI	6			1	1	1	9
NI_L	B99-075	Nickel 63 in Soil	NI63LSC	6			1	1	1	9
PU	B99-075	Plutonium, Isotopic in Solids	PUPLATE	6			1	1	1	9
TC	B99-075	Technetium 99 in Soil	TC99TRLSC	6			1	1	1	9
U	B99-075	Uranium, Isotopic in Soil	UPLATE	6			1	1	1	9
TOTALS				42			7	7	7	63

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

N909210-04 Method Blank

METHOD BLANK

SDG	7225	Client/Case no	Hanford	SDG H0551	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909210-04	Client sample id	Method Blank		
Dept sample id	7224-004	Material/Matrix		SOLID	
		SAF No	B99-075		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	4.19	2.5	4.0	50	J	C
Technetium 99	14133-76-7	-0.156	0.38	0.84	15	U	TC
Uranium 233/234	U-233/234	N.A.			1.0		U
Uranium 235	15117-96-1	N.A.			1.0		U
Uranium 238	U-238	N.A.			1.0		U
Plutonium 238	13981-16-3	N.A.			1.0		PU
Plutonium 239/240	PU-239/240	N.A.			1.0		PU
Nickel 63	13981-37-8	N.A.			30		NI_L
Americium 241	14596-10-2	N.A.			1.0		AM
Potassium 40	13966-00-2	N.A.					GAM
Barium 133	13981-41-4	N.A.					GAM
Cobalt 60	10198-40-0	N.A.			0.050		GAM
Cesium 137	10045-97-3	N.A.			0.10		GAM
Europium 152	14683-23-9	N.A.			0.10		GAM
Europium 154	15585-10-1	N.A.			0.10		GAM
Europium 155	14391-16-3	N.A.			0.10		GAM
Radium 226	13982-63-3	N.A.			0.10		GAM
Radium 228	15262-20-1	N.A.			0.20		GAM
Thorium 228	14274-82-9	N.A.					GAM
Thorium 232	TH-232	N.A.					GAM
Americium 241	14596-10-2	N.A.					GAM
Uranium 238	U-238	N.A.					GAM
Uranium 235	15117-96-1	N.A.					GAM

105-DR FSB-Soil

QC-BLANK 32006

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

N910005-08

Method Blank

METHOD BLANK

SDG	7225	Client/Case no	Hanford	SDG H0551	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N910005-08	Client sample id	Method Blank		
Dept sample id	7225-008	Material/Matrix		SOLID	
		SAF No	B99-075		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.009	0.038	0.090	1.0	U	U
Uranium 235	15117-96-1	0.011	0.046	0.087	1.0	U	U
Uranium 238	U-238	0.009	0.019	0.072	1.0	U	U
Plutonium 238	13981-16-3	0.015	0.024	0.046	1.0	U	PU
Plutonium 239/240	PU-239/240	0.003	0.018	0.033	1.0	U	PU
Nickel 63	13981-37-8	-0.274	1.3	2.2	30	U	NI_L
Americium 241	14596-10-2	0	0.038	0.073	1.0	U	AM
Potassium 40	13966-00-2	U		0.55		U	GAM
Barium 133	13981-41-4	U		6.5		UX	GAM
Cobalt 60	10198-40-0	U		0.052	0.050	U	GAM
Cesium 137	10045-97-3	U		0.035	0.10	U	GAM
Europium 152	14683-23-9	U		0.086	0.10	U	GAM
Europium 154	15585-10-1	U		0.14	0.10	U	GAM
Europium 155	14391-16-3	U		0.049	0.10	U	GAM
Radium 226	13982-63-3	U		0.078	0.10	U	GAM
Radium 228	15262-20-1	U		0.17	0.20	U	GAM
Thorium 228	14274-82-9	U		0.039		U	GAM
Thorium 232	TH-232	U		0.17		U	GAM
Americium 241	14596-10-2	U		0.034		U	GAM
Uranium 238	U-238	U		5.8		U	GAM
Uranium 235	15117-96-1	U		0.097		U	GAM

105-DR FSB-Soil

QC-BLANK 32003

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

N909210-03

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7225

Contact Kevin C. Johnson

Client/Case no Hanford SDG H0551

Case no TRB-SBB-207925

Lab sample id N909210-03

Dept sample id 7224-003

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-075

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	10100	51	5.8	50		C	10900	440	93	85-115	
Technetium 99	52.6	1.7	0.86	15		TC	53.5	2.1	98	83-117	80-120
Uranium 233/234	N.A.			1.0		U					80-120
Uranium 235	N.A.			1.0		U					80-120
Uranium 238	N.A.			1.0		U					80-120
Plutonium 238	N.A.			1.0		PU					80-120
Plutonium 239/240	N.A.			1.0		PU					80-120
Nickel 63	N.A.			30		NI_L					
Americium 241	N.A.			1.0		AM					80-120
Cobalt 60	N.A.			0.050		GAM					80-120
Cesium 137	N.A.			0.10		GAM					80-120

105-DR FSB-Soil

QC-LCS 32005

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

N910005-07 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7225 Client/Case no Hanford SDG H0551

Contact Kevin C. Johnson Case no TRB-SBB-207925

Lab sample id N910005-07 Client sample id Lab Control Sample

Dept sample id 7225-007 Material/Matrix SOLID

SAF No B99-075

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
Uranium 233/234	4.26	0.50	0.26	1.0		U	4.64	0.19	92	81-119	80-120
Uranium 235	4.08	0.49	0.065	1.0		U	3.77	0.15	108	78-122	80-120
Uranium 238	4.55	0.51	0.25	1.0		U	5.04	0.20	90	82-118	80-120
Plutonium 238	10.6	0.76	0.059	1.0		PU	11.3	0.45	94	86-114	80-120
Plutonium 239/240	11.2	0.81	0.066	1.0		PU	11.9	0.48	94	86-114	80-120
Nickel 63	145	3.8	2.1	30		NI_L	147	5.9	99	84-116	
Americium 241	9.97	0.57	0.043	1.0		AM	10.5	0.42	95	88-112	80-120
Cobalt 60	1.01	0.053	0.026	0.050		GAM	1.15	0.046	88	78-122	80-120
Cesium 137	1.34	0.050	0.030	0.10		GAM	1.43	0.057	94	77-123	80-120

105-DR FSB-Soil

QC-LCS 32002

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

N910005-09 B0WCJ0

DUPLICATE

SDG	7225	Client/Case no	Hanford SDG H0551
Contact	Kevin C. Johnson	Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL	
Lab sample id	N910005-09	Lab sample id	N910005-01
Dept sample id	7225-009	Dept sample id	7225-001
		Received	10/01/99
% solids	98.4	% solids	98.4
Client sample id	B0WCJ0		
Location/Matrix	105 DR SOLID		
Collected	09/27/99 14:05		
Custody/SAF No	B99-075-18 B99-075		

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
Carbon 14	2.16	2.6	4.2	50	U	C	1.97	2.6	4.2	U	-	
Technetium 99	0.108	0.33	0.55	15	U	TC	1.12	0.56	1.0	J	165	161
Uranium 233/234	0.557	0.14	0.063	1.0	J	U	0.415	0.12	0.065	J	29	58
Uranium 235	0.040	0.040	0.076	1.0	U	U	0.031	0.041	0.078	U	-	
Uranium 238	0.393	0.12	0.063	1.0	J	U	0.364	0.12	0.065	J	8	68
Plutonium 238	0.008	0.026	0.044	1.0	U	PU	0.012	0.024	0.038	U	-	
Plutonium 239/240	0.016	0.021	0.032	1.0	U	PU	0.008	0.016	0.030	U	-	
Nickel 63	0.060	1.7	2.9	30	U	NI_L	-0.219	1.5	2.6	U	-	
Americium 241	0.031	0.041	0.079	1.0	U	AM	-0.006	0.023	0.063	U	-	
Potassium 40	8.40	0.53	0.28			GAM	8.87	0.74	0.41		5	36
Barium 133	U		0.022		UX	GAM	U		0.047	UX	-	
Cobalt 60	U		0.026	0.050	U	GAM	U		0.053	U	-	
Cesium 137	0.064	0.026	0.026	0.10	J	GAM	U		0.047	U	31	149
Europium 152	U		0.059	0.10	U	GAM	U		0.10	U	-	
Europium 154	U		0.089	0.10	U	GAM	U		0.14	U	-	
Europium 155	U		0.054	0.10	U	GAM	U		0.066	U	-	
Radium 226	0.347	0.050	0.047	0.10		GAM	0.340	0.083	0.084		2	53
Radium 228	0.419	0.11	0.10	0.20		GAM	0.370	0.20	0.20		12	92
Thorium 228	0.384	0.029	0.029			GAM	0.386	0.041	0.042		1	37
Thorium 232	0.419	0.11	0.10			GAM	0.370	0.20	0.20		12	92
Americium 241	U		0.058		U	GAM	U		0.047	U	-	
Uranium 238	U		3.3		U	GAM	U		6.1	U	-	
Uranium 235	U		0.092		U	GAM	U		0.12	U	-	

105-DR FSB-Soil

QC-DUP#1 32004

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

N910005-01 B0WCJ0

DATA SHEET

SDG	7225	Client/Case no	Hanford SDG H0551
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N910005-01	Client sample id	B0WCJ0
Dept sample id	7225-001	Location/Matrix	105 DR SOLID
Received	10/01/99	Collected	09/27/99 14:05
% solids	98.4	Custody/SAF No	B99-075-18 B99-075

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	1.97	2.6	4.2	50	U	C
Technetium 99	14133-76-7	1.12	0.56	1.0	15	J	TC
Uranium 233/234	U-233/234	0.415	0.12	0.065	1.0	J	U
Uranium 235	15117-96-1	0.031	0.041	0.078	1.0	U	U
Uranium 238	U-238	0.364	0.12	0.065	1.0	J	U
Plutonium 238	13981-16-3	0.012	0.024	0.038	1.0	U	PU
Plutonium 239/240	PU-239/240	0.008	0.016	0.030	1.0	U	PU
Nickel 63	13981-37-8	-0.219	1.5	2.6	30	U	NI_L
Americium 241	14596-10-2	-0.006	0.023	0.063	1.0	U	AM
Potassium 40	13966-00-2	8.87	0.74	0.41			GAM
Barium 133	13981-41-4	U		0.047		UX	GAM
Cobalt 60	10198-40-0	U		0.053	0.050	U	GAM
Cesium 137	10045-97-3	U		0.047	0.10	U	GAM
Europium 152	14683-23-9	U		0.10	0.10	U	GAM
Europium 154	15585-10-1	U		0.14	0.10	U	GAM
Europium 155	14391-16-3	U		0.066	0.10	U	GAM
Radium 226	13982-63-3	0.340	0.083	0.084	0.10		GAM
Radium 228	15262-20-1	0.370	0.20	0.20	0.20		GAM
Thorium 228	14274-82-9	0.386	0.041	0.042			GAM
Thorium 232	TH-232	0.370	0.20	0.20			GAM
Americium 241	14596-10-2	U		0.047		U	GAM
Uranium 238	U-238	U		6.1		U	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM

105-DR FSB-Soil

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

N910005-02 B0WCJ8

DATA SHEET

SDG	7225	Client/Case no	Hanford	SDG H0551
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925	
Lab sample id	N910005-02	Client sample id	B0WCJ8	
Dept sample id	7225-002	Location/Matrix	105 DR	SOLID
Received	10/01/99	Collected	09/27/99 09:50	
% solids	97.0	Custody/SAF No	B99-075-18	B99-075

