H0492-TMA/RICKA

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Thermo Nutech
W.O. No. N9-08-087-7178

Bechtel Hanford Inc.
SDG H0492

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0492 is composed of seven solid (soil) samples designated under SAF No. B99-078 with a Project Designation of: 200 Area Source characterization-200-CW-1 OU.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklists. The results were transmitted to BHI via facsimile on October 4, 1999.

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Data
Log In

2.0 ANALYSIS NOTES

2.1 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.2 Total/Isotopic Uranium Analyses

Isotopic analyses were to be based on the results from the total uranium analyses. No isotopic uranium analyses were requested based on the total uranium results. No problems were encountered with the total uranium analyses.

2.3 Gamma Spec Analyses

No problems were encountered during the course of the analyses.

2.4 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.5 Americium-241 Analyses

All samples were reanalyzed due to low initial yields. The reanalyses yields were not improved, except for the QC LCS and blank which had acceptable yields. Due to the low tracer yields the some of the resultant sample MDA's are greater than the RDL. Reanalysis data is reported.

2.6 Tritium Analyses

No problems were encountered during the course of the analyses.

2.7 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.8 Technetium-99 Analyses

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

2.9 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses. Recounts were performed on samples B0W533 and B0W534.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

SAMPLE SUMMARY

SDG 7178
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0492

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0W533	GP-15 <15' bgs 5.5'-6.5'	SOLID		N908087-01	B99-078	B99-078-01	08/16/99 08:15
B0W534	GP-15 <15' bgs 5.5'-6.5'	SOLID		N908087-02	B99-078	B99-078-02	08/16/99 08:34
B0W535	GP-15 <15' bgs 5.5'-6.5'	SOLID		N908087-03	B99-078	B99-078-03	08/16/99 08:50
B0W536	GP-15 <15' bgs 5.5'-6.5'	SOLID		N908087-04	B99-078	B99-078-04	08/16/99 09:03
B0W537	GP-15 <15' bgs 5.5'-6.5'	SOLID		N908087-05	B99-078	B99-078-05	08/16/99 09:10
B0W540	GP-15 <15' bgs 5.5'-6.5'	SOLID		N908087-06	B99-078	B99-078-08	08/16/99 09:31
B0W541	GP-15 <15' bgs 5.5'-6.5'	SOLID		N908087-07	B99-078	B99-078-09	08/16/99 09:40
Method Blank		SOLID		N908087-09	B99-078		
Method Blank		SOLID		N908087-12	B99-078		
Lab Control Sample		SOLID		N908087-08	B99-078		
Lab Control Sample		SOLID		N908087-11	B99-078		
Duplicate (N908087-01)	GP-15 <15' bgs 5.5'-6.5'	SOLID		N908087-13	B99-078		08/16/99 08:15
Duplicate (N908087-06)	GP-15 <15' bgs 5.5'-6.5'	SOLID		N908087-10	B99-078		08/16/99 09:31

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 10/29/99

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SAMPLE DELIVERY GROUP H0492

SDG 7178
Contact Kevin C. Johnson

QC SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0492

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
7178	B99-078-01	B0W533	SOLID	93.5			08/18/99	2	N908087-01	7178-001
	B99-078-02	B0W534	SOLID	94.8			08/18/99	2	N908087-02	7178-002
	B99-078-03	B0W535	SOLID	96.5			08/18/99	2	N908087-03	7178-003
	B99-078-04	B0W536	SOLID	97.2			08/18/99	2	N908087-04	7178-004
	B99-078-05	B0W537	SOLID	96.8			08/18/99	2	N908087-05	7178-005
	B99-078-08	B0W540	SOLID	97.0			08/18/99	2	N908087-06	7178-006
	B99-078-09	B0W541	SOLID	95.6			08/18/99	2	N908087-07	7178-007
		Method Blank	SOLID						N908087-09	7178-009
		Method Blank	SOLID						N908087-12	7178-012
		Lab Control Sample	SOLID						N908087-08	7178-008
		Lab Control Sample	SOLID						N908087-11	7178-011
		Duplicate (N908087-01)	SOLID				08/18/99	2	N908087-13	7178-013
		Duplicate (N908087-06)	SOLID	93.5			08/18/99	2	N908087-10	7178-010

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 10/29/99

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SAMPLE DELIVERY GROUP H0492

SDG 7178
Contact Kevin C. Johnson

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0492

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	6893-085	5.0	7			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6893-085	5.0	7			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6893-085	5.0	7			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6893-085	10.0	7			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6893-085	10.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6893-085	15.0	7			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6893-085	9.0	7			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6893-085	10.0	2			1	1	1/1		
NI_L	SOLID	Nickel 63 in Soil	6893-085	10.0	2			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

WORK SUMMARY

SDG 7178
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0492

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0W533			N908087-01	7178-001	AM	A1	10/06/99	10/29/99	NJV	Americium 241 in Soil
GP-15 <15' bgs 5.5'-6.5'		SOLID	08/16/99	7178-001	GAM		09/30/99	10/04/99	NJV	Gamma Scan
B99-078-01	B99-078		08/18/99	7178-001	PU		09/20/99	10/04/99	NJV	Plutonium, Isotopic in Solids
				7178-001	SR		09/22/99	10/04/99	NJV	Total Strontium in Soil
				7178-001	TH		09/27/99	10/04/99	NJV	Thorium, Isotopic in Soil
				7178-001	U_T		09/13/99	10/04/99	NJV	Uranium, Total in Soil
B0W534			N908087-02	7178-002	AM	A1	10/06/99	10/29/99	NJV	Americium 241 in Soil
GP-15 <15' bgs 5.5'-6.5'		SOLID	08/16/99	7178-002	GAM		09/30/99	10/04/99	NJV	Gamma Scan
B99-078-02	B99-078		08/18/99	7178-002	PU		09/20/99	10/04/99	NJV	Plutonium, Isotopic in Solids
				7178-002	SR		09/22/99	10/04/99	NJV	Total Strontium in Soil
				7178-002	TH		09/27/99	10/04/99	NJV	Thorium, Isotopic in Soil
				7178-002	U_T		09/13/99	10/04/99	NJV	Uranium, Total in Soil
B0W535			N908087-03	7178-003	AM	A1	10/06/99	10/29/99	NJV	Americium 241 in Soil
GP-15 <15' bgs 5.5'-6.5'		SOLID	08/16/99	7178-003	GAM		09/30/99	10/04/99	NJV	Gamma Scan
B99-078-03	B99-078		08/18/99	7178-003	PU		09/20/99	10/04/99	NJV	Plutonium, Isotopic in Solids
				7178-003	SR		09/22/99	10/04/99	NJV	Total Strontium in Soil
				7178-003	TH		09/22/99	10/04/99	NJV	Thorium, Isotopic in Soil
				7178-003	U_T		09/13/99	10/04/99	NJV	Uranium, Total in Soil
B0W536			N908087-04	7178-004	AM	A1	10/06/99	10/29/99	NJV	Americium 241 in Soil
GP-15 <15' bgs 5.5'-6.5'		SOLID	08/16/99	7178-004	GAM		09/30/99	10/04/99	NJV	Gamma Scan
B99-078-04	B99-078		08/18/99	7178-004	PU		09/20/99	10/04/99	NJV	Plutonium, Isotopic in Solids
				7178-004	SR		09/22/99	10/04/99	NJV	Total Strontium in Soil
				7178-004	TH		09/22/99	10/04/99	NJV	Thorium, Isotopic in Soil
				7178-004	U_T		09/13/99	10/04/99	NJV	Uranium, Total in Soil
B0W537			N908087-05	7178-005	AM	A1	10/06/99	10/29/99	NJV	Americium 241 in Soil
GP-15 <15' bgs 5.5'-6.5'		SOLID	08/16/99	7178-005	GAM		09/30/99	10/04/99	NJV	Gamma Scan
B99-078-05	B99-078		08/18/99	7178-005	PU		09/20/99	10/04/99	NJV	Plutonium, Isotopic in Solids
				7178-005	SR		09/22/99	10/04/99	NJV	Total Strontium in Soil
				7178-005	TH		09/24/99	10/04/99	NJV	Thorium, Isotopic in Soil
				7178-005	U_T		09/13/99	10/04/99	NJV	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

SDG 7178
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0492

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0W540			N908087-06	7178-006	AM	A1	10/06/99	10/29/99	NJV	Americium 241 in Soil
GP-15 <15' bgs 5.5'-6.5'		SOLID	08/16/99	7178-006	GAM		09/30/99	10/04/99	NJV	Gamma Scan
B99-078-08	B99-078		08/18/99	7178-006	H		08/29/99	10/04/99	NJV	Tritium in Soil
				7178-006	NI_L		09/09/99	10/04/99	NJV	Nickel 63 in Soil
				7178-006	PU		09/20/99	10/04/99	NJV	Plutonium, Isotopic in Solids
				7178-006	SR		09/22/99	10/04/99	NJV	Total Strontium in Soil
				7178-006	TC		09/27/99	10/04/99	NJV	Technetium 99 in Soil
				7178-006	TH		09/24/99	10/04/99	NJV	Thorium, Isotopic in Soil
				7178-006	U_T		09/13/99	10/04/99	NJV	Uranium, Total in Soil
B0W541			N908087-07	7178-007	AM	A1	10/06/99	10/29/99	NJV	Americium 241 in Soil
GP-15 <15' bgs 5.5'-6.5'		SOLID	08/16/99	7178-007	GAM		09/30/99	10/04/99	NJV	Gamma Scan
B99-078-09	B99-078		08/18/99	7178-007	H		08/29/99	10/04/99	NJV	Tritium in Soil
				7178-007	NI_L		09/09/99	10/04/99	NJV	Nickel 63 in Soil
				7178-007	PU		09/20/99	10/04/99	NJV	Plutonium, Isotopic in Solids
				7178-007	SR		09/22/99	10/04/99	NJV	Total Strontium in Soil
				7178-007	TC		09/29/99	10/04/99	NJV	Technetium 99 in Soil
				7178-007	TH		09/24/99	10/04/99	NJV	Thorium, Isotopic in Soil
				7178-007	U_T		09/13/99	10/04/99	NJV	Uranium, Total in Soil
Method Blank			N908087-09	7178-009	GAM		09/30/99	10/04/99	NJV	Gamma Scan
		SOLID		7178-009	H		08/30/99	10/04/99	NJV	Tritium in Soil
	B99-078			7178-009	NI_L		09/09/99	10/04/99	NJV	Nickel 63 in Soil
				7178-009	PU		09/20/99	10/04/99	NJV	Plutonium, Isotopic in Solids
				7178-009	SR		09/22/99	10/04/99	NJV	Total Strontium in Soil
				7178-009	TC		09/27/99	10/04/99	NJV	Technetium 99 in Soil
				7178-009	TH		09/24/99	10/04/99	NJV	Thorium, Isotopic in Soil
				7178-009	U_T		09/13/99	10/04/99	NJV	Uranium, Total in Soil
Method Blank			N908087-12	7178-012	AM		10/06/99	10/29/99	NJV	Americium 241 in Soil
		SOLID								
	B99-078									