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	1.63	2.4	3.9	50	U	C
Technetium 99	14133-76-7	0.710	0.46	0.79	15	U	TC
Uranium 233/234	U-233/234	0.500	0.13	0.057	1.0	J	U
Uranium 235	15117-96-1	0.018	0.018	0.069	1.0	U	U
Uranium 238	U-238	0.403	0.11	0.057	1.0	J	U
Plutonium 238	13981-16-3	0.005	0.019	0.037	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.039	0.029	0.086	1.0	U	PU
Nickel 63	13981-37-8	0.045	2.5	4.3	30	U	NI_L
Americium 241	14596-10-2	0.055	0.034	0.041	1.0	J	AM
Potassium 40	13966-00-2	9.39	0.84	0.52			GAM
Barium 133	13981-41-4	U		0.050		UX	GAM
Cobalt 60	10198-40-0	U		0.057	0.050	U	GAM
Cesium 137	10045-97-3	0.530	0.061	0.055	0.10		GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Europium 155	14391-16-3	U		0.069	0.10	U	GAM
Radium 226	13982-63-3	0.461	0.10	0.10	0.10		GAM
Radium 228	15262-20-1	0.461	0.19	0.21	0.20		GAM
Thorium 228	14274-82-9	0.470	0.049	0.049			GAM
Thorium 232	TH-232	0.461	0.19	0.21			GAM
Americium 241	14596-10-2	U		0.048		U	GAM
Uranium 238	U-238	U		6.8		U	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM

105-DR FSB-Soil

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

N910005-03 B0WCK0

DATA SHEET

SDG	7225	Client/Case no	Hanford	SDG H0551	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N910005-03	Client sample id	B0WCK0		
Dept sample id	7225-003	Location/Matrix	105 DR	SOLID	
Received	10/01/99	Collected	09/28/99 09:10		
% solids	92.6	Custody/SAF No	B99-075-19	B99-075	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	3.19	2.5	4.1	50	U	C
Technetium 99	14133-76-7	0.490	0.31	0.55	15	U	TC
Uranium 233/234	U-233/234	0.441	0.14	0.080	1.0	J	U
Uranium 235	15117-96-1	0.050	0.041	0.077	1.0	U	U
Uranium 238	U-238	0.458	0.14	0.080	1.0	J	U
Plutonium 238	13981-16-3	-0.005	0.015	0.033	1.0	U	PU
Plutonium 239/240	PU-239/240	0.022	0.020	0.027	1.0	U	PU
Nickel 63	13981-37-8	0.696	3.0	5.1	30	U	NI_L
Americium 241	14596-10-2	0	0.026	0.058	1.0	U	AM
Potassium 40	13966-00-2	8.81	0.67	0.31			GAM
Barium 133	13981-41-4	U		0.040		UX	GAM
Cobalt 60	10198-40-0	U		0.040	0.050	U	GAM
Cesium 137	10045-97-3	3.12	0.084	0.047	0.10		GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.090	0.10	U	GAM
Radium 226	13982-63-3	0.300	0.068	0.078	0.10		GAM
Radium 228	15262-20-1	0.480	0.14	0.14	0.20		GAM
Thorium 228	14274-82-9	0.390	0.047	0.048			GAM
Thorium 232	TH-232	0.480	0.14	0.14			GAM
Americium 241	14596-10-2	U		0.096		U	GAM
Uranium 238	U-238	U		3.6		U	GAM
Uranium 235	15117-96-1	U		0.14		U	GAM

105-DR FSB-Soil

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

N910005-04 B0WCK1

DATA SHEET

SDG	7225	Client/Case no	Hanford SDG H0551
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N910005-04	Client sample id	B0WCK1
Dept sample id	7225-004	Location/Matrix	105 DR SOLID
Received	10/01/99	Collected	09/28/99 12:20
% solids	97.8	Custody/SAF No	B99-075-19 B99-075

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	5.16	2.7	4.3	50	J	C
Technetium 99	14133-76-7	0.165	0.18	0.47	15	U	TC
Uranium 233/234	U-233/234	0.336	0.12	0.079	1.0	J	U
Uranium 235	15117-96-1	0.079	0.060	0.076	1.0	J	U
Uranium 238	U-238	0.262	0.10	0.063	1.0	J	U
Plutonium 238	13981-16-3	-0.004	0.015	0.035	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.004	0.015	0.035	1.0	U	PU
Nickel 63	13981-37-8	1.11	2.6	4.4	30	U	NI_L
Americium 241	14596-10-2	0.024	0.032	0.044	1.0	U	AM
Potassium 40	13966-00-2	7.92	0.34	0.14			GAM
Barium 133	13981-41-4	U		0.014		UX	GAM
Cobalt 60	10198-40-0	U		0.017	0.050	U	GAM
Cesium 137	10045-97-3	0.018	0.016	0.018	0.10	J	GAM
Europium 152	14683-23-9	U		0.038	0.10	U	GAM
Europium 154	15585-10-1	U		0.049	0.10	U	GAM
Europium 155	14391-16-3	U		0.034	0.10	U	GAM
Radium 226	13982-63-3	0.263	0.034	0.031	0.10		GAM
Radium 228	15262-20-1	0.389	0.069	0.063	0.20		GAM
Thorium 228	14274-82-9	0.360	0.020	0.019			GAM
Thorium 232	TH-232	0.389	0.069	0.063			GAM
Americium 241	14596-10-2	U		0.036		U	GAM
Uranium 238	U-238	U		2.0		U	GAM
Uranium 235	15117-96-1	U		0.063		U	GAM

105-DR FSB-Soil

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

N910005-05 B0WCK3

DATA SHEET

SDG	7225	Client/Case no	Hanford SDG H0551
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N910005-05	Client sample id	B0WCK3
Dept sample id	7225-005	Location/Matrix	105 DR SOLID
Received	10/01/99	Collected	09/28/99 13:20
% solids	97.5	Custody/SAF No	B99-075-19 B99-075

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	5.77	2.7	4.2	50	J	C
Technetium 99	14133-76-7	0.087	0.31	0.89	15	U	TC
Uranium 233/234	U-233/234	0.480	0.085	0.030	1.0	J	U
Uranium 235	15117-96-1	0.015	0.015	0.029	1.0	U	U
Uranium 238	U-238	0.406	0.072	0.024	1.0	J	U
Plutonium 238	13981-16-3	0.011	0.028	0.047	1.0	U	PU
Plutonium 239/240	PU-239/240	0.019	0.022	0.034	1.0	U	PU
Nickel 63	13981-37-8	-0.366	1.5	2.5	30	U	NI_L
Americium 241	14596-10-2	0.006	0.022	0.042	1.0	U	AM
Potassium 40	13966-00-2	7.49	0.76	0.45			GAM
Barium 133	13981-41-4	U		0.035		UX	GAM
Cobalt 60	10198-40-0	U		0.054	0.050	U	GAM
Cesium 137	10045-97-3	0.214	0.043	0.046	0.10		GAM
Europium 152	14683-23-9	U		0.099	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.088	0.10	U	GAM
Radium 226	13982-63-3	0.258	0.080	0.087	0.10		GAM
Radium 228	15262-20-1	0.397	0.20	0.20	0.20		GAM
Thorium 228	14274-82-9	0.352	0.045	0.047			GAM
Thorium 232	TH-232	0.397	0.20	0.20			GAM
Americium 241	14596-10-2	U		0.096		U	GAM
Uranium 238	U-238	U		4.5		U	GAM
Uranium 235	15117-96-1	U		0.13		U	GAM

105-DR FSB-Soil

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

N910005-06 B0WCK4

DATA SHEET

SDG	7225	Client/Case no	Hanford	SDG H0551	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N910005-06	Client sample id	B0WCK4		
Dept sample id	7225-006	Location/Matrix	105 DR	SOLID	
Received	10/01/99	Collected	09/29/99 09:30		
% solids	92.9	Custody/SAF No	B99-075-20	B99-075	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Carbon 14	14762-75-5	3.54	2.5	4.1	50	U	C
Technetium 99	14133-76-7	0.049	0.19	0.56	15	U	TC
Uranium 233/234	U-233/234	0.440	0.15	0.080	1.0	J	U
Uranium 235	15117-96-1	0.038	0.051	0.097	1.0	U	U
Uranium 238	U-238	0.293	0.11	0.080	1.0	J	U
Plutonium 238	13981-16-3	0	0.022	0.043	1.0	U	PU
Plutonium 239/240	PU-239/240	0.210	0.057	0.048	1.0	J	PU
Nickel 63	13981-37-8	20.3	2.9	3.8	30	J	NI_L
Americium 241	14596-10-2	0.053	0.037	0.048	1.0	J	AM
Potassium 40	13966-00-2	8.63	0.56	0.30			GAM
Barium 133	13981-41-4	U		0.046		UX	GAM
Cobalt 60	10198-40-0	0.503	0.049	0.036	0.050		GAM
Cesium 137	10045-97-3	2.95	0.080	0.049	0.10		GAM
Europium 152	14683-23-9	1.61	0.10	0.11	0.10		GAM
Europium 154	15585-10-1	0.314	0.11	0.11	0.10		GAM
Europium 155	14391-16-3	U		0.094	0.10	U	GAM
Radium 226	13982-63-3	0.325	0.065	0.071	0.10		GAM
Radium 228	15262-20-1	0.427	0.18	0.19	0.20		GAM
Thorium 228	14274-82-9	0.400	0.041	0.050			GAM
Thorium 232	TH-232	0.427	0.18	0.19			GAM
Americium 241	14596-10-2	U		0.089		U	GAM
Uranium 238	U-238	U		5.5		U	GAM
Uranium 235	15117-96-1	U		0.14		U	GAM

105-DR FSB-Soil

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

Test	AM
Matrix	SOLID
SDG	7225
Contact	Kevin C. Johnson

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0551

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241
Preparation batch 6904-055					
B0WCJ0	N910005-01			7225-001	U
B0WCJ8	N910005-02			7225-002	0.055 J
B0WCK0	N910005-03			7225-003	U
B0WCK1	N910005-04			7225-004	U
B0WCK3	N910005-05			7225-005	U
B0WCK4	N910005-06			7225-006	0.053 J
BLK (QC ID=32003)	N910005-08			7225-008	U
LCS (QC ID=32002)	N910005-07			7225-007	ok
Duplicate (N910005-01)	N910005-09			7225-009	- U
Nominal values and limits from method 105-DR FSB-Soil				RDLs (pCi/g)	1.0

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 6904-055 2σ prep error 5.0 % Reference Lab Notebook 6904 pg. 055																
B0WCJ0	N910005-01			0.063	0.500			60		678			29	10/25/99	10/26	SS-062
B0WCJ8	N910005-02			0.041	0.500			79		675			29	10/25/99	10/26	SS-063
B0WCK0	N910005-03			0.058	0.500			78		675			28	10/25/99	10/26	SS-064
B0WCK1	N910005-04			0.044	0.500			86		675			28	10/25/99	10/26	SS-065
B0WCK3	N910005-05			0.042	0.500			63		675			28	10/25/99	10/26	SS-066
B0WCK4	N910005-06			0.048	0.500			84		1064			27	10/25/99	10/26	SS-029
BLK (QC ID=32003)	N910005-08			0.073	0.500			57		1063				10/25/99	10/26	SS-032
LCS (QC ID=32002)	N910005-07			0.043	0.500			89		1063				10/25/99	10/26	SS-031
Duplicate (N910005-01) (QC ID=32004)	N910005-09			0.079	0.500			37		643			31	10/25/99	10/28	SS-002
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	11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

Test	AM
Matrix	SOLID
SDG	7225
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0551

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	MDA	0.055	±	0.029
FOR 9 SAMPLES	YIELD	70	±	34

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

Test PU	Matrix SOLID
SDG 7225	
Contact Kevin C. Johnson	

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0551	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 6904-055						
B0WCJ0	N910005-01			7225-001	U	U
B0WCJ8	N910005-02			7225-002	U	U
B0WCK0	N910005-03			7225-003	U	U
B0WCK1	N910005-04			7225-004	U	U
B0WCK3	N910005-05			7225-005	U	U
B0WCK4	N910005-06			7225-006	U	0.210 J
BLK (QC ID=32003)	N910005-08			7225-008	U	U
LCS (QC ID=32002)	N910005-07			7225-007	ok	ok
Duplicate (N910005-01)	N910005-09			7225-009	- U	- U
Nominal values and limits from method 105-DR FSB-Soil				RDLs (pCi/g)	1.0	1.0

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 6904-055 2σ prep error 5.0 % Reference Lab Notebook 6904 pg. 055																
B0WCJ0	N910005-01			0.038	0.500			60		1061			29	10/26/99	10/26	SS-001
B0WCJ8	N910005-02			0.086	0.500			29		1061			29	10/26/99	10/26	SS-003
B0WCK0	N910005-03			0.033	0.500			89		1061			28	10/26/99	10/26	SS-005
B0WCK1	N910005-04			0.035	0.500			59		1061			28	10/26/99	10/26	SS-006
B0WCK3	N910005-05			0.047	0.500			81		1063			28	10/26/99	10/26	SS-034
B0WCK4	N910005-06			0.048	0.500			81		1062			27	10/26/99	10/26	SS-035
BLK (QC ID=32003)	N910005-08			0.046	0.500			79		1062				10/26/99	10/26	SS-038
LCS (QC ID=32002)	N910005-07			0.066	0.500			66		1062				10/26/99	10/26	SS-036
Duplicate (N910005-01) (QC ID=32004)	N910005-09			0.044	0.500			85		1062			29	10/26/99	10/26	SS-041
Nominal values and limits from method				1.0	0.500			20-105		10	100		180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Test PU Matrix SOLID
SDG 7225
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

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	0.049	±	0.034
FOR 9 SAMPLES	YIELD	70	±	38

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

Test U Matrix SOLID
SDG 7225
Contact Kevin C. Johnson

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 6904-055											
B0WCJ0	N910005-01			7225-001	0.415 J	U	0.364 J	114	50	9	12
B0WCJ8	N910005-02			7225-002	0.500 J	U	0.403 J	124	47	4	5
B0WCK0	N910005-03			7225-003	0.441 J	U	0.458 J	96	42	11	10
B0WCK1	N910005-04			7225-004	0.336 J	0.079 J	0.262 J	128	67	30	26
B0WCK3	N910005-05			7225-005	0.480 J	U	0.406 J	118	30	4	4
B0WCK4	N910005-06			7225-006	0.440 J	U	0.293 J	150	76	13	18
BLK (QC ID=32003)	N910005-08			7225-008	U	U	U				
LCS (QC ID=32002)	N910005-07			7225-007	ok	ok	ok				
Duplicate (N910005-01)	N910005-09			7225-009	ok J	- U	ok J	142	56	10	11
Nominal values and limits from method 105-DR FSB-Soil				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
							Averages	125		12	

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 6904-055 2σ prep error 5.0 % Reference Lab Notebook 6904 pg. 055																
B0WCJ0	N910005-01			0.078	1.00			88		155			22	10/16/99	10/19	SS-050
B0WCJ8	N910005-02			0.069	1.00			89		172			19	10/16/99	10/16	SS-031
B0WCK0	N910005-03			0.080	1.00			80		172			18	10/16/99	10/16	SS-032
B0WCK1	N910005-04			0.079	1.00			82		172			18	10/16/99	10/16	SS-033
B0WCK3	N910005-05			0.030	1.00			42		868			20	10/16/99	10/18	SS-049
B0WCK4	N910005-06			0.097	1.00			66		172			17	10/16/99	10/16	SS-034
BLK (QC ID=32003)	N910005-08			0.090	1.00			74		172				10/16/99	10/16	SS-036
LCS (QC ID=32002)	N910005-07			0.26	1.00			98		172				10/16/99	10/16	SS-035
Duplicate (N910005-01) (QC ID=32004)	N910005-09			0.076	1.00			87		172			19	10/16/99	10/16	SS-038
Nominal values and limits from method				1.0	1.00			30-105		150	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

METHOD SUMMARY, cont.

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Test U Matrix SOLID
SDG 7225
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

PROCEDURES	REFERENCE	UPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-910	Uranium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	0.095	±	0.13
FOR 9 SAMPLES	YIELD	78	±	33

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

Test	TC
Matrix	SOLID
SDG	7225
Contact	Kevin C. Johnson

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0551

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6904-052						
B0WCJ0	N910005-01			7225-001	1.12	J
B0WCJ8	N910005-02			7225-002	U	
B0WCK0	N910005-03			7225-003	U	
B0WCK1	N910005-04			7225-004	U	
B0WCK3	N910005-05			7225-005	U	
B0WCK4	N910005-06			7225-006	U	
BLK (QC ID=32006)	N909210-04			7224-004	U	
LCS (QC ID=32005)	N909210-03			7224-003	ok	
Duplicate (N910005-01)	N910005-09			7225-009	OUT	U
Nominal values and limits from method 105-DR FSB-Soil				RDLs (pCi/g)	15	

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 6904-052	2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 052															
B0WCJ0	N910005-01			1.0	1.01			65		101			21	10/15/99	10/18	GRB-214
B0WCJ8	N910005-02			0.79	1.00			81		101			21	10/15/99	10/18	GRB-215
B0WCK0	N910005-03			0.55	1.05			60		101			22	10/15/99	10/20	GRB-230
B0WCK1	N910005-04			0.47	1.00			71		101			21	10/15/99	10/19	GRB-222
B0WCK3	N910005-05			0.89	1.02			39		101			21	10/15/99	10/19	GRB-223
B0WCK4	N910005-06			0.56	1.05			58		101			20	10/15/99	10/19	GRB-224
BLK (QC ID=32006)	N909210-04			0.84	1.02			40		101				10/15/99	10/19	GRB-232
LCS (QC ID=32005)	N909210-03			0.86	1.02			67		101				10/15/99	10/18	GRB-210
Duplicate (N910005-01) (QC ID=32004)	N910005-09			0.55	1.00			45		200			22	10/15/99	10/19	GRB-207
Nominal values and limits from method				15	1.02			20-105		50			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

Test	TC
Matrix	SOLID
SDG	7225
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0551

PROCEDURES	REFERENCE	TC99TRLSC
	EP-060	Soil Preparation, rev 0
	EP-020	Sample Leach For Technetium-99, rev 0
	EP-540	Technetium-99 Purification, rev 0

AVERAGES ± 2 SD	MDA	0.72	±	0.38
FOR 9 SAMPLES	YIELD	58	±	29

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

Test GAM Matrix SOLID
SDG 7225
Contact Kevin C. Johnson

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6904-055						
B0WCJ0	N910005-01			7225-001	U	U
B0WCJ8	N910005-02			7225-002	U	0.530
B0WCK0	N910005-03			7225-003	U	3.12
B0WCK1	N910005-04			7225-004	U	0.018 J
B0WCK3	N910005-05			7225-005	U	0.214
B0WCK4	N910005-06			7225-006	0.503	2.95
BLK (QC ID=32003)	N910005-08			7225-008	U	U
LCS (QC ID=32002)	N910005-07			7225-007	ok	ok
Duplicate (N910005-01)	N910005-09			7225-009	- U	ok J
Nominal values and limits from method 105-DR FSB-Soil				RDLs (pCi/g)	0.050	0.10

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 6904-055 2σ prep error 15.0 % Reference Lab Notebook 6904 pg. 055																
B0WCJ0	N910005-01			0.12	216					497			24	10/07/99	10/21	JR,01,00
B0WCJ8	N910005-02			0.13	81.2					918			21	10/07/99	10/18	PD,01,00
B0WCK0	N910005-03			0.080	172					918			20	10/07/99	10/18	JR,03,00
B0WCK1	N910005-04			0.038	206					918			20	10/07/99	10/18	JR,04,00
B0WCK3	N910005-05			0.10	215					497			23	10/07/99	10/21	JR,03,00
B0WCK4	N910005-06			0.12	179					418			20	10/07/99	10/19	JR,04,00
BLK (QC ID=32003)	N910005-08			0.086	181					409				10/07/99	10/20	JR,01,00
LCS (QC ID=32002)	N910005-07			0.026	181					496				10/07/99	10/21	JR,04,00
Duplicate (N910005-01) (QC ID=32004)	N910005-09			0.068	216					397			23	10/07/99	10/20	JR,04,00
Nominal values and limits from method				0.050	181					100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

METHOD SUMMARY, cont.

GAMMA SCAN

GAMMA SPECTROSCOPY

Test GAM Matrix SOLID
SDG 7225
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

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

AVERAGES ± 2 SD	MDA	0.085	±	0.073
FOR 9 SAMPLES	YIELD		±	

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

Test C Matrix SOLID
SDG 7225
Contact Kevin C. Johnson

METHOD SUMMARY

CARBON 14 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 6904-052						
B0WCJ0	N910005-01			7225-001	U	
B0WCJ8	N910005-02			7225-002	U	
B0WCK0	N910005-03			7225-003	U	
B0WCK1	N910005-04			7225-004	5.16	J
B0WCK3	N910005-05			7225-005	5.77	J
B0WCK4	N910005-06			7225-006	U	
BLK (QC ID=32006)	N909210-04			7224-004	4.19	J
LCS (QC ID=32005)	N909210-03			7224-003	ok	
Duplicate (N910005-01)	N910005-09			7225-009	-	U

Nominal values and limits from method RDLs (pCi/g) 50
105-DR FSB-Soil

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 6904-052	2σ prep error 10.0 %				Reference Lab Notebook 6904 pg. 052											
B0WCJ0	N910005-01			4.2	0.206			100		100			24	10/21/99	10/21	LSC-005
B0WCJ8	N910005-02			3.9	0.227			100		100			25	10/21/99	10/22	LSC-005
B0WCK0	N910005-03			4.1	0.218			100		100			24	10/21/99	10/22	LSC-005
B0WCK1	N910005-04			4.3	0.214			100		100			24	10/21/99	10/22	LSC-005
B0WCK3	N910005-05			4.2	0.212			100		100			24	10/21/99	10/22	LSC-005
B0WCK4	N910005-06			4.1	0.216			100		100			23	10/21/99	10/22	LSC-005
BLK (QC ID=32006)	N909210-04			4.0	0.207			100		100				10/21/99	10/21	LSC-005
LCS (QC ID=32005)	N909210-03			5.8	0.207			100		52				10/21/99	10/22	LSC-005
Duplicate (N910005-01) (QC ID=32004)	N910005-09			4.2	0.209			100		100			24	10/21/99	10/21	LSC-005
Nominal values and limits from method				50	0.215					25			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

METHOD SUMMARY, cont.