Lab id TMANC
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

SDG 7178
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0492

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			N908087-08	7178-008	GAM		09/30/99	10/04/99	NJV	Gamma Scan
		SOLID		7178-008	H		08/29/99	10/04/99	NJV	Tritium in Soil
	B99-078			7178-008	NI_L		09/09/99	10/04/99	NJV	Nickel 63 in Soil
				7178-008	PU		09/20/99	10/04/99	NJV	Plutonium, Isotopic in Solids
				7178-008	SR		09/22/99	10/04/99	NJV	Total Strontium in Soil
				7178-008	TC		09/30/99	10/04/99	NJV	Technetium 99 in Soil
				7178-008	TH		09/24/99	10/04/99	NJV	Thorium, Isotopic in Soil
				7178-008	U_T		09/13/99	10/04/99	NJV	Uranium, Total in Soil
Lab Control Sample			N908087-11	7178-011	AM		10/11/99	10/29/99	NJV	Americium 241 in Soil
		SOLID								
	B99-078									
Duplicate (N908087-01)			N908087-13	7178-013	AM		10/06/99	10/29/99	NJV	Americium 241 in Soil
GP-15 <15' bgs 5.5'-6.5'		SOLID	08/16/99							
	B99-078		08/18/99							
Duplicate (N908087-06)			N908087-10	7178-010	GAM		09/30/99	10/04/99	NJV	Gamma Scan
GP-15 <15' bgs 5.5'-6.5'		SOLID	08/16/99	7178-010	H		08/30/99	10/04/99	NJV	Tritium in Soil
	B99-078		08/18/99	7178-010	NI_L		09/09/99	10/04/99	NJV	Nickel 63 in Soil
				7178-010	PU		09/20/99	10/04/99	NJV	Plutonium, Isotopic in Solids
				7178-010	SR		09/22/99	10/04/99	NJV	Total Strontium in Soil
				7178-010	TC		09/27/99	10/04/99	NJV	Technetium 99 in Soil
				7178-010	TH		09/24/99	10/04/99	NJV	Thorium, Isotopic in Soil
				7178-010	U_T		09/13/99	10/04/99	NJV	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

SDG 7178
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0492

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B99-078	Americium 241 in Soil	AM/CMPLATE	7			1	1	1	10
GAM	B99-078	Gamma Scan	GAMMAHI	7			1	1	1	10
H	B99-078	Tritium in Soil	EPA906.0	2			1	1	1	5
NI_L	B99-078	Nickel 63 in Soil	NI63LSC	2			1	1	1	5
PU	B99-078	Plutonium, Isotopic in Solids	PUPLATE	7			1	1	1	10
SR	B99-078	Total Strontium in Soil	SRTOTAL	7			1	1	1	10
TC	B99-078	Technetium 99 in Soil	TC99TRLSC	2			1	1	1	5
TH	B99-078	Thorium, Isotopic in Soil	THPLATE	7			1	1	1	10
U_T	B99-078	Uranium, Total in Soil	UKPA	7			1	1	1	10
TOTALS				48			9	9	9	75

Lab id TMANC
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

N908087-09 Method Blank

METHOD BLANK

SDG	7178	Client/Case no	Hanford	SDG-H0492	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N908087-09	Client sample id	Method Blank		
Dept sample id	7178-009	Material/Matrix		SOLID	
		SAF No	B99-078		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.042	0.050	0.088	400	U	H
Technetium 99	14133-76-7	-0.021	0.22	0.49	15	U	TC
Total Uranium (ug/g)	7440-61-1	0	0.002	0.005	1.0	U	U_T
Plutonium 238	13981-16-3	0	0.024	0.090	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.024	0.024	0.11	1.0	U	PU
Nickel 63	13981-37-8	-0.654	1.1	2.0	30	U	NI_L
Total Strontium	SR-RAD	-0.019	0.26	0.46	1.0	U	SR
Thorium 228	14274-82-9	0.052	0.087	0.14	1.0	U	TH
Thorium 230	14269-63-7	U		0.20	1.0	U	TH
Thorium 232	TH-232	0.052	0.052	0.066	1.0	U	TH
Potassium 40	13966-00-2	U		0.064		U	GAM
Cobalt 60	10198-40-0	U		0.007	0.050	U	GAM
Cesium 137	10045-97-3	U		0.006	0.10	U	GAM
Europium 152	14683-23-9	U		0.015	0.10	U	GAM
Europium 154	15585-10-1	U		0.015	0.10	U	GAM
Europium 155	14391-16-3	U		0.012	0.10	U	GAM
Radium 226	13982-63-3	U		0.012	0.10	U	GAM
Radium 228	15262-20-1	U		0.026	0.20	U	GAM
Thorium 228	14274-82-9	U		0.009		U	GAM
Thorium 232	TH-232	U		0.026		U	GAM
Americium 241	14596-10-2	U		0.013		U	GAM
Uranium 238	U-238	U		0.81		U	GAM
Uranium 235	15117-96-1	U		0.019		U	GAM

200 Area Source charztn-200-CW-1 OU

QC-BLANK 31662

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

N908087-12 Method Blank

METHOD BLANK

SDG	7178	Client/Case no	Hanford SDG-H0492
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908087-12	Client sample id	Method Blank
Dept sample id	7178-012	Material/Matrix	SOLID
		SAF No	B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Americium 241	14596-10-2	-0.019	0.023	0.052	1.0	U	AM

200 Area Source charztn-200-CW-1 OU

QC-BLANK 31941

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

N908087-08

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7178

Contact Kevin C. Johnson

Client/Case no Hanford SDG-H0492

Case no TRB-SBB-207925

Lab sample id N908087-08

Dept sample id 7178-008

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	5.97	0.16	0.084	400	J	H	6.05	0.24	99	84-116	80-120
Technetium 99	68.5	1.6	0.75	15		TC	69.8	2.8	98	84-116	80-120
Total Uranium (ug/g)	28.8	3.3	0.055	1.0		U_T	30.4	1.2	95	78-122	80-120
Plutonium 238	10.9	0.71	0.032	1.0		PU	11.3	0.45	96	87-113	80-120
Plutonium 239/240	11.0	0.72	0.042	1.0		PU	11.9	0.48	92	87-113	80-120
Nickel 63	163	4.0	2.0	30		NI_L	167	6.7	98	84-116	
Total Strontium	10.9	0.79	0.60	1.0		SR	12.5	0.50	87	83-117	
Thorium 230	27.8	1.5	0.19	1.0		TH	28.0	1.1	99	88-112	
Cobalt 60	0.333	0.035	0.015	0.050		GAM	0.326	0.013	102	71-129	80-120
Cesium 137	0.363	0.032	0.024	0.10		GAM	0.352	0.014	103	72-128	80-120

200 Area Source charztn-200-CW-1 OU

QC-LCS 31661

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

N908087-11

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7178

Contact Kevin C. Johnson

Client/Case no Hanford SDG-H0492

Case no TRB-SBB-207925

Lab sample id N908087-11

Dept sample id 7178-011

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Americium 241	9.04	0.67	0.040	1.0		AM	9.58	0.38	94	86-114	80-120

200 Area Source charztn-200-CW-1 OU

QC-LCS 31940

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

N908087-13 B0W533

DUPLICATE

SDG	7178			Client/Case no	Hanford SDG-H0492
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N908087-13	Lab sample id	N908087-01	Client sample id	B0W533
Dept sample id	7178-013	Dept sample id	7178-001	Location/Matrix	GP-15 <15' bgs 5.5'-6.5' SOLID
		Received	08/18/99	Collected	08/16/99 08:15
		% solids	93.5	Custody/SAF No	B99-078-01 B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Americium 241	-5.66	9.5	12	1.0	U	AM	0	0.88	2.1	U	-		

200 Area Source charztn-200-CW-1 OU

QC-DUP#1 31942

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

N908087-10 B0W540

DUPLICATE

SDG	7178			Client/Case no	Hanford SDG-H0492
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N908087-10	Lab sample id	N908087-06	Client sample id	B0W540
Dept sample id	7178-010	Dept sample id	7178-006	Location/Matrix	GP-15 <15' bgs 5.5'-6.5' SOLID
		Received	08/18/99	Collected	08/16/99 09:31
% solids	93.5	% solids	97.0	Custody/SAF No	B99-078-08 B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Tritium	-0.047	0.049	0.087	400	U	H	-0.027	0.050	0.087	U	-		
Technetium 99	-0.297	0.41	0.95	15	U	TC	0.118	0.19	0.52	U	-		
Total Uranium (ug/g)	0.444	0.049	0.006	1.0	J	U_T	0.465	0.050	0.006	J	5	30	
Plutonium 238	0.003	0.020	0.037	1.0	U	PU	0	0.030	0.083	U	-		
Plutonium 239/240	-0.003	0.010	0.028	1.0	U	PU	-0.015	0.045	0.10	U	-		
Nickel 63	-0.168	1.3	2.2	30	U	NI_L	0.134	1.2	2.0	U	-		
Total Strontium	0.021	0.38	0.65	1.0	U	SR	0.303	0.48	0.66	U	-		
Thorium 228	0.102	0.094	0.14	1.0	U	TH	0.117	0.12	0.19	U	-		
Thorium 230	U		0.18	1.0	U	TH	0.067	0.12	0.18	U	-		
Thorium 232	0.203	0.094	0.075	1.0	J	TH	0.191	0.083	0.064	J	6	96	
Potassium 40	9.71	0.48	0.22			GAM	10.1	1.5	0.21		4	40	
Cobalt 60	U		0.022	0.050	U	GAM	U		0.019	U	-		
Cesium 137	U		0.022	0.10	U	GAM	U		0.017	U	-		
Europium 152	U		0.055	0.10	U	GAM	U		0.047	U	-		
Europium 154	U		0.074	0.10	U	GAM	U		0.066	U	-		
Europium 155	U		0.080	0.10	U	GAM	U		0.047	U	-		
Radium 226	0.374	0.047	0.042	0.10		GAM	U		0.060	U	145	66	
Radium 228	0.418	0.095	0.095	0.20		GAM	U		0.12	U	111	93	
Thorium 228	0.390	0.029	0.030			GAM	U		0.048	U	156	56	
Thorium 232	0.418	0.095	0.095			GAM	U		0.12	U	111	93	
Americium 241	U		0.19		U	GAM	U		0.027	U	-		
Uranium 238	U		2.8		U	GAM	U		2.3	U	-		
Uranium 235	U		0.096		U	GAM	U		0.071	U	-		

200 Area Source charztn-200-CW-1 OU

QC-DUP#6 31663

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

N908087-01 B0W533

DATA SHEET

SDG	7178	Client/Case no	Hanford SDG-H0492
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908087-01	Client sample id	B0W533
Dept sample id	7178-001	Location/Matrix	GP-15 <15' bgs 5.5'-6.5' SOLID
Received	08/18/99	Collected	08/16/99 08:15
% solids	93.5	Custody/SAF No	B99-078-01 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.607	0.067	0.005	1.0	J	U_T
Plutonium 238	13981-16-3	0.003	0.021	0.046	1.0	U	PU
Plutonium 239/240	PU-239/240	0.007	0.021	0.042	1.0	U	PU
Americium 241	14596-10-2	0	0.88	2.1	1.0	U	AM
Total Strontium	SR-RAD	-0.087	0.28	0.39	1.0	U	SR
Thorium 228	14274-82-9	0.118	0.088	0.14	1.0	U	TH
Thorium 230	14269-63-7	0.168	0.13	0.19	1.0	U	TH
Thorium 232	TH-232	0.197	0.073	0.056	1.0	J	TH
Potassium 40	13966-00-2	12.2	0.64	0.31			GAM
Cobalt 60	10198-40-0	U		0.029	0.050	U	GAM
Cesium 137	10045-97-3	4.58	0.091	0.045	0.10		GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.097	0.10	U	GAM
Europium 155	14391-16-3	U		0.13	0.10	U	GAM
Radium 226	13982-63-3	0.589	0.073	0.069	0.10		GAM
Radium 228	15262-20-1	0.823	0.15	0.13	0.20		GAM
Thorium 228	14274-82-9	0.810	0.068	0.072			GAM
Thorium 232	TH-232	0.823	0.15	0.13			GAM
Americium 241	14596-10-2	U		0.31		U	GAM
Uranium 238	U-238	U		3.4		U	GAM
Uranium 235	15117-96-1	U		0.16		U	GAM