CARBON 14 IN SOIL

LIQUID SCINTILLATION COUNTING

Test	C
Matrix	SOLID
SDG	7225
Contact	Kevin C. Johnson

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0551

PROCEDURES	REFERENCE	C14COXLSC
	EP-060	Soil Preparation, rev 0
	EP-251	Tritium / Carbon-14 Oxidation, rev 0

AVERAGES ± 2 SD	MDA	4.3	±	1.1
FOR 9 SAMPLES	YIELD	100	±	0

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

Test NI L Matrix SOLID
SDG 7225
Contact Kevin C. Johnson

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6904-055						
B0WCJ0	N910005-01			7225-001	U	
B0WCJ8	N910005-02			7225-002	U	
B0WCK0	N910005-03			7225-003	U	
B0WCK1	N910005-04			7225-004	U	
B0WCK3	N910005-05			7225-005	U	
B0WCK4	N910005-06			7225-006	20.3	J
BLK (QC ID=32003)	N910005-08			7225-008	U	
LCS (QC ID=32002)	N910005-07			7225-007	ok	
Duplicate (N910005-01)	N910005-09			7225-009	-	U
Nominal values and limits from method 105-DR FSB-Soil				RDLs (pCi/g)	30	

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 6904-055 2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 055																
B0WCJ0	N910005-01			2.6	0.500			72		100			25	10/22/99	10/22	LSC-005
B0WCJ8	N910005-02			4.3	0.500			44		100			25	10/22/99	10/22	LSC-005
B0WCK0	N910005-03			5.1	0.500			38		100			24	10/22/99	10/22	LSC-005
B0WCK1	N910005-04			4.4	0.500			44		100			24	10/22/99	10/22	LSC-005
B0WCK3	N910005-05			2.5	0.500			76		100			24	10/22/99	10/22	LSC-005
B0WCK4	N910005-06			3.8	0.500			52		100			23	10/22/99	10/22	LSC-005
BLK (QC ID=32003)	N910005-08			2.2	0.500			85		100				10/22/99	10/23	LSC-005
LCS (QC ID=32002)	N910005-07			2.1	0.500			85		100				10/22/99	10/22	LSC-005
Duplicate (N910005-01) (QC ID=32004)	N910005-09			2.9	0.500			65		100			26	10/22/99	10/23	LSC-005
Nominal values and limits from method				30	0.500					10			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/01/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0551

METHOD SUMMARY, cont.

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Test NI L Matrix SOLID
SDG 7225
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

PROCEDURES	REFERENCE	NI63LSC
	EP-060	Soil Preparation, rev 0
	EP-431	Nickel-63 Purification, rev 0

AVERAGES ± 2 SD	MDA	3.3	±	2.2
FOR 9 SAMPLES	YIELD	62	±	37

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/01/99

SDG 7225
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/01/99

SDG 7225
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/01/99

SDG 7225
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/01/99

SDG 7225
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/01/99

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

SDG 7225
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/01/99

SDG 7225
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/01/99

SDG 7225
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/01/99

SDG 7225
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/01/99

SDG 7225
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/01/99

SDG 7225
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/01/99

SDG 7225
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0551

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/01/99

METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

SDG 7225
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG_H0551

METHOD SUMMARY

* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/01/99

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-075-18	Page 1 of 1

Collector: Fahlberg/~~Bchale~~ Bowers RE 9.29.99	Company Contact: Jason Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days		
Project Designation: 105-DR FSB - Soil	Sampling Location: 105 DR	SAF No.: B99-075	
Ice Chest No.: SML 429-A ~~SML510~~ RE 9.30.99	Field Logbook No.: EL-1281	Method of Shipment: FEDEX	
Shipped To: TMA/~~RECRA~~ RE 9.27.99	Offsite Property No.: RE 9.30.99 ~~A990276~~ A99.0282	Bill of Lading/Air Bill No.: 4235 7952 ~~9907~~ 9/30/99 ct 0028	
		COA: R105D42800	

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	Cool 4C	None	None							
	Type of Container	aG	aG	aG	~~aG~~ poly							
	No. of Container(s)	1	1	1	1							
Special Handling and/or Storage	Volume	60mL	60mL	60mL	500mL tube liner							
SAMPLE ANALYSIS		Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.							
Sample No.	Matrix *	Sample Date	Sample Time									
✓ B0WCJ0	Soil	9.27.99	1405				X			Bowcjo		
✓ B0WCJ8	Soil	9.27.99	0950				X			Bowcjo		
~~B0WCJ9~~ RE 9.30.99	~~Soil~~	~~9.27.99~~	~~1310~~				X			~~Bowcjo~~		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Fahlberg / R. Fahlberg	Date/Time: 1610 9-27-99	Received By: Ref 1-B	Date/Time: 1610 9-27-99
Relinquished By: Ref 1-B	Date/Time: 9-30-99 1000	Received By: R. Fahlberg / R. Fahlberg	Date/Time: 1000 9.30.99
Relinquished By: R. Fahlberg / R. Fahlberg	Date/Time: 1430 9.30.99	Received By: Fed Ex	Date/Time: 9-30-99
Relinquished By: FedEx	Date/Time: 10-1-99 9:30	Received By: TNV McGoldenberg	Date/Time: 9/30 10-1-99

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Barium-133} | Isotopic Plutonium | Isotopic Uranium | Americium-241 | Carbon-14 | Nickel-63 | Technetium-99 |

All volume in poly liner, to be put in 60 ml bottles & shipped to RECRA

Matrix *
- Soil
- Water
- Vapor
- Other Solid
- Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-075-19	Page 1 of 1

Collector: Fahlberg/~~Behnke~~ Bowers RS 9.28.99	Company Contact: Jason Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days		
Project Designation: 105-DR FSB - Soil	Sampling Location: 105 DR		SAF No.: B99-075
Ice Chest No.: ERC. 96.065	Field Logbook No.: EL-1281		Method of Shipment: Fed Ex
Shipped To: TMA/~~RECRA~~ RS 9.28.99	Offsite Property No.: A99-0284		Bill of Lading/Air Bill No.: 4235 7953 0039
			COA: R105 D4 2800

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	Cool 4C	None	None							
	Type of Container	aG	aG	aG	aG							
Special Handling and/or Storage	No. of Container(s)	1	1	1	1							
	Volume	60mL	60mL	60mL	500mL							
SAMPLE ANALYSIS		Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.							

Sample No.	Matrix *	Sample Date	Sample Time										
B0WCK0	Soil	9-28-99	0910				X						
~~B0WCK1~~	~~Soil~~												
~~B0WCK2~~	~~Soil~~												
~~B0WCK3~~	~~Soil~~												

✓ R 9.30

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: R.Fahlberg / R.Fahlberg Date/Time 9.28.99 1540	Received By: Ref 1-C Date/Time 9.28.99 1540	
Relinquished By: Ref 1-C Date/Time 9.28.99 1100	Received By: R.Fahlberg / R.Fahlberg Date/Time 9.30.99 1100	
Relinquished By: R.Fahlberg / R.Fahlberg Date/Time 9.30.99 1430	Received By: Fed Ex Date/Time 9-30-99	
Relinquished By: FedEx Date/Time 10-1-99 9:30	Received By: TNU M. Goldenberg Date/Time 10-1-99 9:30	

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Barium-133}; Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

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

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-075-19

Collector: Fahlberg/~~Behnke~~ Bowers RF 9.28.99	Company Contact: Jason Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days		
Project Designation: 105-DR FSB - Soil	Sampling Location: 105 DR	SAF No.: B99-075	
Ice Chest No.: SML 429A	Field Logbook No.: EL-1281	Method of Shipment: Fed Ex	
Shipped To: TMA/~~RECRA~~ RF 9.28.99	Offsite Property No.: A99-0282	Bill of Lading/Air Bill No.: 4235 7953 0028	
		COA: R105D42800	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	Cool 4C	Cool 4C	None	None						
	Type of Container	aG	aG	aG	aG						
	No. of Container(s)	1	1	1	1						
Special Handling and/or Storage	Volume	60mL	60mL	60mL	500mL						
SAMPLE ANALYSIS		Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.						

Sample No.	Matrix *	Sample Date	Sample Time										
~~B0WCK0~~	~~Soil~~	~~9-28-99~~	0910				X					BOWCD1	
B0WCK1	Soil	9-28-99	1220				X					BOWCD1	
~~B0WCK2~~ RF 9.30.99	~~Soil~~	~~9-28-99~~	1306				X					BOWCD1	
B0WCK3	Soil	9-28-99	1320				X					BOWCD1	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Fahlberg / R. Fahlberg	Date/Time: 1540 9-28-99	Received By: Ref 1-C	Date/Time: 1540 9-28-99
Relinquished By: Ref 1-C	Date/Time: 9-30-99 1000	Received By: R. Fahlberg / R. Fahlberg	Date/Time: 1000 9-30-99
Relinquished By: R. Fahlberg / R. Fahlberg	Date/Time: 1430 9-30-99	Received By: R. Fahlberg / Fed Ex	Date/Time: 9-30-99
Relinquished By: Fed Ex	Date/Time: 10-1-99 9:30	Received By: TNV M. Goldenberg	Date/Time: 9:30 10-1-99

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Barium-133}; Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99

BOWCK1, BOWCK2, BOWCK3 All volume in poly liner, to be put in 60ml bottles and shipped to RECRA

Matrix *
- Soil
- Water
- Vapor
- Other Solid
- Other Liquid

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

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-075-20

Collector: Fahlberg/~~Behnke~~ Bowers 9-29-99	Company Contact: Jason Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days		
Project Designation: 105-DR FSB - Soil	Sampling Location: 105 DR		SAF No.: B99-075
Ice Chest No.: ERC 96-065	Field Logbook No.: EL-1281		Method of Shipment: Fed Ex
~~Shipped To~~ TMA/RECRA 9-29-99	Offsite Property No.: A99 0284		Bill of Lading/Air Bill No.: 4235 7953 0039
			COA: R105D4 2800

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	None	None							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	60mL	60mL	60mL	500mL							
SAMPLE ANALYSIS	Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.							
Sample No. / Matrix * / Sample Date / Sample Time											
B0WCK4 / Soil / 9-29-99 / 0930				X			B0WCD2				
~~B0WCK5~~ RJN 9/29/99 / Soil											
~~B0WCK6~~ RJN 9/29/99 / Soil											
~~B0WCK7~~ RJN 9/29/99 / Soil											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R Fahlberg / R Fahlberg 9-29-99	Date/Time: 1430	Received By: Raf I-C 9-29-99	Date/Time: 1430
Relinquished By: Raf I-C 9-30-99	Date/Time: 1100	Received By: R Fahlberg / R Fahlberg 9-30-99	Date/Time: 1100
Relinquished By: R Fahlberg / R Fahlberg 9-30-99	Date/Time: 1450	Received By: Fed Ex 9-30-99	Date/Time:
Relinquished By: FNV FedEx 10-1-99	Date/Time: 9:30	Received By: TNV M. Goldenberg 10-1-99	Date/Time: 9:30

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
- Soil
- Water
- Vapor
- Other Solid
- Other Liquid

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

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 10-1-99 9:30

CoC No. B99-075-19, 18,

Container I.D. No. SML-429A Requested TAT (Days) 21 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: 6
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 _____
14. Received by M. Goldenberg Date: 10-1-99 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 _____

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 10-1-99 9:30

CoC No. B99-075-20, 19

Container I.D. No. ERC 96-065 Requested TAT (Days) 21 P.O. Received Yes [ ] No [✓]

INSPECTION

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

NOV

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-075
RFW#: 9910L264
SDG/SAF#: H0551/B99-075

W.O.#: 10985-001-001-9999-00
Date Received: 10-01-99

PCB

The set of samples consisted of two (2) soil samples collected on 09-28,29-99.

The samples and their associated QC samples were extracted on 10-26-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 11-01-99. 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 analysis have been met. These samples were originally extracted within their required holding time. Due to Aroclor 1254 contamination the samples were re-extracted outside of hold time. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
3. The samples and their associated QC samples received a sulfuric acid and sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recovery was 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.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-02-99
Date

pef\r:\group\data\pest\10L-264.pcb

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.

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

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

Recra LabNet Philadelphia

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 Philadelphia Sample Discrepancy Report (SDR) SDR #: 99GC197

Initiator: B Pastor RFW Batch: 99IOL264 Parameter: OPCB
Date: 10/25/99 Samples: All Matrix: Soil
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: 99CE1237

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)

Another sample in the batch contained large amounts of AR1254. This was also found throughout the batch & in the blank.

2. Known or Probable Causes(s) Cross contamination

3. Discussion and Proposed Action Other Description: Re-extract

__ 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: [illegible] 10/25/99

__ 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: [illegible] 11/29/99 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 Specialist for distribution and filing.