200 Area Source charztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

N908087-02 B0W534

DATA SHEET

SDG	7178	Client/Case no	Hanford SDG-H0492
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908087-02	Client sample id	B0W534
Dept sample id	7178-002	Location/Matrix	GP-15 <15' bgs 5.5'-6.5' SOLID
Received	08/18/99	Collected	08/16/99 08:34
% solids	94.8	Custody/SAF No	B99-078-02 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.553	0.067	0.058	1.0	J	U_T
Plutonium 238	13981-16-3	-0.023	0.045	0.11	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.008	0.045	0.10	1.0	U	PU
Americium 241	14596-10-2	-0.490	2.0	4.7	1.0	U	AM
Total Strontium	SR-RAD	0.035	0.14	0.19	1.0	U	SR
Thorium 228	14274-82-9	0.170	0.089	0.12	1.0	J	TH
Thorium 230	14269-63-7	-0.007	0.10	0.19	1.0	U	TH
Thorium 232	TH-232	0.198	0.074	0.056	1.0	J	TH
Potassium 40	13966-00-2	11.4	1.6	0.24			GAM
Cobalt 60	10198-40-0	U		0.020	0.050	U	GAM
Cesium 137	10045-97-3	0.741	0.034	0.024	0.10		GAM
Europium 152	14683-23-9	U		0.060	0.10	U	GAM
Europium 154	15585-10-1	U		0.075	0.10	U	GAM
Europium 155	14391-16-3	U		0.054	0.10	U	GAM
Radium 226	13982-63-3	U		0.077	0.10	U	GAM
Radium 228	15262-20-1	U		0.16	0.20	U	GAM
Thorium 228	14274-82-9	U		0.34		U	GAM
Thorium 232	TH-232	U		0.16		U	GAM
Americium 241	14596-10-2	U		0.033		U	GAM
Uranium 238	U-238	U		2.8		U	GAM
Uranium 235	15117-96-1	U		0.090		U	GAM

200 Area Source charztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

N908087-03 B0W535

DATA SHEET

SDG	7178	Client/Case no	Hanford SDG-H0492
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908087-03	Client sample id	B0W535
Dept sample id	7178-003	Location/Matrix	GP-15 <15' bgs 5.5'-6.5' SOLID
Received	08/18/99	Collected	08/16/99 08:50
% solids	96.5	Custody/SAF No	B99-078-03 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.379	0.042	0.005	1.0	J	U_T
Plutonium 238	13981-16-3	-0.007	0.013	0.041	1.0	U	PU
Plutonium 239/240	PU-239/240	0.003	0.013	0.032	1.0	U	PU
Americium 241	14596-10-2	-0.297	0.30	0.76	1.0	U	AM
Total Strontium	SR-RAD	-0.063	0.19	0.27	1.0	U	SR
Thorium 228	14274-82-9	0.184	0.11	0.14	1.0	J	TH
Thorium 230	14269-63-7	U		0.22	1.0	U	TH
Thorium 232	TH-232	0.145	0.077	0.094	1.0	J	TH
Potassium 40	13966-00-2	9.16	0.62	0.32			GAM
Cobalt 60	10198-40-0	U		0.032	0.050	U	GAM
Cesium 137	10045-97-3	U		0.027	0.10	U	GAM
Europium 152	14683-23-9	U		0.072	0.10	U	GAM
Europium 154	15585-10-1	U		0.10	0.10	U	GAM
Europium 155	14391-16-3	U		0.079	0.10	U	GAM
Radium 226	13982-63-3	0.355	0.055	0.053	0.10		GAM
Radium 228	15262-20-1	0.403	0.12	0.13	0.20		GAM
Thorium 228	14274-82-9	0.429	0.033	0.032			GAM
Thorium 232	TH-232	0.403	0.12	0.13			GAM
Americium 241	14596-10-2	U		0.10		U	GAM
Uranium 238	U-238	U		3.4		U	GAM
Uranium 235	15117-96-1	U		0.10		U	GAM

200 Area Source charztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

N908087-04 B0W536

DATA SHEET

SDG	7178	Client/Case no	Hanford SDG-H0492
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908087-04	Client sample id	B0W536
Dept sample id	7178-004	Location/Matrix	GP-15 <15' bgs 5.5'-6.5' SOLID
Received	08/18/99	Collected	08/16/99 09:03
% solids	97.2	Custody/SAF No	B99-078-04 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.577	0.063	0.005	1.0	J	U_T
Plutonium 238	13981-16-3	0.018	0.027	0.043	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.027	0.060	1.0	U	PU
Americium 241	14596-10-2	0.197	0.27	0.50	1.0	U	AM
Total Strontium	SR-RAD	-0.121	0.21	0.31	1.0	U	SR
Thorium 228	14274-82-9	0.139	0.10	0.17	1.0	U	TH
Thorium 230	14269-63-7	0.205	0.13	0.20	1.0	J	TH
Thorium 232	TH-232	0.132	0.073	0.070	1.0	J	TH
Potassium 40	13966-00-2	9.55	0.38	0.16			GAM
Cobalt 60	10198-40-0	U		0.017	0.050	U	GAM
Cesium 137	10045-97-3	0.019	0.011	0.014	0.10	J	GAM
Europium 152	14683-23-9	U		0.039	0.10	U	GAM
Europium 154	15585-10-1	U		0.054	0.10	U	GAM
Europium 155	14391-16-3	U		0.042	0.10	U	GAM
Radium 226	13982-63-3	0.364	0.035	0.032	0.10		GAM
Radium 228	15262-20-1	0.452	0.090	0.086	0.20		GAM
Thorium 228	14274-82-9	0.454	0.022	0.021			GAM
Thorium 232	TH-232	0.452	0.090	0.086			GAM
Americium 241	14596-10-2	U		0.051		U	GAM
Uranium 238	U-238	U		2.1		U	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM

200 Area Source charztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

N908087-05 B0W537

DATA SHEET

SDG	7178	Client/Case no	Hanford SDG-H0492
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908087-05	Client sample id	B0W537
Dept sample id	7178-005	Location/Matrix	GP-15 <15' bgs 5.5'-6.5' SOLID
Received	08/18/99	Collected	08/16/99 09:10
% solids	96.8	Custody/SAF No	B99-078-05 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.370	0.041	0.005	1.0	J	U_T
Plutonium 238	13981-16-3	-0.007	0.020	0.047	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.016	0.026	0.058	1.0	U	PU
Americium 241	14596-10-2	-0.083	0.17	0.64	1.0	U	AM
Total Strontium	SR-RAD	0.030	0.13	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.040	0.13	0.22	1.0	U	TH
Thorium 230	14269-63-7	U		0.21	1.0	U	TH
Thorium 232	TH-232	0.087	0.080	0.11	1.0	U	TH
Potassium 40	13966-00-2	9.58	0.49	0.18			GAM
Cobalt 60	10198-40-0	U		0.024	0.050	U	GAM
Cesium 137	10045-97-3	U		0.022	0.10	U	GAM
Europium 152	14683-23-9	U		0.056	0.10	U	GAM
Europium 154	15585-10-1	U		0.083	0.10	U	GAM
Europium 155	14391-16-3	U		0.079	0.10	U	GAM
Radium 226	13982-63-3	0.371	0.046	0.043	0.10		GAM
Radium 228	15262-20-1	0.532	0.082	0.081	0.20		GAM
Thorium 228	14274-82-9	0.448	0.030	0.030			GAM
Thorium 232	TH-232	0.532	0.082	0.081			GAM
Americium 241	14596-10-2	U		0.20		U	GAM
Uranium 238	U-238	U		2.9		U	GAM
Uranium 235	15117-96-1	U		0.095		U	GAM

200 Area Source charztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

N908087-06 B0W540

DATA SHEET

SDG	7178	Client/Case no	Hanford SDG-H0492
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908087-06	Client sample id	B0W540
Dept sample id	7178-006	Location/Matrix	GP-15 <15' bgs 5.5'-6.5' SOLID
Received	08/18/99	Collected	08/16/99 09:31
% solids	97.0	Custody/SAF No	B99-078-08 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.027	0.050	0.087	400	U	H
Technetium 99	14133-76-7	0.118	0.19	0.52	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.465	0.050	0.006	1.0	J	U_T
Plutonium 238	13981-16-3	0	0.030	0.083	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.015	0.045	0.10	1.0	U	PU
Nickel 63	13981-37-8	0.134	1.2	2.0	30	U	NI_L
Americium 241	14596-10-2	-6.61	22	27	1.0	U	AM
Total Strontium	SR-RAD	0.303	0.48	0.66	1.0	U	SR
Thorium 228	14274-82-9	0.117	0.12	0.19	1.0	U	TH
Thorium 230	14269-63-7	0.067	0.12	0.18	1.0	U	TH
Thorium 232	TH-232	0.191	0.083	0.064	1.0	J	TH
Potassium 40	13966-00-2	10.1	1.5	0.21			GAM
Cobalt 60	10198-40-0	U		0.019	0.050	U	GAM
Cesium 137	10045-97-3	U		0.017	0.10	U	GAM
Europium 152	14683-23-9	U		0.047	0.10	U	GAM
Europium 154	15585-10-1	U		0.066	0.10	U	GAM
Europium 155	14391-16-3	U		0.047	0.10	U	GAM
Radium 226	13982-63-3	U		0.060	0.10	U	GAM
Radium 228	15262-20-1	U		0.12	0.20	U	GAM
Thorium 228	14274-82-9	U		0.048		U	GAM
Thorium 232	TH-232	U		0.12		U	GAM
Americium 241	14596-10-2	U		0.027		U	GAM
Uranium 238	U-238	U		2.3		U	GAM
Uranium 235	15117-96-1	U		0.071		U	GAM

200 Area Source charztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

N908087-07 B0W541

DATA SHEET

SDG	7178	Client/Case no	Hanford SDG-H0492
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908087-07	Client sample id	B0W541
Dept sample id	7178-007	Location/Matrix	GP-15 <15' bgs 5.5'-6.5' SOLID
Received	08/18/99	Collected	08/16/99 09:40
% solids	95.6	Custody/SAF No	B99-078-09 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.040	0.051	0.090	400	U	H
Technetium 99	14133-76-7	0.113	0.41	0.56	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.619	0.069	0.006	1.0	J	U_T
Plutonium 238	13981-16-3	-0.003	0.017	0.034	1.0	U	PU
Plutonium 239/240	PU-239/240	0.003	0.011	0.021	1.0	U	PU
Nickel 63	13981-37-8	0.745	1.3	2.2	30	U	NI_L
Americium 241	14596-10-2	0.189	0.38	0.60	1.0	U	AM
Total Strontium	SR-RAD	-0.004	0.11	0.15	1.0	U	SR
Thorium 228	14274-82-9	0.105	0.13	0.21	1.0	U	TH
Thorium 230	14269-63-7	U		0.19	1.0	U	TH
Thorium 232	TH-232	0.128	0.080	0.077	1.0	J	TH
Potassium 40	13966-00-2	10.8	1.5	0.19			GAM
Cobalt 60	10198-40-0	U		0.019	0.050	U	GAM
Cesium 137	10045-97-3	0.736	0.032	0.024	0.10		GAM
Europium 152	14683-23-9	U		0.053	0.10	U	GAM
Europium 154	15585-10-1	U		0.061	0.10	U	GAM
Europium 155	14391-16-3	U		0.046	0.10	U	GAM
Radium 226	13982-63-3	U		0.063	0.10	U	GAM
Radium 228	15262-20-1	U		0.14	0.20	U	GAM
Thorium 228	14274-82-9	U		0.050		U	GAM
Thorium 232	TH-232	U		0.14		U	GAM
Americium 241	14596-10-2	U		0.029		U	GAM
Uranium 238	U-238	U		2.3		U	GAM
Uranium 235	15117-96-1	U		0.076		U	GAM

200 Area Source charztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

Test AM Matrix SOLID
SDG 7178
Contact Kevin C. Johnson

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0492

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6893-085						
B0W533	N908087-01		A1	7178-001	U	
B0W534	N908087-02		A1	7178-002	U	
B0W535	N908087-03		A1	7178-003	U	
B0W536	N908087-04		A1	7178-004	U	
B0W537	N908087-05		A1	7178-005	U	
B0W540	N908087-06		A1	7178-006	U	
B0W541	N908087-07		A1	7178-007	U	
BLK (QC ID=31941)	N908087-12			7178-012	U	
LCS (QC ID=31940)	N908087-11			7178-011	ok	
Duplicate (N908087-01)	N908087-13			7178-013	-	U

Nominal values and limits from method RDLs (pCi/g) 1.0
200 Area Source charztn-200-CW-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-085 2σ prep error 5.0 % Reference Lab Notebook 6893 pg.085																
B0W533	N908087-01		A1	2.1	0.500			2		684			51	10/06/99	10/06	SS-003
B0W534	N908087-02		A1	4.7	0.500			1		684			51	10/06/99	10/06	SS-006
B0W535	N908087-03		A1	0.76	0.500			7		682			51	10/06/99	10/06	SS-009
B0W536	N908087-04		A1	0.50	0.500			5		682			51	10/06/99	10/06	SS-011
B0W537	N908087-05		A1	0.64	0.500			4		640			51	10/06/99	10/06	SS-055
B0W540	N908087-06		A1	27	0.500			0		682			51	10/06/99	10/06	SS-014
B0W541	N908087-07		A1	0.60	0.500			6		682			51	10/06/99	10/06	SS-015
BLK (QC ID=31941)	N908087-12			0.052	0.500			91		639				10/06/99	10/06	SS-061
LCS (QC ID=31940)	N908087-11			0.040	0.500			84		957				10/06/99	10/11	SS-052
Duplicate (N908087-01) (QC ID=31942)	N908087-13			12	0.500			1		661			51	10/06/99	10/06	SS-045
Nominal values and limits from method				1.0	0.500			20-105		700	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

Test	AM
Matrix	SOLID
SDG	7178
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0492

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	4.8	±	17
FOR 10 SAMPLES	YIELD	20	±	71

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

Test PU	Matrix SOLID
SDG 7178	
Contact Kevin C. Johnson	

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0492	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6893-085								
B0W533	N908087-01			7178-001	U		U	
B0W534	N908087-02			7178-002	U		U	
B0W535	N908087-03			7178-003	U		U	
B0W536	N908087-04			7178-004	U		U	
B0W537	N908087-05			7178-005	U		U	
B0W540	N908087-06			7178-006	U		U	
B0W541	N908087-07			7178-007	U		U	
BLK (QC ID=31662)	N908087-09			7178-009	U		U	
LCS (QC ID=31661)	N908087-08			7178-008	ok		ok	
Duplicate (N908087-06)	N908087-10			7178-010	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	
200 Area Source charztn-200-CW-1 OU								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-085	2σ prep error 5.0 %			Reference Lab Notebook 6893 pg.085												
B0W533	N908087-01			0.046	0.500			66		1005			35	09/18/99	09/20	SS-006
B0W534	N908087-02			0.11	0.500			30		1004			35	09/18/99	09/20	SS-010
B0W535	N908087-03			0.041	0.500			72		1004			35	09/18/99	09/20	SS-012
B0W536	N908087-04			0.060	0.500			52		1004			35	09/18/99	09/20	SS-014
B0W537	N908087-05			0.058	0.500			74		1004			35	09/18/99	09/20	SS-015
B0W540	N908087-06			0.10	0.500			32		1004			35	09/18/99	09/20	SS-016
B0W541	N908087-07			0.034	0.500			81		993			35	09/18/99	09/20	SS-055
BLK (QC ID=31662)	N908087-09			0.11	0.500			20		993				09/18/99	09/20	SS-059
LCS (QC ID=31661)	N908087-08			0.042	0.500			81		993				09/18/99	09/20	SS-056
Duplicate (N908087-06) (QC ID=31663)	N908087-10			0.037	0.500			90		992			35	09/18/99	09/20	SS-063
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	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

Test	PU
Matrix	SOLID
SDG	7178
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0492

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	0.064	±	0.062
FOR 10 SAMPLES	YIELD	60	±	49

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

Test TH	Matrix SOLID
SDG 7178	
Contact Kevin C. Johnson	

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0492	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6893-085							
B0W533	N908087-01			7178-001	U	U	0.197 J
B0W534	N908087-02			7178-002	0.170 J	U	0.198 J
B0W535	N908087-03			7178-003	0.184 J	U	0.145 J
B0W536	N908087-04			7178-004	U	0.205 J	0.132 J
B0W537	N908087-05			7178-005	U	U	U
B0W540	N908087-06			7178-006	U	U	0.191 J
B0W541	N908087-07			7178-007	U	U	0.128 J
BLK (QC ID=31662)	N908087-09			7178-009	U	U	U
LCS (QC ID=31661)	N908087-08			7178-008		ok	
Duplicate (N908087-06)	N908087-10			7178-010	- U	- U	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0
200 Area Source charztn-200-CW-1 OU							

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-085	2σ prep error 5.0 %				Reference Lab Notebook 6893 pg.085											
B0W533	N908087-01			0.19	0.200			93		892			42	09/21/99	09/27	SS-027
B0W534	N908087-02			0.19	0.200			87		892			42	09/21/99	09/27	SS-029
B0W535	N908087-03			0.22	0.200			94		864			37	09/21/99	09/22	SS-048
B0W536	N908087-04			0.20	0.200			98		864			37	09/21/99	09/22	SS-049
B0W537	N908087-05			0.22	0.200			97		756			39	09/21/99	09/24	SS-031
B0W540	N908087-06			0.19	0.200			91		756			39	09/21/99	09/24	SS-032
B0W541	N908087-07			0.21	0.200			97		756			39	09/21/99	09/24	SS-033
BLK (QC ID=31662)	N908087-09			0.20	0.200			92		756				09/21/99	09/24	SS-035
LCS (QC ID=31661)	N908087-08			0.19	0.200			75		756				09/21/99	09/24	SS-034
Duplicate (N908087-06) (QC ID=31663)	N908087-10			0.18	0.200			102		756			39	09/21/99	09/24	SS-036
Nominal values and limits from method				1.0	0.200			20-105		200			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

Test TH	Matrix SOLID
SDG 7178	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no. SDG-H0492	

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

AVERAGES ± 2 SD	MDA	0.20	±	0.027
FOR 10 SAMPLES	YIELD	93	±	15

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

Test	SR
Matrix	SOLID
SDG	7178
Contact	Kevin C. Johnson

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0492

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6893-085						
B0W533	N908087-01			7178-001	U	
B0W534	N908087-02			7178-002	U	
B0W535	N908087-03			7178-003	U	
B0W536	N908087-04			7178-004	U	
B0W537	N908087-05			7178-005	U	
B0W540	N908087-06			7178-006	U	
B0W541	N908087-07			7178-007	U	
BLK (QC ID=31662)	N908087-09			7178-009	U	
LCS (QC ID=31661)	N908087-08			7178-008	ok	
Duplicate (N908087-06)	N908087-10			7178-010	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200 Area Source charztn-200-CW-1 OU						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-085	2σ prep error 10.0 % Reference Lab Notebook 6893 pg.085															
B0W533	N908087-01			0.39	1.00			34		393			37	09/21/99	09/22	GRB-217
B0W534	N908087-02			0.19	1.00			69		393			37	09/21/99	09/22	GRB-218
B0W535	N908087-03			0.27	1.00			50		393			37	09/21/99	09/22	GRB-219
B0W536	N908087-04			0.31	1.00			43		393			37	09/21/99	09/22	GRB-220
B0W537	N908087-05			0.17	1.00			86		400			37	09/21/99	09/22	GRB-201
B0W540	N908087-06			0.66	1.00			20		400			37	09/21/99	09/22	GRB-202
B0W541	N908087-07			0.15	1.00			91		400			37	09/21/99	09/22	GRB-203
BLK (QC ID=31662)	N908087-09			0.46	1.00			35		200				09/21/99	09/22	GRB-218
LCS (QC ID=31661)	N908087-08			0.60	1.00			23		400				09/21/99	09/22	GRB-204
Duplicate (N908087-06) (QC ID=31663)	N908087-10			0.65	1.00			25		200			37	09/21/99	09/22	GRB-219
Nominal values and limits from method				1.0	1.00					100			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

Test SR	Matrix SOLID
SDG 7178	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0492	

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

AVERAGES ± 2 SD	MDA	0.38	±	0.40
FOR 10 SAMPLES	YIELD	48	±	52

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

Test	TC
Matrix	SOLID
SDG	7178
Contact	Kevin C. Johnson

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0492

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6893-085						
B0W540	N908087-06			7178-006	U	
B0W541	N908087-07			7178-007	U	
BLK (QC ID=31662)	N908087-09			7178-009	U	
LCS (QC ID=31661)	N908087-08			7178-008	ok	
Duplicate (N908087-06)	N908087-10			7178-010	-	U

Nominal values and limits from method RDLs (pCi/g) 15

200 Area Source charztn-200-CW-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-085 2σ prep error 10.0 % Reference Lab Notebook 6893 pg.085																
B0W540	N908087-06			0.52	1.00			68		101			42	09/22/99	09/27	GRB-202
B0W541	N908087-07			0.56	1.00			60		101			44	09/22/99	09/29	GRB-230
BLK (QC ID=31662)	N908087-09			0.49	1.00			72		101				09/22/99	09/27	GRB-207
LCS (QC ID=31661)	N908087-08			0.75	1.00			37		150				09/22/99	09/30	GRB-202
Duplicate (N908087-06) (QC ID=31663)	N908087-10			0.95	1.00			40		101			42	09/22/99	09/27	GRB-208
Nominal values and limits from method				15	1.00			20-105		50			180			

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 FOR 5 SAMPLES				
MDA	0.65	±	0.39
YIELD	55	±	32

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

Test GAM Matrix SOLID	Client Hanford
SDG 7178	Contract TRB-SBB-207925
Contact Kevin C. Johnson	Case no SDG-H0492

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6893-085						
B0W533	N908087-01			7178-001	U	4.58
B0W534	N908087-02			7178-002	U	0.741
B0W535	N908087-03			7178-003	U	U
B0W536	N908087-04			7178-004	U	0.019 J
B0W537	N908087-05			7178-005	U	U
B0W540	N908087-06			7178-006	U	U
B0W541	N908087-07			7178-007	U	0.736
BLK (QC ID=31662)	N908087-09			7178-009	U	U
LCS (QC ID=31661)	N908087-08			7178-008	ok	ok
Duplicate (N908087-06)	N908087-10			7178-010	- U	- U
Nominal values and limits from method				RDLs (pCi/g)	0.050	0.10
200 Area Source charztn-200-CW-1 OU						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-085	2σ prep error 15.0 % Reference Lab Notebook 6893 pg.085															
B0W533	N908087-01			0.079	822					170			45	08/23/99	09/30	MB,05,00
B0W534	N908087-02			0.051	794					170			45	08/23/99	09/30	MB,07,00
B0W535	N908087-03			0.085	788					202			45	08/23/99	09/30	02,03,00
B0W536	N908087-04			0.048	795					202			45	08/23/99	09/30	02,04,00
B0W537	N908087-05			0.063	807					202			45	08/23/99	09/30	MB,05,00
B0W540	N908087-06			0.046	814					202			45	08/23/99	09/30	MB,07,00
B0W541	N908087-07			0.043	806					214			45	08/23/99	09/30	MB,07,00
BLK (QC ID=31662)	N908087-09			0.011	804					209				08/23/99	09/30	01,04,00
LCS (QC ID=31661)	N908087-08			0.015	804					210				08/23/99	09/30	01,03,00
Duplicate (N908087-06) (QC ID=31663)	N908087-10			0.061	814					209			45	08/23/99	09/30	MB,05,00
Nominal values and limits from method				0.050	804					100			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

Test GAM Matrix SOLID	Client Hanford
SDG 7178	Contract TRB-SBB-207925
Contact Kevin C. Johnson	Case no SDG-H0492

METHOD SUMMARY, cont.