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

L-WI-006/E-03/99

OC4RU-Log-in 10/26/99

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 11/02/99 13:24

RFW Batch Number: **9910L264** Client: **TNU-HANFORD B99-075** Work Order: 10985001001 Page: 1

	Cust ID:	B0WCK0	B0WCK4	B0WCK4	B0WCK4	PBLKYC	PBLKYC BS
Sample Information	RFW#:	001	002	002 MS	002 MSD	99LE1304-MB1	99LE1304-MB1
	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
		REPREP	REPREP				
Surrogate:	Tetrachloro-m-xylene	105 %	105 %	108 %	100 %	112 %	110 %
	Decachlorobiphenyl	107 %	109 %	112 %	107 %	116 %	114 %
		fl	fl	fl	fl	fl	fl
Aroclor-1254		180 U	36 U	94 %	91 %	33 U	95 %

11-02-99

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

Recra LabNet - Lionville Laboratory
PCB ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-075

DATE RECEIVED: 10/01/99 RFW LOT # :9910L264

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WCK0	001 R1	S	99LE1304	09/28/99	10/26/99	11/01/99
B0WCK4	002 R1	S	99LE1304	09/29/99	10/26/99	11/01/99
B0WCK4	002 MS	S	99LE1304	09/29/99	10/26/99	11/01/99
B0WCK4	002 MSD	S	99LE1304	09/29/99	10/26/99	11/01/99

LAB QC:

PBLKYC	MB1	S	99LE1304	N/A	10/26/99	11/01/99
PBLKYC	MB1 BS	S	99LE1304	N/A	10/26/99	11/01/99

11/23/99

RECRA LabNet Use Only
9910 1264

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) PCB

TM 10-1-99

Client: TMU Hanford B99-075
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: Orlette Johnson
QC: Spec Del: std TAT: 21 day
Date Rec'd: 10-1-99 Date Due: 10/22/99
Account #:

Refrigerator #				2					2		2						
#/Type Container	Liquid																
	Solid			1AG					1AG		1AG						
Volume	Liquid																
	Solid			60ml					60ml		60ml						
Preservatives				–					–		–						
ANALYSES REQUESTED			ORGANIC						INORG								
			VOA	BNA	Pest/PCB	Herb			Metal	CN	Cr+6						
			RECRA LabNet Use Only														
					ODCB				HPBTO HHGTO		IORG						

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	ODCB	HPBTO HHGTO	IORG
001	BOWCKO			S	9/28/99	0910	✓	✓	✓
002	BOWCK4			I	9/29/99	0930	✓	✓	✓

Special Instructions:
Saf # B99-075

COMPOSITE WASTE

DATE/REVISIONS:
1. Run Matrix QC
2. PCB = AR1254 only
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered ___
Airbill # 4235795300 40
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. 5.3 °C

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

Relinquished by	Received by	Date	Time
Fed Ex	TMurray	10-1-99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-075-19	Page 1 of 1

Collector: Fahlberg/~~Belmke~~ Bowers 9-28-99	Company Contact: Jason Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days		
Project Designation: 105-DR FSB - Soil	Sampling Location: 105 DR		SAF No.: B99-075
Ice Chest No.: FRC-96.014	Field Logbook No.: EL-1281		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA 9-28-99	Offsite Property No.: A99 0283		Bill of Lading/Air Bill No.: 4235 7953 0040
			COA: R105 D4 2800

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	Cool 4C	Cool 4C	None	None						
	Type of Container	aG	aG	aG	aG						
Special Handling and/or Storage	No. of Container(s)	1	1	1	1						
	Volume	60mL	60mL	60mL	500mL						
SAMPLE ANALYSIS		Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions						
Sample No.	Matrix *	Sample Date	Sample Time								
B0WCK0	Soil	9-28-99	0910	X	X	X					
~~B0WCK1~~	~~Soil~~										
~~B0WGK2~~	~~Soil~~	9-28-99									
~~B0WCK3~~	~~Soil~~										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Fahlberg / R. Fahlberg 9-28-99	Date/Time: 1540	Received By: Ref I-C 9-28-99	Date/Time: 1540
Relinquished By: Ref I-C 9-30-99	Date/Time: 1100	Received By: R. Fahlberg / R. Fahlberg 9-30-99	Date/Time: 1100
Relinquished By: R. Fahlberg / R. Fahlberg 9-30-99	Date/Time: 1430	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex 10-1-99	Date/Time: 0930	Received By: T Murray 10-1-99	Date/Time: 0930

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

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

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-075-20

Collector: Fahlberg/~~Behnke~~ Bowers 9-29-99	Company Contact: Jason Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days		
Project Designation: 105-DR FSB - Soil	Sampling Location: 105 DR		SAF No.: B99-075
Ice Chest No.: ERC 96-014	Field Logbook No.: EL-1281		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA D 9-29-99	Offsite Property No.: A99 0283		Bill of Lading/Air Bill No.: 4235 7953 0040
			COA R105D4 2800

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	None	None							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	60mL	60mL	60mL	500mL							
SAMPLE ANALYSIS	Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead), Mercury - 7471 - (CV)	See item (1) in Special Instructions.							
Sample No. / Matrix * / Sample Date / Sample Time											
B0WCK4 / Soil / 9-29-99 / 0930	X	X	X				BOWCD2				
~~B0WCK5~~ RJN 9/29/99 / Soil											
~~B0WCK6~~ RJN 9/29/99 / Soil											
~~B0WCK7~~ RJN 9/29/99 / Soil											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R Fahlberg / R Fahlberg	Date/Time: 1430 9-29-99	Received By: I-C	Date/Time: 9-29-99 1430
Relinquished By: Ref I-C	Date/Time: 9-30-99 1100	Received By: R Fahlberg / R Fahlberg	Date/Time: 1100 9-30-99
Relinquished By: R Fahlberg / R Fahlberg	Date/Time: 1430 9-30-99	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10-1-99 0930	Received By: T Murray	Date/Time: 10-1-99 0930

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

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

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

NOV 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-075
RFW# : 9910L275
SDG# : H0551
SAF# : B99-075

W.O. # : 10985-001-001-9999-00
Date Received: 10-02-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 4 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 recoveries for Chromium VI 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.

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-28-99
Date

njp\i10-275

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 12 pages.

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	__		✓ 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.

L-WI-034/D-6/99

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 10/15/99

CLIENT: TNU-HANFORD B99-075 RECRA LOT #: 9910L275

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WCJ0	% Solids	98.3	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
-002	B0WCJ8	% Solids	96.7	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
-003	B0WCK1	% Solids	97.8	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
-004	B0WCK3	% Solids	97.7	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/15/99

CLIENT: TNU-HANFORD B99-075 RECRA LOT #: 9910L275

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LVI073-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 10/15/99

CLIENT: TNU-HANFORD B99-075 RECRA LOT #: 9910L275

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-004	B0WCK3	Soluble Chromium VI	4.1	0.41u	4.1	108.8	1.0
		Insoluble Chromium VI	1090	0.41u	1180	92.6	100
BLANK10	99LVI073-MB1	Soluble Chromium VI	4.0	0.40u	4.0	100.1	1.0
		Insoluble Chromium VI	1130	0.40u	1160	96.7	100

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 10/15/99

CLIENT: TNU-HANFORD B99-075 RECRA LOT #: 9910L275

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-004REP	B0WCK3	% Solids	97.7	97.4	0.25	1.0
		Chromium VI	0.41u	0.41u	NC	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-075

DATE RECEIVED: 10/02/99 RFW LOT # :9910L275

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WCJ0						
% SOLIDS	001	S	99L%S132	09/27/99	10/08/99	10/10/99
CHROMIUM VI	001	S	99LVI073	09/27/99	10/13/99	10/13/99
B0WCJ8						
% SOLIDS	002	S	99L%S132	09/27/99	10/08/99	10/10/99
CHROMIUM VI	002	S	99LVI073	09/27/99	10/13/99	10/13/99
B0WCK1						
% SOLIDS	003	S	99L%S132	09/29/99	10/08/99	10/10/99
CHROMIUM VI	003	S	99LVI073	09/29/99	10/13/99	10/13/99
B0WCK3						
% SOLIDS	004	S	99L%S132	09/29/99	10/08/99	10/10/99
% SOLIDS	004 REP	S	99L%S132	09/29/99	10/08/99	10/10/99
CHROMIUM VI	004	S	99LVI073	09/29/99	10/13/99	10/13/99
CHROMIUM VI	004 REP	S	99LVI073	09/29/99	10/13/99	10/13/99
CHROMIUM VI	004 MS	S	99LVI073	09/29/99	10/13/99	10/13/99
CHROMIUM VI	004 MSD	S	99LVI073	09/29/99	10/13/99	10/13/99

LAB QC:

CHROMIUM VI	MB1	S	99LVI073	N/A	10/13/99	10/13/99
CHROMIUM VI	MB1 BS	S	99LVI073	N/A	10/13/99	10/13/99
CHROMIUM VI	MB1 BSD	S	99LVI073	N/A	10/13/99	10/13/99

RECRA LabNet Use Only

99101275 ae

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford B99-075

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: spec Del: std TAT: 21 day

Date Rec'd: 10/2/99 Date Due: 10/23/99

Account #:

Refrigerator #				2					2		2						
#/Type Container	Liquid																
	Solid			1AG					1AG		1AG						
Volume	Liquid																
	Solid			60					60		60						
Preservatives				—					—		—						
ANALYSES REQUESTED		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				TCLP Metal	CN	Hex Cr						

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected			ODCB				MPBTO MHgTo		ICRG				
001	BOWCJ0			S	9-27-99	1405			1				1		1				
002	BOWCJ8				1	0950			1				1		1				
003	BOWCK1				9-29-99	1220			1				1		1				
004	BOWCK3				1	1320			1				1		1				

Special Instructions:

saf # B99-075

sdg # H0551

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
2.
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # Sub Low
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. 0.2 °C

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

965 9504 215

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	10-2-99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-075-18	Page 1 of 1

Collector: Fahlberg/~~Behnke~~ Bowers RF 9.27-99	Company Contact: Jason Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days		
Project Designation: 105-DR FSB - Soil	Sampling Location: 105 DR	SAF No.: B99-075	
Ice Chest No.: SML 429-A ~~SML 510~~ RF 9.30.99	Field Logbook No.: EL-1281	Method of Shipment: FEDEX	
Shipped To: ~~TMA~~/RECRA RF 9.27.99	Offsite Property No.: ~~A99 0276~~ A99.0282 RF 9.30.99	Bill of Lading/Air Bill No.: 4235 7952 ~~9907~~ 0028 CF 9/30/99	
		COA: R105D42800	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	Cool 4C	Cool 4C	None	None						
	Type of Container	aG	aG	aG	aG						
Special Handling and/or Storage	No. of Container(s)	1	1	1	1						
	Volume	60mL	60mL	60mL	500mL						
SAMPLE ANALYSIS		Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions						
Sample No.	Matrix *	Sample Date	Sample Time								
B0WCJ0	Soil	9.27.99	1405	X	X	X			BOWCDO		
B0WCJ8	Soil	9.27.99	0950	X	X	X			BOWCDO		
~~B0WCJ9~~ RF 9.30.99	~~Soil~~	~~9.27.99~~	~~1310~~	~~X~~	~~X~~	~~X~~			~~BOWCDO~~		

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: R.Fahlberg / R.Fahlberg Date/Time: 9.27.99 1610	Received By: Ref 1-B Date/Time: 9.27.99 1610	
Relinquished By: Ref 1-B Date/Time: 9.30.99 1000	Received By: R.Fahlberg / R.Fahlberg Date/Time: 9.30.99 1000	
Relinquished By: R.Fahlberg / R.Fahlberg Date/Time: 9.30.99 14:30	Received By: Fed Ex Date/Time: 9-30-99	
Relinquished By: FedEx Date/Time: 10-1-99 9:30	Received By: TNV McGoldenberg Date/Time: 10-1-99 9:30	