GAMMA SCAN

GAMMA SPECTROSCOPY

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

AVERAGES ± 2 SD	MDA	0.050 ± 0.048
FOR 10 SAMPLES	YIELD	±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

Test U T Matrix SOLID	Client Hanford
SDG 7178	Contract TRB-SBB-207925
Contact Kevin C. Johnson	Case no SDG-H0492

METHOD SUMMARY

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 6893-085					
B0W533	N908087-01			7178-001	0.607 J
B0W534	N908087-02			7178-002	0.553 J
B0W535	N908087-03			7178-003	0.379 J
B0W536	N908087-04			7178-004	0.577 J
B0W537	N908087-05			7178-005	0.370 J
B0W540	N908087-06			7178-006	0.465 J
B0W541	N908087-07			7178-007	0.619 J
BLK (QC ID=31662)	N908087-09			7178-009	U
LCS (QC ID=31661)	N908087-08			7178-008	ok
Duplicate (N908087-06)	N908087-10			7178-010	ok J
Nominal values and limits from method				RDLs (ug/g)	1.0
200 Area Source charztn-200-CW-1 OU					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-085	2σ prep error 9.0 %			Reference Lab Notebook 6893 pg.085												
B0W533	N908087-01			0.005	0.0600								28	09/13/99	09/13	KPA-001
B0W534	N908087-02			0.058	0.0540								28	09/13/99	09/13	KPA-001
B0W535	N908087-03			0.005	0.0600								28	09/13/99	09/13	KPA-001
B0W536	N908087-04			0.005	0.0600								28	09/13/99	09/13	KPA-001
B0W537	N908087-05			0.005	0.0600								28	09/13/99	09/13	KPA-001
B0W540	N908087-06			0.006	0.0540								28	09/13/99	09/13	KPA-001
B0W541	N908087-07			0.006	0.0540								28	09/13/99	09/13	KPA-001
BLK (QC ID=31662)	N908087-09			0.005	0.0570									09/13/99	09/13	KPA-001
LCS (QC ID=31661)	N908087-08			0.055	0.0570									09/13/99	09/13	KPA-001
Duplicate (N908087-06) (QC ID=31663)	N908087-10			0.006	0.0540								28	09/13/99	09/13	KPA-001
Nominal values and limits from method				1.0	0.0570								180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

Test U T	Matrix SOLID
SDG 7178	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0492	

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

AVERAGES ± 2 SD	MDA 0.016	± 0.043
FOR 10 SAMPLES	YIELD	±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

Test H	Matrix SOLID
SDG 7178	
Contact Kevin C. Johnson	

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0492	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6893-085						
B0W540	N908087-06			7178-006	U	
B0W541	N908087-07			7178-007	U	
BLK (QC ID=31662)	N908087-09			7178-009	U	
LCS (QC ID=31661)	N908087-08			7178-008	ok	J
Duplicate (N908087-06)	N908087-10			7178-010	-	U

Nominal values and limits from method RDLs (pCi/g) 400

200 Area Source charztn-200-CW-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-085	2σ prep error 10.0 % Reference Lab Notebook 6893 pg.085															
B0W540	N908087-06			0.087	20.8			100		120			13	08/27/99	08/29	LSC-005
B0W541	N908087-07			0.090	20.2			100		120			13	08/27/99	08/29	LSC-005
BLK (QC ID=31662)	N908087-09			0.088	20.5			100		120				08/27/99	08/30	LSC-005
LCS (QC ID=31661)	N908087-08			0.084	20.5			100		120				08/27/99	08/29	LSC-005
Duplicate (N908087-06) (QC ID=31663)	N908087-10			0.087	20.0			100		120			14	08/27/99	08/30	LSC-005
Nominal values and limits from method				400	20.5					25			180			

PROCEDURES	REFERENCE	EPA906.0
	EP-060	Soil Preparation, rev 0
	EP-211	Tritium in Solid Samples by Azeotropic Distillation, rev 0

AVERAGES ± 2 SD FOR 5 SAMPLES	MDA	0.087	± 0.004
	YIELD	100	± 0

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/29/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0492

Test NI L Matrix SOLID
SDG 7178
Contact Kevin C. Johnson

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0492

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6893-085						
B0W540	N908087-06			7178-006	U	
B0W541	N908087-07			7178-007	U	
BLK (QC ID=31662)	N908087-09			7178-009	U	
LCS (QC ID=31661)	N908087-08			7178-008	ok	
Duplicate (N908087-06)	N908087-10			7178-010	-	U

Nominal values and limits from method RDLs (pCi/g) 30
200 Area Source charztn-200-CW-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-085	2σ prep error 10.0 %				Reference Lab Notebook 6893 pg.085											
B0W540	N908087-06			2.0	0.500			89		100			24	09/08/99	09/09	LSC-005
B0W541	N908087-07			2.2	0.500			83		100			24	09/08/99	09/09	LSC-005
BLK (QC ID=31662)	N908087-09			2.0	0.500			90		100				09/08/99	09/09	LSC-005
LCS (QC ID=31661)	N908087-08			2.0	0.500			89		100				09/08/99	09/09	LSC-005
Duplicate (N908087-06) (QC ID=31663)	N908087-10			2.2	0.500			83		100			24	09/08/99	09/09	LSC-005
Nominal values and limits from method				30	0.500					10			180			

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

AVERAGES ± 2 SD MDA 2.1 ± 0.22
FOR 5 SAMPLES YIELD 87 ± 7

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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.

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REPORT GUIDE

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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.

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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.

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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).

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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.

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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.

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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.

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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.

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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.

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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

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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.

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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'

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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.

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Case no SDG-H0492

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 10/29/99

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	B99-078-01	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 5.5' - 6.5'	SAF No.: B99-078	
Ice Chest No.: SML 587	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA ThermoRetec	Offsite Property No.: A990287	Bill of Lading/Air Bill No.: 4235 7952 8430	
		COA: B20CW16716	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W533	Soil	8-16-99	0815	X					X		
											B0W5L4

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers, Doug Bowers, Date/Time: 8-16-99/1345	Received By: RCF IB 3728, Date/Time: 8-16-99/1345	
Relinquished By: RCF IB, Date/Time: 8-17-99/1200	Received By: Doug Bowers, Doug Bowers, Date/Time: 8-17-99/1200	
Relinquished By: Doug Bowers, Doug Bowers, Date/Time: 8-17-99/1200	Received By: Fed Ex, Date/Time: 8-17-99	
Relinquished By: FedEX, Date/Time: 9:00 8-18-99	Received By: TNV M. Goldenberg, Date/Time: 9:00 8-18-99	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-02	Page 1 of 1

Collector: Brent Porter R. Nielson/D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 8'-9'	SAF No.: B99-078	
Ice Chest No.: SML587	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Thermo Retec	Offsite Property No.: A990207	Bill of Lading/Air Bill No.: 4235 7952 8430	
		COA: B2UCW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
✓ B0W534	Soil	8-16-99	0834	X[b]					X[b]		
										B0W5L4	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-16-99 / 1345	Received By: Rcf / B 3728	Date/Time: 8-16-99 / 1345
Relinquished By: Rcf / B	Date/Time: 8-17-99 / 1200	Received By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99 / 1200
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99 / 1200	Received By: Fed Ex	Date/Time: 8-17-99
Relinquished By: FedEx 9:00	Date/Time: 8-18-99	Received By: TNU M. Goldenberg 9:00	Date/Time: 8-18-99

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-03	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N	Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 10.5' - 11.5'		SAF No.: B99-078		
Ice Chest No.: 3ML587	Field Logbook No.: EL-1511		Method of Shipment: Federal Express		
Shipped To: TMA/RECRA Thermo Retec	Offsite Property No.: A990207		Bill of Lading/Air Bill No.: 4235 7952 8430		
			COA: B2UCW1671C		

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No. / Matrix * / Sample Date / Sample Time										
B0W535 / Soil / 8-16-99 / 0850	X						X			
								BOWSL4		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 8-16-99/1345	Received By: RSF 1B 3728	Date/Time: 8-16-99/1345
Relinquished By: Ref 1B	Date/Time: 8-17-99/1200	Received By: Doug Bowers	Date/Time: Doug Bowers 8-17-99/1200
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 8-17-99/1200	Received By: Fed Ex	Date/Time: 8-17-99
Relinquished By: FedEx	Date/Time: 8-18-99 9:00	Received By: TNU M. Goldenberg	Date/Time: 9:00 8-18-99

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 – Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-04	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 13' - 14'	SAF No.: B99-078	
Ice Chest No.: SML 587	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Thermo Retec	Offsite Property No.: A990207	Bill of Lading/Air Bill No.: 4235 7958 8430	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W536	Soil	8-16-99	0903	X°						X°			
												BOWGL4	

V

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers, Doug Bowers, Date/Time: 8-16-99/1345	Received By: Bob B 3728, Date/Time: 8-16-99/1345	
Relinquished By: Bob B, Date/Time: 8-17-99/1200	Received By: Doug Bowers, Doug Bowers, Date/Time: 8-17-99/1200	
Relinquished By: Doug Bowers, Doug Bowers, Date/Time: 8-17-99/1200	Received By: Fed Ex, Date/Time: 8-17-99	
Relinquished By: FedEx, Date/Time: 8-18-99 9:00	Received By: TM M. Goldenberg, Date/Time: 8-18-99 9:00	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-05	Page 1 of 1

Collector: Brent Porter R. Nielson/D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 14' - 15'	SAF No.: B99-078	
Ice Chest No.: SML 587	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Thermo Retec	Offsite Property No.: A990207	Bill of Lading/Air Bill No.: 4235 7952 8430	
		COA: B2XCW167IC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No. / Matrix * / Sample Date / Sample Time										
B0W537 / Soil / 8-16-99 / 0910	X						X			
									B0W5LA	

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers, Doug Bowers, 8-16-99/1345	Received By: R of JB 3788, 8-16-99/1345	
Relinquished By: R of JB, 8-17-99/1200	Received By: Doug Bowers, Doug Bowers, 8-17-99	
Relinquished By: Doug Bowers, Doug Bowers, 8-17-99/1200	Received By: Fed Ex, 8-17-99	
Relinquished By: FedEx, 9:00 8-18-99	Received By: TNV M. Goldenberg, 9:00 8-18-99	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