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99

60ml bottles are empty upon arrival to TMA, they will be filled from the 500ml poly liner shipped to RECRA

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

LABORATORY SECTION	Received By: Fed Ex 10-2-99 0930	Title: 10-1-99 0930	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-075-19

Collector: Fahlberg/~~Behnke~~ Bowers FX 9.28-99	Company Contact: Jason Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days		
Project Designation: 105-DR FSB - Soil	Sampling Location: 105 DR		SAF No.: B99-075
Ice Chest No.: SML 4298	Field Logbook No.: EL-1281		Method of Shipment: Fed Ex
Shipped To: ~~TSA~~/RECRA 9.28.99	Offsite Property No.: A99-0282		Bill of Lading/Air Bill No.: 4235 7953 0028
			COA: R105D42800

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	None	None							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	60mL	60mL	60mL	500mL							
SAMPLE ANALYSIS	Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead), Mercury - 7471 - (CV)	See item (1) in Special Instructions							

Sample No.	Matrix *	Sample Date	Sample Time										
~~B0WCK0~~	~~Soil~~	~~9-29-99~~	~~0910~~	~~X~~									
B0WCK1	Soil	9-29-99	1220	X**	X**	X**						BOW	CDI
~~B0WCK2~~	~~Soil~~	~~9-29-99~~	~~1306~~	~~X~~	~~X~~	~~X~~						BOW	CDI
B0WCK3	Soil	9-29-99	1320	X**	X**	X**						BOW	CDI

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R.Fahlberg / R.Fahlberg	Date/Time: 1940 9.28.99	Received By: Raf I-C	Date/Time: 1940 9.28.99
Relinquished By: Raf I-C	Date/Time: 1000 9.30.99	Received By: R.Fahlberg / R.Fahlberg	Date/Time: 1000
Relinquished By: R.Fahlberg / R.Fahlberg	Date/Time: 1430 9.30.99	Received By: Fed Ex	Date/Time: 9-30-99
Relinquished By: FedEx	Date/Time: 10-1-99 9:30	Received By: TNV M.Goldenberg 10-1-99	Date/Time: 9:30
LABORATORY SECTION	Received By: 10-2-99 0930	Title: Hernandez 10-2-99 0930	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, *Europium-155*}; *Gamma Spec - Add-on* {Barium-133}; Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99

60 ml bottles are empty. They will be filled from liner material and sent to RECRA

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

Thermo NUtech CHAIN OF CUSTODY ORD # N9-10-003

10/01/99 11:57:45 WORK ID: SAF B99-075/SDG H0551

RCVD: 10/01/99 DUE: 10/22/99 KEEP: 10/21/00 DISP: S

DASH	SAMPLE IDENTIFICATION	STORED	TESTS				
01A-S	B0WCJ0	RECRA	DISPOS	WB029	WB074	WB116	WB185
01B-S	B0WCJ0 MS	RECRA	WB029	WB074	WB116	WB185	
01C-S	B0WCJ0 DUP	RECRA	WB029	WB074	WB116	WB185	
02A-S	B0WCJ8	RECRA	DISPOS	WB029	WB074	WB116	WB185
03A-S	B0WCK1	RECRA	DISPOS	WB029	WB074	WB116	WB185
04A-S	B0WCK3	RECRA	DISPOS	WB029	WB074	WB116	WB185

RELEASED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
Ryamamoto	10/1/99	Recra	10/01/99		

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

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-075
RFW# : 9910L264
SDG# : H0551
SAF# : B99-075

W.O. # : 10985-001-001-9999-00
Date Received: 10-01-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 2 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 recoveries for Chromium VI 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

10-28-99
Date

njp\i10-264

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 ~~16~~ 11 pages. 10/28/99

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	__		✓ 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**

002

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 10/15/99

CLIENT: TNU-HANFORD B99-075

RECRA LOT #: 9910L264

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WCK0	% Solids	93.2	%	0.01	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0
-002	B0WCK4	% Solids	92.7	%	0.01	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/15/99

CLIENT: TNU-HANFORD B99-075 RECRA LOT #: 9910L264

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LVI073-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 10/15/99

CLIENT: TNU-HANFORD B99-075 RECRA LOT #: 9910L264

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	B0WCK4	Soluble Chromium VI	4.2	0.43u	4.3	95.2	1.0
		Insoluble Chromium VI	974	0.43u	1180	82.9	100
BLANK10	99LVI073-MB1	Soluble Chromium VI	4.0	0.40u	4.0	100.1	1.0
		Insoluble Chromium VI	1130	0.40u	1160	96.7	100

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 10/15/99

CLIENT: TNU-HANFORD B99-075 RECRA LOT #: 9910L264

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WCK0	% Solids	93.2	91.9	1.4	1.0
-002REP	B0WCK4	Chromium VI	0.43u	0.43u	NC	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-075

DATE RECEIVED: 10/01/99 RFW LOT # :9910L264

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WCK0						
% SOLIDS	001	S	99L%S133	09/28/99	10/12/99	10/13/99
% SOLIDS	001 REP	S	99L%S133	09/28/99	10/12/99	10/13/99
CHROMIUM VI	001	S	99LVI073	09/28/99	10/13/99	10/13/99
B0WCK4						
% SOLIDS	002	S	99L%S133	09/29/99	10/12/99	10/13/99
CHROMIUM VI	002	S	99LVI073	09/29/99	10/13/99	10/13/99
CHROMIUM VI	002 REP	S	99LVI073	09/29/99	10/13/99	10/13/99
CHROMIUM VI	002 MS	S	99LVI073	09/29/99	10/13/99	10/13/99
CHROMIUM VI	002 MSD	S	99LVI073	09/29/99	10/13/99	10/13/99

LAB QC:

CHROMIUM VI	MB1	S	99LVI073	N/A	10/13/99	10/13/99
CHROMIUM VI	MB1 BS	S	99LVI073	N/A	10/13/99	10/13/99
CHROMIUM VI	MB1 BSD	S	99LVI073	N/A	10/13/99	10/13/99

RECRA LabNet Use Only

9910237 264

TM 10-1-99

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMU Hanford B99-075

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Orlette Johnson

QC: spec Del: std TAT: 21 day

Date Rec'd: 10-1-99 Date Due: 10/22/99

Account #:

Refrigerator #				2					2		2							
#/Type Container	Liquid																	
	Solid			1AG					1AG		1AG							
Volume	Liquid																	
	Solid			60ml					60ml		60ml							
Preservatives				–					–		–							
ANALYSES REQUESTED		ORGANIC							INORG									
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Cr+6							
RECRA LabNet Use Only				OPCB					HPBTO HHGTO		IORG							

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected														
S - Soil	001	BOWCKD			S	9/28/99	0910			✓					✓		✓				
SE - Sediment	002	BOWCKH			I	9/28/99	0930			✓					✓		✓				
SO - Solid																					
SL - Sludge																					
W - Water																					
O - Oil																					
A - Air																					
DS - Drum Solids																					
DL - Drum Liquids																					
L - EP/TCLP Leachate																					
WI - Wipe																					
X - Other																					
F - Fish																					

Special Instructions:

Saf # B99-075

COMPOSITE WASTE

DATE/REVISIONS:

1. Run Matrix QC
2.
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # 423579530040
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. 5.3 C

Relinquished by	Received by	Date	Time
FedEx	TMurray	10-1-99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

NOTES:

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-075-19	Page 1 of 1

Collector: Fahlberg/~~Behnke~~ Bowers 9-28-99	Company Contact: Jason Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days		
Project Designation: 105-DR FSB - Soil	Sampling Location: 105 DR		SAF No.: B99-075
Ice Chest No.: ERC-96-014	Field Logbook No.: EL-1281		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA 9-28-99	Offsite Property No.: A99 0283		Bill of Lading/Air Bill No.: 4235 7953 0040
			COA: R105 D4 2800

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	Cool 4C	None	None							
	Type of Container	aG	aG	aG	aG							
	No. of Container(s)	1	1	1	1							
Special Handling and/or Storage	Volume	60mL	60mL	60mL	500mL							
SAMPLE ANALYSIS		Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions							
Sample No.	Matrix *	Sample Date	Sample Time									
B0WCK0	Soil	9-28-99	0910	X	X	X						
~~B0WCK1~~	~~Soil~~											
~~B0WCK2~~	~~Soil~~	9-28-99										
~~B0WCK3~~	~~Soil~~											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Fahlberg / R. Fahlberg 9-28-99	Date/Time: 1540	Received By: Raf 1-C 9-28-99	Date/Time: 1540
Relinquished By: Raf 1-C 9-30-99 1100	Date/Time:	Received By: R. Fahlberg / R. Fahlberg 9-30-99	Date/Time: 1100
Relinquished By: R. Fahlberg / R. Fahlberg 9-30-99	Date/Time: 1430	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex 10-1-99 0930	Date/Time:	Received By: T. Murray 10-1-99 0930	Date/Time:

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium, Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

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

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-075-20

Collector: Fahlberg/~~Behnke~~ Bowers 9-29-99	Company Contact: Jason Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days		
Project Designation: 105-DR FSB - Soil	Sampling Location: 105 DR		SAF No.: B99-075
Ice Chest No.: ERC 96-014	Field Logbook No.: EL-1281		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA	Offsite Property No.: A99 0283		Bill of Lading/Air Bill No.: 4235 7953 0040
			COA R105D4 2800

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	None	None							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	60mL	60mL	60mL	500mL							
SAMPLE ANALYSIS	Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions							

Sample No.	Matrix *	Sample Date	Sample Time										
B0WCK4	Soil	9-29-99	0930	X	X	X				BOWCD2			
~~B0WCK5~~ RJN 9/29/99	Soil												
~~B0WCK6~~ RJN 9/29/99	Soil												
~~B0WCK7~~ RJN 9/29/99	Soil												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R Fahlberg / R Fahlberg	Date/Time: 1430 9-29-99	Received By: I-C	Date/Time: 9-29-99 1430
Relinquished By: Ref I-C	Date/Time: 9-30-99 1100	Received By: R Fahlberg / R Fahlberg	Date/Time: 1100 9-30-99
Relinquished By: R Fahlberg / R Fahlberg	Date/Time: 1430 9-30-99	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10-1-99 0930	Received By: TM Murray	Date/Time: 10-1-99 0930

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Barium-133}; Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

RECRA
ENVIRONMENTAL
INC.
Chemical and Environmental Measurement Information

NOV 1999
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-075
RFW#: 9910L275
SDG/SAF#: H0551/B99-075

W.O.#: 10985-001-001-9999-00
Date Received: 10-02-99

PCB

The set of samples consisted of four (4) soil samples collected on 09-27,29-99.

The samples and their associated QC samples were extracted on 10-11-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 10-20-99. The extraction procedure was based on method 3520 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 cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. Three (3) of sixteen (16) surrogate recoveries were outside QC limits; however, the surrogate recovery acceptance criteria were met (i.e., no more than one outlier per sample).
6. The blank spike recovery was 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.

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-26-99
Date

pef\r:\group\data\pest\09L-275.pcb

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 8 pages.