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

Matrix *
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	B99-078-08	Page 1 of 1

Collector: Brent Porter R. Nielson/D Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 >15' bgs 20.5' - 21.5'	SAF No.: B99-078	
Ice Chest No.: SML 587	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Thermo Retec	Offsite Property No.: A990207	Bill of Lading/Air Bill No.: 4235 7992 8430	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
	Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.
Sample No.	Matrix * / Sample Date / Sample Time										
B0W540	Soil / 8-16-99 / 0931	X	X	X	X						X
									B0W5L4		

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-16-99/1345	Received By: Ref ID 3728
Date/Time: 8-16-99/1345	Received By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99/1200
Relinquished By: Ref ID	Date/Time: 8-17-99/1200	Received By: Doug Bowers / Doug Bowers
Date/Time: 8-17-99/1200	Received By: Fed Ex	Date/Time: 8-17-99
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99/1200	Received By: Fed Ex
Date/Time: 8-17-99/1200	Received By: FedEx	Date/Time: 8-18-99 9:00
Relinquished By: FedEx	Date/Time: 8-18-99 9:00	Received By: TNV M. Goldenberg
Date/Time: 8-18-99 9:00	Title	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

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

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-09	Page 1 of 1

Collector: Brent Porter P.Bowers / R.Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N	Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 >15' bgs 2L 25'		SAF No.: B99-078		
Ice Chest No.: SML 587	Field Logbook No.: EL-1511		Method of Shipment: Federal Express		
Shipped To: TMA/RECRA Thermo Retec	Offsite Property No.: A 990207		Bill of Lading/Air Bill No.: 4235 7952 8430		
			COA: B20CW167IC		

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions

Sample No.	Matrix *	Sample Date	Sample Time										
B0W541	Soil	8-16-99	0940	X	X	X	X						X
											B0W5L4		

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-16-99/1345	Received By: Ref IB 3728
Relinquished By: Ref IB	Date/Time: 8-17-99/1200	Received By: Doug Bowers / Doug Bowers
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99/1200	Received By: Fed Ex
Relinquished By: Fed Ex	Date/Time: 8-18-99 9:00	Received By: TNU M. Goldenberg

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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 8-18-99 9:00

CoC No. B99-078-01, B99-078-02, B99-078-03, B99-078-04, B99-078-05, B99-078-08, B99-078-09

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

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 7
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: 8-18-99 Time: 9:00

LOGIN

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

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9908L778
SDG/SAF #: H0492/ B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 08-18-99

GC/MS VOLATILE

Seven (7) soil samples were collected on 08-16-99.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 08-27,30,31-99.

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

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

2. The required holding time for analysis was met with the exception of sample B0W533, which was analyzed outside of holding time. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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

4. All surrogate recoveries were within EPA QC limits.

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

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

7. The method blanks contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than 2x the CRQL.

OCT 1999
RECEIVED
Data
Log In

By J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

09-30-99
Date

som\group\data\ voa\tnu08778.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 17 pages.

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

GLOSSARY OF VOA DATA

DATA QUALIFIERS

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

mmz\10-94\gloss.voa

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.voa

Recra LabNet Philadelphia Sample Discrepancy Report (SDR) SDR #: 99VT158

Initiator: B. Rubino RFW Batch: 9908L778 Parameter: MS VOA
Date: 9/24/99 Samples: 007 Matrix: SOIL
Client: TMU-Hanford B99-078 Method: SW846/MCAWW/CLP/ Prep Batch: _____

1. Reason for SDR

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

b. General Discrepancy

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

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

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

Sample 007 analyzed 58 minutes out of hold.

2. Known or Probable Causes(s)

sample loading

3. Discussion and Proposed Action Other Description:

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

Report / narrate

4. Project Manager Instructions...signature/date: [signature] 9/24/99

__ 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: [signature] 9/24/99 Other Explanation:

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

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
0	X Initiator B. Rubino	__	__ Metals: Doughty
__	X Lab Manager: M. Taylor	__	__ Inorganic: Perrone
1	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

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 09/24/99 13:32

RFW Batch Number: **9908L778** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0W541		B0W541		B0W541		B0W540		B0W537		B0W536	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		004	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.980		0.980		0.962		1.02		1.00		0.980	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	100	%	97	%	101	%	99	%	97	%	99	%
	Bromofluorobenzene	98	%	91	%	93	%	95	%	93	%	93	%
	1,2-Dichloroethane-d4	106	%	101	%	105	%	100	%	96	%	99	%
			fl		fl		fl		fl		fl		fl
Chloromethane		10	U	10	U	10	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U	10	U	10	U	10	U
Methylene Chloride		9	B	11	B	9	B	10	B	9	B	8	B
Acetone		10	U	10	U	10	U	10	U	10	U	10	U
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	107	%	99	%	5	U	5	U	5	U
1,1-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	5	U	5	U	5	U
Chloroform		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
2-Butanone		10	U	10	U	10	U	10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		5	U	5	U	5	U	5	U	5	U	5	U
Bromodichloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene		5	U	100	%	92	%	5	U	5	U	5	U
Dibromochloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Benzene		5	U	106	%	98	%	5	U	5	U	5	U
Trans-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Bromoform		5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U	10	U	10	U	10	U
Tetrachloroethene		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Toluene		5	U	109	%	100	%	5	U	5	U	5	U

*= Outside of EPA CLP QC limits.

90

Cust ID:	B0W541	B0W541	B0W541	B0W540	B0W537	B0W536
RFW#:	001	001 MS	001 MSD	002	003	004
Chlorobenzene	5 U	106 %	96 %	5 U	5 U	5 U
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 09/24/99 13:32

RFW Batch Number: **9908L778** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

	Cust ID:	B0W535		B0W534		B0W533		VBLKNZ		VBLKNZ BS		VBLKOA	
Sample Information	RFW#:	005		006		007		99LVH321-MB1		99LVH321-MB1		99LVN243-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.962		1.02		1.02		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	104	%	102	%	117	%	102	%	100	%	107	%
	Bromofluorobenzene	98	%	92	%	98	%	98	%	95	%	91	%
	1,2-Dichloroethane-d4	104	%	102	%	112	%	99	%	102	%	104	%
Chloromethane		6	J	11	U	11	U	10	U	10	U	10	U
Bromomethane		10	U	11	U	11	U	10	U	10	U	10	U
Vinyl Chloride		10	U	11	U	11	U	10	U	10	U	10	U
Chloroethane		10	U	11	U	11	U	10	U	10	U	10	U
Methylene Chloride		10	B	9	B	19	B	3	J	5	BJ	9	
Acetone		10	U	11	U	4	BJ	1	J	10	U	1	J
Carbon Disulfide		5	U	6	U	6	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	6	U	6	U	5	U	111	%	5	U
1,1-Dichloroethane		5	U	6	U	6	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	6	U	6	U	5	U	5	U	5	U
Chloroform		5	U	6	U	6	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	6	U	6	U	5	U	5	U	5	U
2-Butanone		10	U	11	U	11	U	10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	6	U	6	U	5	U	5	U	5	U
Carbon Tetrachloride		5	U	6	U	6	U	5	U	5	U	5	U
Bromodichloromethane		5	U	6	U	6	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	6	U	6	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	6	U	6	U	5	U	5	U	5	U
Trichloroethene		5	U	6	U	6	U	5	U	103	%	5	U
Dibromochloromethane		5	U	6	U	6	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	6	U	6	U	5	U	5	U	5	U
Benzene		5	U	6	U	6	U	5	U	109	%	5	U
Trans-1,3-Dichloropropene		5	U	6	U	6	U	5	U	5	U	5	U
Bromoform		5	U	6	U	6	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	11	U	11	U	10	U	10	U	10	U
2-Hexanone		10	U	11	U	11	U	10	U	10	U	10	U
Tetrachloroethene		5	U	6	U	6	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	6	U	6	U	5	U	5	U	5	U
Toluene		5	U	6	U	6	U	5	U	110	%	5	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **9908L778** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2b

Cust ID:	B0W535	B0W534	B0W533	VBLKNZ	VBLKNZ BS	VBLKOA
RFW#:	005	006	007	99LVH321-MB1	99LVH321-MB1	99LVN243-MB1
Chlorobenzene	5 U	6 U	6 U	5 U	108 %	5 U
Ethylbenzene	5 U	6 U	6 U	5 U	5 U	5 U
Styrene	5 U	6 U	6 U	5 U	5 U	5 U
Xylene (total)	5 U	6 U	6 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

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

DATE RECEIVED: 08/18/99 RFW LOT # :9908L778

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W541	001	S	99LVH321	08/16/99	N/A	08/27/99
B0W541	001 MS	S	99LVH321	08/16/99	N/A	08/27/99
B0W541	001 MSD	S	99LVH321	08/16/99	N/A	08/27/99
B0W540	002	S	99LVH321	08/16/99	N/A	08/27/99
B0W537	003	S	99LVH321	08/16/99	N/A	08/27/99
B0W536	004	S	99LVH321	08/16/99	N/A	08/27/99
B0W535	005	S	99LVH321	08/16/99	N/A	08/27/99
B0W534	006	S	99LVH321	08/16/99	N/A	08/27/99
B0W533	007	S	99LVN243	08/16/99	N/A	08/31/99

LAB QC:

VBLKNZ	MB1	S	99LVH321	N/A	N/A	08/27/99
VBLKNZ	MB1 BS	S	99LVH321	N/A	N/A	08/27/99
VBLKOA	MB1	S	99LVN243	N/A	N/A	08/30/99

RECRA LabNet Use Only

9908L778

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) Schnell

Client: TNU - HANFORD B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: SPEC Del: STD TAT: 30 DAY
Date Rec'd: 8/18/99 Date Due: 9/17/99
Account #: TNU HANFORD

Refrigerator #		1	6						6		6		6			
#/Type Container	Liquid															
	Solid	1g	1g						1g		1AG		1g			
Volume	Liquid															
	Solid	250	500						500		250		UR			
Preservatives											—					
ANALYSES REQUESTED →	ORGANIC: VOA								INORG: Metal							
	ORGANIC: BNA															
	ORGANIC: Pest/PCB															
	ORGANIC: Herb															
	INORG: CN															

w/BNA

w/Metals

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	OC 24H	OC 25H	~~Herb~~ 8/18/99		ODPO OGCSC OPCB		Met ①		1PH	ICP6	Ana ①
001	BDW541			S	8/16/99	0940	✓	✓	✓		✓	✓	✓		✓	✓	✓
2	540					0931											
3	537					0910											
4	536					0903											
5	535					0850											
6	534					0834											
007	533					0815											

Special Instructions:

Soy # B99-078

8/24/99 all samples ~~[illegible]~~ added OGCSC 8/24/99

COMPOSITE WASTE

DATE/REVISIONS:
1. Met ① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
3. Ana ① = IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ISFD, INH3N, ICNTO, ICSO4
5. Run Matrix QC
6. *42357952846 2 @ 4.0°C

RECRA LabNet Use Only

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

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

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

Relinquished by	Received by	Date	Time
FedEx	Johnson	8/18/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-09	Page 1 of 1

Collector: Brent Porter R. Nielson/D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 >15' bgs 24' - 25'	SAF No.: B99-078	
Ice Chest No.: SML 395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra labret	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235 7952 8462 - 4.1	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
Special Handling and/or Storage: 778	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
	Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045 DRO PCB	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W541	Soil	8-16-99	0940					X	X	X	X	X	
											B0W5L4		