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

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: 10/23/99 11:58

RFW Batch Number: **9910L275** Client: **TNU-HANFORD B99-075** Work Order: 10985001001 Page: 1

	Cust ID:	B0WCJ0	B0WCJ0	B0WCJ0	B0WCJ8	B0WCK1	B0WCK3
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	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	120 * %	118 %	120 * %	125 * %	112 %	112 %
	Decachlorobiphenyl	108 %	113 %	113 %	112 %	108 %	110 %
Aroclor-1016		34 U	51 U	51 U	34 U	34 U	34 U
Aroclor-1221		68 U	100 U	100 U	69 U	68 U	68 U
Aroclor-1232		34 U	51 U	51 U	34 U	34 U	34 U
Aroclor-1242		34 U	51 U	51 U	34 U	34 U	34 U
Aroclor-1248		34 U	51 U	51 U	34 U	34 U	34 U
Aroclor-1254		34 U	102 %	103 %	34 U	34 U	34 U
Aroclor-1260		34 U	51 U	51 U	34 U	34 U	34 U

	Cust ID:	PBLKXA	PBLKXA BS
Sample Information	RFW#:	99LE1234-MB1	99LE1234-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	118 %	118 %
	Decachlorobiphenyl	115 %	111 %
Aroclor-1016		33 U	33 U
Aroclor-1221		67 U	67 U
Aroclor-1232		33 U	33 U
Aroclor-1242		33 U	33 U
Aroclor-1248		33 U	33 U
Aroclor-1254		33 U	93 %
Aroclor-1260		33 U	33 U

AW 10-25-99

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

Recra LabNet - Lionville Laboratory
PCB ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-075

DATE RECEIVED: 10/02/99 RFW LOT # :9910L275

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WCJ0	001	S	99LE1234	09/27/99	10/11/99	10/20/99
B0WCJ0	001 MS	S	99LE1234	09/27/99	10/11/99	10/20/99
B0WCJ0	001 MSD	S	99LE1234	09/27/99	10/11/99	10/20/99
B0WCJ8	002	S	99LE1234	09/27/99	10/11/99	10/20/99
B0WCK1	003	S	99LE1234	09/29/99	10/11/99	10/20/99
B0WCK3	004	S	99LE1234	09/29/99	10/11/99	10/20/99

LAB QC:

PBLKXA	MB1	S	99LE1234	N/A	10/11/99	10/20/99
PBLKXA	MB1 BS	S	99LE1234	N/A	10/11/99	10/20/99

gw 10-29-99

RECRA LabNet Use Only

99102275 all

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) PCB

Client: TNU Hanford B99-075

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: spec Del: std TAT: 21 day

Date Rec'd: 10/2/99 Date Due: 10/23/99

Account #:

Refrigerator #				2					2		2					
#/Type Container	Liquid															
	Solid			1AG					1AG		1AG					
Volume	Liquid															
	Solid			60					60		60					
Preservatives				—					—		—					
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	~~Pest~~ PCB	Herb				TCP Metal	CN	Hex Cr					
RECRA LabNet Use Only																
				8PCB					MPB10 MPB70		1CR6					

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	BOWCJ0			S	9-27-99	1405			1					1		1		
002	BOWCJ8				↓	0950			1					1		1		
003	BOWCK1				9-29-99	1220			1					1		1		
004	BOWCK3			↓	↓	1320			1					1		1		

Special Instructions:

saf # B99-075

sdg # H0551

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
2. PCB = AR1254 only
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___

Airbill # Sunflower

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. 0.2 °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	10-2-99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

NOTES:

965 9504 215

SERVICE TRACKING NUMBER - PULL UP PURPLE TAB

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-075-18	Page 1 of 1

Collector: Fahlberg/~~Behnke~~ Bowers RF 9.27-99	Company Contact: Jason Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days		
Project Designation: 105-DR FSB - Soil	Sampling Location: 105 DR		SAF No.: B99-075
Ice Chest No.: SML 429-A ~~SML 510~~ RF 9.30.99	Field Logbook No.: EL-1281		Method of Shipment: FEDEX
Shipped To: ~~TMA~~/RECRA RF 9.27.99	Offsite Property No.: ~~A99 0276~~ A99.0282 RF 9.30.99		Bill of Lading/Air Bill No.: 4235 7452 ~~99907~~ CF 9/30/99 0025
			COA: R105D42800

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	None	None							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	60mL	60mL	60mL	500mL							
SAMPLE ANALYSIS	Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead), Mercury - 7471 - (CV)	See item (1) in Special Instructions							
Sample No.	Matrix *	Sample Date	Sample Time								
B0WCJ0	Soil	9.27.99	1405	X	X	X			BOWCDO		
B0WCJ8	Soil	9.27.99	0950	X	X	X			BOWCDO		
~~B0WCJ9~~ RF 9.30.99	~~Soil~~	~~9.27.99~~	~~1310~~	~~X~~	~~X~~	~~X~~			~~BOWCDO~~		

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: R. Fahlberg / R. Fahlberg		1610 9.27.99
Received By: Ref 1-B		1610 9.27.99
Relinquished By: Ref 1-B		9.30.99 1000
Received By: R. Fahlberg / R. Fahlberg		1000 9.30.99
Relinquished By: R. Fahlberg / R. Fahlberg		14:30 9.30.99
Received By: Fed Ex		9-30-99
Relinquished By: Fed Ex		9:30 10-1-99
Received By: TNV M. Goldenberg		9:30 10-1-99

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133), Isotopic Plutonium; Isotopic Uranium, Americium-241; Carbon-14; Nickel-63; Technetium-99

60ml bottles are empty upon arrival to TMA, they will be filled from the 500ml poly liner & shipped to RECRA

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

LABORATORY SECTION: Received By: Fed Ex 10-2-99 0930 — Title: 10-1-99 0930 — Date/Time

FINAL SAMPLE: Disposal Method — Disposed By — Date/Time

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-075-19

Collector: Fahlberg/~~Bennke~~ Bowers FA 9-28-99	Company Contact: Jason Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days		
Project Designation: 105-DR FSB - Soil	Sampling Location: 105 DR	SAF No.: B99-075	
Ice Chest No.: SML 4298	Field Logbook No.: EL-1281	Method of Shipment: Fed Ex	
Shipped To: ~~TSD~~/RECRA RE 9-28-99	Offsite Property No.: A99-0282	Bill of Lading/Air Bill No.: 4235 7953 0028	
		COA: R105D42800	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	None	None								
Type of Container	aG	aG	aG	aG								
No. of Container(s)	1	1	1	1								
Volume	60mL	60mL	60mL	500mL								
SAMPLE ANALYSIS	Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead), Mercury - 7471 - (CV)	See item (1) in Special Instructions								

Sample No.	Matrix *	Sample Date	Sample Time										
~~B0WCK0~~	~~Soil~~	~~9-29-99~~	~~0910~~	~~X~~									
B0WCK1	Soil	9-29-99	1220	X**	X**	X**						BOW	CDI
~~B0WCK2~~	~~Soil~~	~~9-29-99~~	~~1306~~	~~X~~	~~X~~	~~X~~						BOW	CDI
B0WCK3	Soil	9-29-99	1320	X**	X**	X**						BOW	CDI

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R Fahlberg / R Fahlberg	9-28-99 1940	Raf I-C	9-28-99 1940
Raf I-C	9-30-99 1000	R Fahlberg / R Fahlberg	1000
R Fahlberg / R Fahlberg	9-30-99 1430	Fed Ex	9-30-99
FedEx	10-1-99 9:30	TNV M. Goldenberg	10-1-99 9:30

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99

60 ml bottles are empty. They will be filled from liner material and sent to RECRA

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

LABORATORY SECTION — Received By: 10-2-99 0930 Lilli Hanamoy 10-2-99 0930 Title — Date/Time

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

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

NOV 2000
Date
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-075
RFW# : 9910L264
SDG/SAF# : H0551/B99-075

W.O.# : 10985-001-001-9999-00
Date Received: 10-01-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 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) 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. All matrix spike recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. All duplicate analyses were within 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.

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

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.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-20-99
Date

mld/m10-264

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9910L264

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A __3010A __3015 __3020A ✓3050A __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-03/98

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 10/20/99

CLIENT: TNU-HANFORD B99-075 RECRA LOT #: 9910L264

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WCK0	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	2.7 u	MG/KG	2.7	1.0
-002	B0WCK4	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.0 u	MG/KG	3.0	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/20/99

CLIENT: TNU-HANFORD B99-075

RECRA LOT #: 9910L264

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99C0300-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0
BLANK1	99L0690-MB1	Lead, Total	3.1 u	MG/KG	3.1	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 10/20/99

CLIENT: TNU-HANFORD B99-075

RECRA LOT #: 9910L264

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WCK0	Lead, Total	45.8	2.7 u	52.1	87.9	1.0
-002	B0WCK4	Mercury, Total	0.16	0.02u	0.16	100	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 10/20/99

CLIENT: TNU-HANFORD B99-075 RECRA LOT #: 9910L264

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WCK0	Lead, Total	2.7 u	2.9 u	NC	1.0
-002REP	B0WCK4	Mercury, Total	0.02u	0.02u	NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/20/99

CLIENT: TNU-HANFORD B99-075 RECRA LOT #: 9910L264

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99C0300-LC1	Mercury, LCS	1.1	1.0	MG/KG	105.8
LCS1	99L0690-LC1	Lead, LCS	252	250	MG/KG	100.8

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-075

DATE RECEIVED: 10/01/99 RFW LOT # :9910L264

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WCK0						
MERCURY, TOTAL	001	S	99C0300	09/28/99	10/18/99	10/19/99
LEAD, TOTAL	001	S	99L0690	09/28/99	10/11/99	10/11/99
LEAD, TOTAL	001 REP	S	99L0690	09/28/99	10/11/99	10/11/99
LEAD, TOTAL	001 MS	S	99L0690	09/28/99	10/11/99	10/11/99
B0WCK4						
MERCURY, TOTAL	002	S	99C0300	09/29/99	10/18/99	10/19/99
MERCURY, TOTAL	002 REP	S	99C0300	09/29/99	10/18/99	10/19/99
MERCURY, TOTAL	002 MS	S	99C0300	09/29/99	10/18/99	10/19/99
LEAD, TOTAL	002	S	99L0690	09/29/99	10/11/99	10/11/99

LAB QC:

MERCURY LABORATORY	LC1 BS	S	99C0300	N/A	10/18/99	10/19/99
MERCURY, TOTAL	MB1	S	99C0300	N/A	10/18/99	10/19/99
LEAD LABORATORY	LC1 BS	S	99L0690	N/A	10/11/99	10/11/99
LEAD, TOTAL	MB1	S	99L0690	N/A	10/11/99	10/11/99

RECRA LabNet Use Only

9910 1237 264

TM 10-1-99

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMU Hanford B99-075

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Orlette Johnson

QC: spec Del: std TAT: 21 day

Date Rec'd: 10-1-99 Date Due: 10/22/99

Account #:

Refrigerator #			2					2		2						
#/Type Container	Liquid															
	Solid		1 PGT					1 PGT		1 PGT						
Volume	Liquid															
	Solid		60ml					60ml		60ml						
Preservatives			–					–		–						
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb				INORG: Metal	CN	Cr+6					
RECRA LabNet Use Only				OPCB					HPBTO HHGTO		ICRG					

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	HPBTO HHGTO	ICRG
001	BOWCKD			S	9/28/99	0910	✓	✓	✓
002	BOWCKH			I	9/29/99	0930	✓	✓	✓

Special Instructions:

Daf # B99-075

COMPOSITE WASTE

DATE/REVISIONS:

1. Run Matrix QC
2.
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # 423579530040
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. 5.3 C

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

NOTES:

Relinquished by	Received by	Date	Time
FedEx	TMurray	10-1-99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

011

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-075-19	Page 1 of 1

Collector: Fahlberg/~~Belmke~~ Bowers 9.28.99	Company Contact: Jason Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days		
Project Designation: 105-DR FSB - Soil	Sampling Location: 105 DR		SAF No.: B99-075
Ice Chest No.: ERC-96.014	Field Logbook No.: EL-1281		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA 9.28.99	Offsite Property No.: A99 0283		Bill of Lading/Air Bill No.: 4235 7953 0040
			COA: R105 D4 2800

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	Cool 4C	Cool 4C	None	None						
	Type of Container	aG	aG	aG	aG						
Special Handling and/or Storage	No. of Container(s)	1	1	1	1						
	Volume	60mL	60mL	60mL	500mL						
SAMPLE ANALYSIS		Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions.						