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers, Date/Time: 8-16-99/1345	Received By: Bell 3728, Date/Time: 8-16-99/1345	
Relinquished By: Bell 8-17-99/1200	Received By: Doug Bowers, Date/Time: 8-17-99/1200	
Relinquished By: Doug Bowers, Date/Time: 8-17-99/1200	Received By: Fed Ex, Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-08	Page 1 of 1

Collector: Brent Porter R. Nielson Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 >15' bgs 20.5' — 21.5'	SAF No.: B99-078	
Ice Chest No.: SML 395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A99 0228	Bill of Lading/Air Bill No.: 4235795Z8462	
		COA: B20CW167IC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W540	Soil	8-16-99	0931					X	X	X	X	X	
												B0W5L4	

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers Date/Time: Doug Bowers 8-16-99/1345	Received By: RcF ID 3728 Date/Time: 8-16-99/1345	
Relinquished By: RcF ID Date/Time: 8-17-99/1200	Received By: Doug Bowers Date/Time: Doug Bowers 8-17-99/1200	
Relinquished By: Doug Bowers Date/Time: Doug Bowers 8-17-99/1200	Received By: Fed Ex Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-05	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 14' - 15'	SAF No.: B99-078	
Ice Chest No.: SML395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Reera Labnet	Offsite Property No.: A9902088	Bill of Lading/Air Bill No.: 42357952 8462	
		COA: B2UCW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1			
	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W537	Soil	8-16-99	0910		X	X	X	X	X		
										B0W6L4	

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-16-99/1345	Received By: Ref 1B 3728
Relinquished By: Ref 1B	Date/Time: 8-17-99/1200	Received By: Doug Bowers / Doug Bowers
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99/1200	Received By: Fed Ex
Relinquished By	Date/Time	Received By

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-04	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 13' - 14'	SAF No.: B99-078	
Ice Chest No.: SML395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labonet	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235 7952 8462	
		COA: B20CW167IC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No. / Matrix * / Sample Date / Sample Time										
B0W536 / Soil / 8-16-99 / 0903		X	X	X	X	X				
									B0W524	

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers, Date/Time: Doug Bowers 8-16-99/1345	Received By: Ref ID 3728, Date/Time: 8-16-99/1345	
Relinquished By: Ref ID, Date/Time: 8-17-99/1200	Received By: Doug Bowers, Date/Time: Doug Bowers 8-17-99/1200	
Relinquished By: Doug Bowers, Date/Time: Doug Bowers 8-17-99/1200	Received By: Fed Ex, Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-03	Page 1 of 1

Collector: Brent Porter R.Nielson / D.Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N	Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 10.5' - 11.5'		SAF No.: B99-078		
Ice Chest No.: ERC 40	Field Logbook No.: EL-1511		Method of Shipment: Federal Express		
Shipped To: TMA/RECRA Reera Labret	Offsite Property No.: A9902Ø8		Bill of Lading/Air Bill No.: 4235795284 5 1 - 4.3		
			COA: B0CW1C71C		

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
5 B0W535	Soil	8-16-99	0850		X	X	X	X	X		
										B0W5L4	

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers Date/Time: Doug Bowers 8-16-99/1345	Received By: Doug Bowers Date/Time: Doug Bowers 8-16-99/1345	
Relinquished By: Doug Bowers Date/Time: Doug Bowers 8-17-99/1200	Received By: Doug Bowers Date/Time: Doug Bowers 8-17-99/1200	
Relinquished By: Doug Bowers Date/Time: Doug Bowers 8-17-99/1200	Received By: Fed Ex Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-02	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 8'-9'	SAF No.: B99-078	
Ice Chest No.: ERC 40	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235795284 5 1	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1			
	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W534	Soil	8-16-99	0834		X	X	X	X	X		
										B0W5L4	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 8-16-99/1347	Received By: Ref 1B 3728	Date/Time: 8-16-99/1347
Relinquished By: Ref 1B	Date/Time: 8-17-99/1200	Received By: Doug Bowers	Date/Time: Doug Bowers 8-17-99/1200
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 8-17-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-01	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 5.5' - 6.5'	SAF No.: B99-078	
Ice Chest No.: ER-40	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235795284 51	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1			
	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W533	Soil	8-16-99	0815		X	X	X	X	X		
										B0W5L4	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 8-16-99/1245	Received By: Ref ID 3728	Date/Time: 8-16-99/1245
Relinquished By: Ref ID	Date/Time: 8-17-99/1200	Received By: Doug Bowers	Date/Time: 8-17-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-17-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Fedex	Date/Time:	Received By: Dunson	Date/Time: 8/18/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9908L778
SDG/SAF #: H0492/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 08-18-99

SEMIVOLATILE

Seven (7) soil samples were collected on 08-16-99.

The samples and their associated QC samples were extracted on 08-25-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 09-03,09-99.

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

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding times for extraction and analysis were met.
3. Non-target compounds were detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. A spectral search was conducted for the compound Butylated Hydroxytoluene; this compound was not identified in the samples.

OCT 1999
RECEIVED
Data
Log In

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

09-30-99
Date

som\gorup\data\bna\tnu08778.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 17 pages.

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

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

mmz\10-94\gloss.bna

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.bna

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 09/20/99 18:38

RFW Batch Number: **9908L778** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0W541		B0W541		B0W541		B0W540		B0W537		B0W536	
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 Recovery	Nitrobenzene-d5	66	%	74	%	75	%	71	%	64	%	65	%
	2-Fluorobiphenyl	68	%	75	%	75	%	71	%	64	%	63	%
	Terphenyl-d14	82	%	82	%	80	%	76	%	72	%	72	%
	Phenol-d5	65	%	74	%	78	%	71	%	63	%	62	%
	2-Fluorophenol	67	%	76	%	79	%	74	%	66	%	66	%
	2,4,6-Tribromophenol	59	%	73	%	75	%	59	%	49	%	55	%
		fl		fl		fl		fl		fl		fl	
Phenol		350	U	76	%	76	%	340	U	340	U	340	U
bis(2-Chloroethyl)ether		350	U	350	U	350	U	340	U	340	U	340	U
2-Chlorophenol		350	U	71	%	71	%	340	U	340	U	340	U
1,3-Dichlorobenzene		350	U	350	U	350	U	340	U	340	U	340	U
1,4-Dichlorobenzene		350	U	73	%	71	%	340	U	340	U	340	U
1,2-Dichlorobenzene		350	U	350	U	350	U	340	U	340	U	340	U
2-Methylphenol		350	U	350	U	350	U	340	U	340	U	340	U
2,2'-oxybis(1-Chloropropane)		350	U	350	U	350	U	340	U	340	U	340	U
4-Methylphenol		350	U	350	U	350	U	340	U	340	U	340	U
N-Nitroso-di-n-propylamine		350	U	81	%	81	%	340	U	340	U	340	U
Hexachloroethane		350	U	350	U	350	U	340	U	340	U	340	U
Nitrobenzene		350	U	350	U	350	U	340	U	340	U	340	U
Isophorone		350	U	350	U	350	U	340	U	340	U	340	U
2-Nitrophenol		350	U	350	U	350	U	340	U	340	U	340	U
2,4-Dimethylphenol		350	U	350	U	350	U	340	U	340	U	340	U
bis(2-Chloroethoxy)methane		350	U	350	U	350	U	340	U	340	U	340	U
2,4-Dichlorophenol		350	U	350	U	350	U	340	U	340	U	340	U
1,2,4-Trichlorobenzene		350	U	75	%	74	%	340	U	340	U	340	U
Naphthalene		350	U	350	U	350	U	340	U	340	U	340	U
4-Chloroaniline		350	U	350	U	350	U	340	U	340	U	340	U
Hexachlorobutadiene		350	U	350	U	350	U	340	U	340	U	340	U
4-Chloro-3-methylphenol		350	U	68	%	68	%	340	U	340	U	340	U
2-Methylnaphthalene		350	U	350	U	350	U	340	U	340	U	340	U
Hexachlorocyclopentadiene		350	U	350	U	350	U	340	U	340	U	340	U
2,4,6-Trichlorophenol		350	U	350	U	350	U	340	U	340	U	340	U
2,4,5-Trichlorophenol		870	U	870	U	870	U	860	U	860	U	860	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0W541		B0W541		B0W541		B0W540		B0W537		B0W536	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	350	U	350	U	350	U	340	U	340	U	340	U
2-Nitroaniline	870	U	870	U	870	U	860	U	860	U	860	U
Dimethylphthalate	350	U	350	U	350	U	340	U	340	U	340	U
Acenaphthylene	350	U	350	U	350	U	340	U	340	U	340	U
2,6-Dinitrotoluene	350	U	350	U	350	U	340	U	340	U	340	U
3-Nitroaniline	870	U	870	U	870	U	860	U	860	U	860	U
Acenaphthene	350	U	78	%	76	%	340	U	340	U	340	U
2,4-Dinitrophenol	870	U	870	U	870	U	860	U	860	U	860	U
4-Nitrophenol	870	U	56	%	58	%	860	U	860	U	860	U
Dibenzofuran	350	U	350	U	350	U	340	U	340	U	340	U
2,4-Dinitrotoluene	350	U	69	%	67	%	340	U	340	U	340	U
Diethylphthalate	350	U	350	U	350	U	340	U	340	U	340	U
4-Chlorophenyl-phenylether	350	U	350	U	350	U	340	U	340	U	340	U
Fluorene	350	U	350	U	350	U	340	U	340	U	340	U
4-Nitroaniline	870	U	870	U	870	U	860	U	860	U	860	U
4,6-Dinitro-2-methylphenol	870	U	870	U	870	U	860	U	860	U	860	U
N-Nitrosodiphenylamine (1)	350	U	350	U	350	U	340	U	340	U	340	U
4-Bromophenyl-phenylether	350	U	350	U	350	U	340	U	340	U	340	U
Hexachlorobenzene	350	U	350	U	350	U	340	U	340	U	340	U
Pentachlorophenol	870	U	81	%	79	%	860	U	860	U	860	U
Phenanthrene	350	U	350	U	350	U	340	U	340	U	340	U
Anthracene	350	U	350	U	350	U	340	U	340	U	340	U
Carbazole	350	U	350	U	350	U	340	U	340	U	340	U
Di-n-butylphthalate	350	U	350	U	350	U	340	U	340	U	340	U
Fluoranthene	350	U	350	U	350	U	340	U	340	U	340	U
Pyrene	350	U	81	%	78	%	340	U	340	U	340	U
Butylbenzylphthalate	350	U	350	U	350	U	340	U	340	U	340	U
3,3'-Dichlorobenzidine	350	U	350	U	350	U	340	U	340	U	340	U
Benzo(a)anthracene	350	U	350	U	350	U	340	U	340	U	340	U
Chrysene	350	U	350	U	350	U	340	U	340	U	340	U
bis(2-Ethylhexyl)phthalate	350	U	350	U	350	U	340	U	340	U	340	U
Di-n-octyl phthalate	350	U	350	U	350	U	340	U	340	U	340	U
Benzo(b)fluoranthene	350	U	350	U	350	U	340	U	340	U	340	U
Benzo(k)fluoranthene	350	U	350	U	350	U	340	U	340	U	340	U
Benzo(a)pyrene	350	U	350	U	350	U	340	U	340	U	340	U
Indeno(1,2,3-cd)pyrene	350	U	350	U	350	U	340	U	340	U	340	U
Dibenz(a,h)anthracene	350	U	350	U	350	U	340	U	340	U	340	U
Benzo(g,h,i)perylene	350	U	350	U	350	U	340	U	340	U	340	U