Sample No.	Matrix *	Sample Date	Sample Time										
B0WCK0	Soil	9-28-99	0910	X	X	X							
~~B0WCK1~~	~~Soil~~	~~RB~~											
~~B0WCK2~~	~~Soil~~	9-28-99											
~~B0WCK3~~	~~Soil~~												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R.Bowers/R.Fahlberg 9-28-99	Date/Time: 1540	Received By: Raf I-C 9-28-99	Date/Time: 1540
Relinquished By: Raf I-C 9-30-99	Date/Time: 1100	Received By: R.Bowers/R.Fahlberg 9-30-99	Date/Time: 1100
Relinquished By: R.Fahlberg/R.Fahlberg 9-30-99	Date/Time: 1430	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10-1-99 0930	Received By: TMurray	Date/Time: 10-1-99 0930

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Barium-133}; Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99

COLLECTOR VOA ALIQUOTS TO SUBN COL

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

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

012

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-075-20

Collector: Fahlberg/~~Behnke~~ Bowers 9-29-99	Company Contact: Jason Adler — Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days	
Project Designation: 105-DR FSB - Soil	Sampling Location: 105 DR	SAF No.: B99-075
Ice Chest No.: ERC 96-014	Field Logbook No.: EL-1281	Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA 9-29-99	Offsite Property No.: A99 0283	Bill of Lading/Air Bill No.: 4235 7953 0040
		COA R105D4 2800

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	None	None							
Type of Container	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	60mL	60mL	60mL	500mL							
SAMPLE ANALYSIS	Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions							
Sample No.	Matrix *	Sample Date	Sample Time								
B0WCK4	Soil	9-29-99	0930	X	X	X				BOWCD2	
~~B0WCK5~~ RJN 9/29/99	Soil										
~~B0WCK6~~ RJN 9/29/99	Soil										
~~B0WCK7~~ RJN 9/29/99	Soil										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R Fahlberg / R Fahlberg 9-29-99	Date/Time: 1430	Received By: I-C	Date/Time: 9-29-99 1430
Relinquished By: Ref I-C	Date/Time: 9-30-99 1100	Received By: R Fahlberg / R Fahlberg	Date/Time: 1100 9-30-99
Relinquished By: R Fahlberg / R Fahlberg	Date/Time: 9-30-99 1430	Received By: Fed Ex	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10-1-99 0930	Received By: T Murray	Date/Time: 10-1-99 0930

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

013

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

NOV 1999
Data Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-075
RFW# : 9910L275
SDG/SAF# : H0551/B99-075

W.O.# : 10985-001-001-9999-00
Date Received: 10-02-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 4 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) 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. All matrix spike recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. The duplicate analysis for 1 analyte 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.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-19-99
Date

mld/m10-275

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9910L275

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A __3010A __3015 __3020A ✓3050A __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-W1-033/M-03/98

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 10/18/99

CLIENT: TNU-HANFORD B99-075

RECRA LOT #: 9910L275

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WCJ0	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	2.4 u	MG/KG	2.4	1.0
-002	B0WCJ8	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	3.5	MG/KG	2.7	1.0
-003	B0WCK1	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	2.9 u	MG/KG	2.9	1.0
-004	B0WCK3	Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Lead, Total	2.6 u	MG/KG	2.6	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/14/99

CLIENT: TNU-HANFORD B99-075

RECRA LOT #: 9910L275

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99C0294-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0
BLANK1	99L0690-MB1	Lead, Total	3.1 u	MG/KG	3.1	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 10/18/99

CLIENT: TNU-HANFORD B99-075 RECRA LOT #: 9910L275

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WCJ0	Mercury, Total	0.15	0.02u	0.16	96.2	1.0
		Lead, Total	47.3	2.4 u	47.5	99.6	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 10/18/99

CLIENT: TNU-HANFORD B99-075 RECRA LOT #: 9910L275

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WCJ0	Mercury, Total	0.02u	0.02	NC	1.0
		Lead, Total	2.4 u	2.8 u	NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/18/99

CLIENT: TNU-HANFORD B99-075 RECRA LOT #: 9910L275

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99C0294-LC1	Mercury, LCS	1.1	1.0	MG/KG	105.8
LCS1	99L0690-LC1	Lead, LCS	252	250	MG/KG	100.8

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-075

DATE RECEIVED: 10/02/99 RFW LOT # :9910L275

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WCJ0						
MERCURY, TOTAL	001	S	99C0294	09/27/99	10/10/99	10/11/99
MERCURY, TOTAL	001 REP	S	99C0294	09/27/99	10/10/99	10/11/99
MERCURY, TOTAL	001 MS	S	99C0294	09/27/99	10/10/99	10/11/99
LEAD, TOTAL	001	S	99L0690	09/27/99	10/11/99	10/11/99
LEAD, TOTAL	001 REP	S	99L0690	09/27/99	10/11/99	10/11/99
LEAD, TOTAL	001 MS	S	99L0690	09/27/99	10/11/99	10/11/99
B0WCJ8						
MERCURY, TOTAL	002	S	99C0294	09/27/99	10/10/99	10/11/99
LEAD, TOTAL	002	S	99L0690	09/27/99	10/11/99	10/11/99
B0WCK1						
MERCURY, TOTAL	003	S	99C0294	09/29/99	10/10/99	10/11/99
LEAD, TOTAL	003	S	99L0690	09/29/99	10/11/99	10/11/99
B0WCK3						
MERCURY, TOTAL	004	S	99C0294	09/29/99	10/10/99	10/11/99
LEAD, TOTAL	004	S	99L0690	09/29/99	10/11/99	10/11/99

LAB QC:

MERCURY LABORATORY	LC1 BS	S	99C0294	N/A	10/10/99	10/11/99
MERCURY, TOTAL	MB1	S	99C0294	N/A	10/10/99	10/11/99
LEAD LABORATORY	LC1 BS	S	99L0690	N/A	10/11/99	10/11/99
LEAD, TOTAL	MB1	S	99L0690	N/A	10/11/99	10/11/99

RECRA LabNet Use Only

99102275 all

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford B99-075

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: spec Del: std TAT: 21 day

Date Rec'd: 10/2/99 Date Due: 10/23/99

Account #:

Refrigerator #				2					2		2						
#/Type Container	Liquid																
	Solid			1AG					1AG		1AG						
Volume	Liquid																
	Solid			60					60		60						
Preservatives				—					—		—						
ANALYSES REQUESTED		ORGANIC							INORG								
		VOA	BNA	~~Pest~~ PCB	Herb				TCP Metal	CN	Hex Cr						
RECRA LabNet Use Only				OPCB					MPBTO Mtgto		ICRG						

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	MPBTO Mtgto	ICRG
001	BOWCF0			S	9-27-99	1405	1	1	1
002	BOWCJ8				↓	0950	1	1	1
003	BOWCK1				9-29-99	1220	1	1	1
004	BOWCK3			↓	↓	1320	1	1	1

Special Instructions:

saf # B99-075

sdg # H0551

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
2.
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___

Airbill # Sub/Low

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. 6.2 °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	10-2-99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

01C 9504 215

011

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-075-18	Page 1 of 1

Collector: Fahlberg/~~Behnke~~ Bowers RF 9.27-99	Company Contact: Jason Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ	Price Code: 8L	Data Turnaround: 21 Days
Project Designation: 105-DR FSB - Soil	Sampling Location: 105 DR		SAF No.: B99-075		
Ice Chest No.: SML 429-A ~~SML 510~~ RF 9.30.99	Field Logbook No.: EL-1281		Method of Shipment: FEDEX		
Shipped To: ~~TMA~~/RECRA RF 9.27.99	Offsite Property No.: ~~A99 0276~~ A99.0282 RF 9.30.99		Bill of Lading/Air Bill No.: 4235 7952 ~~9907~~ CF 9/30/99 002		
			COA R105D42800		

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	Cool 4C	None	None							
	Type of Container	aG	aG	aG	aG							
	No. of Container(s)	1	1	1	1							
Special Handling and/or Storage	Volume	60mL	60mL	60mL	500mL							
SAMPLE ANALYSIS		Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	See item (1) in Special Instructions							
Sample No.	Matrix * / Sample Date / Sample Time											
B0WCJ0	Soil / 9.27.99 / 1405	X	X	X			BOWCD0					
B0WCJ8	Soil / 9.27.99 / 0950	X	X	X			BOWCD0					
~~B0WCJ9~~ RF 9.30.99	~~Soil / 9.27.99 / 1310~~	~~X~~	~~X~~	~~X~~			~~BOWCD0~~					

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Fahlberg / R. Fahlberg 9.27.99 Date/Time 1610	Received By: RF 1-B 9.27.99 Date/Time 1610		
Relinquished By: RF 1-B 9.30.99 Date/Time 1000	Received By: R. Fahlberg / R. Fahlberg 9.30.99 Date/Time 1000		
Relinquished By: R. Fahlberg / R. Fahlberg 9.30.99 Date/Time 14:30	Received By: Fed Ex 9-30-99 Date/Time		
Relinquished By: Fed Ex 9:30 10-1-99 Date/Time	Received By: TNV M. Goldberg 10-1-99 Date/Time 9:30		
LABORATORY SECTION	Received By: Fed Ex 10-2-99 0930	10-1-99 Title 0930	Date/Time
FINAL SAMPLE	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99

60ml bottles are empty upon arrival to TMA, they will be filled from the 500ml poly liner shipped to RECRA

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

012

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-075-19

Collector: Fahlberg/~~Behnke~~ Bowers FA 9-28-99	Company Contact: Jason Adler	Telephone No.: 373-4316	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days		
Project Designation: 105-DR FSB - Soil	Sampling Location: 105 DR		SAF No.: B99-075
Ice Chest No.: SML 4398	Field Logbook No.: EL-1281		Method of Shipment: Fed Ex
Shipped To: ~~TMA~~/RECRA 9-28-99	Offsite Property No.: A99-0282		Bill of Lading/Air Bill No.: 4235 7953 0028
			COA: R105D42800

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	None	None								
Type of Container	aG	aG	aG	aG								
No. of Container(s)	1	1	1	1								
Volume	60mL	60mL	60mL	500mL								
SAMPLE ANALYSIS	Chromium Hex - 7196	PCBs - 8080 (Aroclor-1254)	ICP Metals - 6010A (Add-on) (Lead), Mercury - 7471 - (CV)	See item (1) in Special Instructions								
Sample No.	Matrix *	Sample Date	Sample Time									
~~B0WCK0~~	~~Soil~~	~~9-29-99~~	~~0910~~	~~X~~								
B0WCK1	Soil	9-29-99	1220	X	X	X					Bow	CDI
~~B0WCK2~~	~~Soil~~	~~9-29-99~~	~~1306~~	~~X~~	~~X~~	~~X~~					Bow	CDI
B0WCK3	Soil	9-29-99	1320	X	X	X					Bow	CDI

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	9-28-99 1940	Raf I-C	9-28-99 1940
Raf I-C	9-30-99 1000	R. Fahlberg / R. Fahlberg	1000
R. Fahlberg / R. Fahlberg	9-30-99 1430	Fed Ex	9-30-99
Fed Ex	10-1-99 9:30	TNV M. Goldenberg	10-1-99 9:30

SPECIAL INSTRUCTIONS

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Barium-133); Isotopic Plutonium; Isotopic Uranium; Americium-241; Carbon-14; Nickel-63; Technetium-99

60 ml bottles are empty. They will be filled from liner material and sent to RECRA

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

LABORATORY SECTION — Received By: 10-2-99 0930 Title: Lab Manager 10-2-99 0930 Date/Time

FINAL SAMPLE DISPOSITION — Disposal Method: Disposed By: Date/Time

013