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

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 09/20/99 18:38

RFW Batch Number: **9908L778** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

	Cust ID:	B0W535		B0W534		B0W533		SBLKBR		SBLKBR BS	
Sample Information	RFW#:	005		006		007		99LE1031-MB1		99LE1031-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	68	%	69	%	64	%	58	%	65	%
	2-Fluorobiphenyl	71	%	68	%	73	%	65	%	65	%
	Terphenyl-d14	82	%	75	%	76	%	72	%	72	%
	Phenol-d5	68	%	67	%	55	%	51	%	66	%
	2-Fluorophenol	70	%	69	%	60	%	54	%	66	%
	2,4,6-Tribromophenol	62	%	54	%	54	%	35	%	59	%
Phenol		340	U	350	U	350	U	330	U	63	%
bis(2-Chloroethyl)ether		340	U	350	U	350	U	330	U	330	U
2-Chlorophenol		340	U	350	U	350	U	330	U	57	%
1,3-Dichlorobenzene		340	U	350	U	350	U	330	U	330	U
1,4-Dichlorobenzene		340	U	350	U	350	U	330	U	59	%
1,2-Dichlorobenzene		340	U	350	U	350	U	330	U	330	U
2-Methylphenol		340	U	350	U	350	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		340	U	350	U	350	U	330	U	330	U
4-Methylphenol		340	U	350	U	350	U	330	U	330	U
N-Nitroso-di-n-propylamine		340	U	350	U	350	U	330	U	67	%
Hexachloroethane		340	U	350	U	350	U	330	U	330	U
Nitrobenzene		340	U	350	U	350	U	330	U	330	U
Isophorone		340	U	350	U	350	U	330	U	330	U
2-Nitrophenol		340	U	350	U	350	U	330	U	330	U
2,4-Dimethylphenol		340	U	350	U	350	U	330	U	330	U
bis(2-Chloroethoxy)methane		340	U	350	U	350	U	330	U	330	U
2,4-Dichlorophenol		340	U	350	U	350	U	330	U	330	U
1,2,4-Trichlorobenzene		340	U	350	U	350	U	330	U	60	%
Naphthalene		340	U	350	U	350	U	330	U	330	U
4-Chloroaniline		340	U	350	U	350	U	330	U	330	U
Hexachlorobutadiene		340	U	350	U	350	U	330	U	330	U
4-Chloro-3-methylphenol		340	U	350	U	350	U	330	U	56	%
2-Methylnaphthalene		340	U	350	U	350	U	330	U	330	U
Hexachlorocyclopentadiene		340	U	350	U	350	U	330	U	330	U
2,4,6-Trichlorophenol		340	U	350	U	350	U	330	U	330	U
2,4,5-Trichlorophenol		860	U	880	U	880	U	840	U	840	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0W535		B0W534		B0W533		SBLKBR		SBLKBR BS	
RFW#:	005		006		007		99LE1031-MB1		99LE1031-MB1	
2-Chloronaphthalene	340	U	350	U	350	U	330	U	330	U
2-Nitroaniline	860	U	880	U	880	U	840	U	840	U
Dimethylphthalate	340	U	350	U	350	U	330	U	330	U
Acenaphthylene	340	U	350	U	350	U	330	U	330	U
2,6-Dinitrotoluene	340	U	350	U	350	U	330	U	330	U
3-Nitroaniline	860	U	880	U	880	U	840	U	840	U
Acenaphthene	340	U	350	U	350	U	330	U	63	%
2,4-Dinitrophenol	860	U	880	U	880	U	840	U	840	U
4-Nitrophenol	860	U	880	U	880	U	840	U	45	%
Dibenzofuran	340	U	350	U	350	U	330	U	330	U
2,4-Dinitrotoluene	340	U	350	U	350	U	330	U	57	%
Diethylphthalate	340	U	350	U	350	U	330	U	330	U
4-Chlorophenyl-phenylether	340	U	350	U	350	U	330	U	330	U
Fluorene	340	U	350	U	350	U	330	U	330	U
4-Nitroaniline	860	U	880	U	880	U	840	U	840	U
4,6-Dinitro-2-methylphenol	860	U	880	U	880	U	840	U	840	U
N-Nitrosodiphenylamine (1)	340	U	350	U	350	U	330	U	330	U
4-Bromophenyl-phenylether	340	U	350	U	350	U	330	U	330	U
Hexachlorobenzene	340	U	350	U	350	U	330	U	330	U
Pentachlorophenol	860	U	880	U	880	U	840	U	62	%
Phenanthrene	340	U	350	U	350	U	330	U	330	U
Anthracene	340	U	350	U	350	U	330	U	330	U
Carbazole	340	U	350	U	350	U	330	U	330	U
Di-n-butylphthalate	340	U	350	U	350	U	330	U	330	U
Fluoranthene	340	U	350	U	350	U	330	U	330	U
Pyrene	340	U	350	U	350	U	330	U	68	%
Butylbenzylphthalate	340	U	350	U	350	U	330	U	330	U
3,3'-Dichlorobenzidine	340	U	350	U	350	U	330	U	330	U
Benzo(a)anthracene	340	U	350	U	350	U	330	U	330	U
Chrysene	340	U	350	U	350	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	340	U	350	U	350	U	330	U	330	U
Di-n-octyl phthalate	340	U	350	U	350	U	330	U	330	U
Benzo(b)fluoranthene	340	U	350	U	350	U	330	U	330	U
Benzo(k)fluoranthene	340	U	350	U	350	U	330	U	330	U
Benzo(a)pyrene	340	U	350	U	350	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	340	U	350	U	350	U	330	U	24	J
Dibenz(a,h)anthracene	340	U	350	U	350	U	330	U	26	J
Benzo(g,h,i)perylene	340	U	350	U	350	U	330	U	31	J

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W541

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L778-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E090308

Level: (low/med) LOW Date Received: 08/18/99

% Moisture: 4 decanted: (Y/N) Date Extracted: 08/25/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/03/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0

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

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W540

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L778-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E090311

Level: (low/med) LOW Date Received: 08/18/99

% Moisture: 3 decanted: (Y/N) Date Extracted: 08/25/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/03/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

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

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W537

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L778-003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E090312

Level: (low/med) LOW Date Received: 08/18/99

% Moisture: 3 decanted: (Y/N) Date Extracted: 08/25/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/03/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	7.53	80	JAB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W536

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L778-004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E090313

Level: (low/med) LOW Date Received: 08/18/99

% Moisture: 2 decanted: (Y/N) Date Extracted: 08/25/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/03/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0

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

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

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W535

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L778-005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E090314

Level: (low/med) LOW Date Received: 08/18/99

% Moisture: 3 decanted: (Y/N) Date Extracted: 08/25/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/03/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

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

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W534

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L778-006

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E090315

Level: (low/med) LOW Date Received: 08/18/99

% Moisture: 5 decanted: (Y/N) Date Extracted: 08/25/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/03/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	7.55	200	JAB

FORM 1 SV-TIC 3/90

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W533

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L778-007

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D090914

Level: (low/med) LOW Date Received: 08/18/99

% Moisture: 6 decanted: (Y/N) Date Extracted: 08/25/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/09/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	5.54	90	JB
2.	ALDOL CONDENSATE	6.18	100	JAB
3.	ALKANE	24.50	90	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKBR

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 99LE1031-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D090918

Level: (low/med) LOW Date Received: 08/25/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 08/25/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/09/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	5.45	60	JA
2.	UNKNOWN	5.52	60	J
3.	ALDOL CONDENSATE	6.16	90	JA

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

DATE RECEIVED: 08/18/99 RFW LOT # :9908L778

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W541	001	S	99LE1031	08/16/99	08/25/99	09/03/99
B0W541	001 MS	S	99LE1031	08/16/99	08/25/99	09/03/99
B0W541	001 MSD	S	99LE1031	08/16/99	08/25/99	09/03/99
B0W540	002	S	99LE1031	08/16/99	08/25/99	09/03/99
B0W537	003	S	99LE1031	08/16/99	08/25/99	09/03/99
B0W536	004	S	99LE1031	08/16/99	08/25/99	09/03/99
B0W535	005	S	99LE1031	08/16/99	08/25/99	09/03/99
B0W534	006	S	99LE1031	08/16/99	08/25/99	09/03/99
B0W533	007	S	99LE1031	08/16/99	08/25/99	09/09/99

LAB QC:

SBLKBR	MB1	S	99LE1031	N/A	08/25/99	09/09/99
SBLKBR	MB1 BS	S	99LE1031	N/A	08/25/99	09/03/99

1411

RECRA LabNet Use Only

9908L778

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) Schnell

Client: TNU - HANFORD B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: SPEC Del: STD TAT: 30 DAY
Date Rec'd: 8/18/99 Date Due: 9/17/99
Account #: TNUHANFORD

Refrigerator #		1	6						6		6		6				
#/Type Container	Liquid																
	Solid	1g	1g						1g		1AG		1g				
Volume	Liquid																
	Solid	250	500						500		250		1tr				
Preservatives											—						
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN							

W/BNA

W/Metals

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	0824H	0825H	8/18/99		0D20 0G25C 0PCB		Metal		1QH	1CR6	Ang
001	BDW541			S	8/16/99	0940	✓	✓	✓		✓	✓	✓		✓	✓	✓
2	540					0931											
3	537					0910											
4	536					0903											
5	535					0850											
6	534					0834											
007	533					0815											

Special Instructions:

Say # B99-078

8/24/99 all samples ~~[illegible]~~ added ACISC 8/24/99

COMPOSITE WASTE

DATE/REVISIONS:

Met (1.) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
Ang (2.) = 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ISFD, INH3N, ICNTO, ICSO4
5. Run Matrix QC
6. *42357952846 2 @ 4.0°C

RECRA LabNet Use Only

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

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

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

Relinquished by	Received by	Date	Time
Fed Ex	Jackson	8/18/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-078
RFW#: 9908L778
SDG/SAF#: H0492/B99-078

W.O.#: 10985-001-001-9999-00
Date Received: 08-18-99

PCB

The set of samples consisted of seven (7) soil samples collected on 08-16-99.

The samples and their associated QC samples were extracted on 08-25-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 09-15-99. 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. All cooler temperatures have been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis have been met.
3. The 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. 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.

OCT 1999
RECEIVED
Data
Log In

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

09-27-99
Date

pef\r:\group\data\pest\08L-778.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 13 pages.

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

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

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

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

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

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 09/18/99 09:58

RFW Batch Number: **9908L778** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1

004

	Cust ID:	B0W541	B0W541	B0W541	B0W540	B0W537	B0W536
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	105 %	105 %	108 %	105 %	100 %	108 %
	Decachlorobiphenyl	101 %	99 %	101 %	98 %	101 %	106 %
Aroclor-1016		34 U	34 U	34 U	34 U	34 U	34 U
Aroclor-1221		68 U	69 U	69 U	67 U	68 U	67 U
Aroclor-1232		34 U	34 U	34 U	34 U	34 U	34 U
Aroclor-1242		34 U	34 U	34 U	34 U	34 U	34 U
Aroclor-1248		34 U	34 U	34 U	34 U	34 U	34 U
Aroclor-1254		34 U	103 %	103 %	34 U	34 U	34 U
Aroclor-1260		34 U	34 U	34 U	34 U	34 U	34 U

	Cust ID:	B0W535	B0W534	B0W533	PBLKTC	PBLKTC BS
Sample Information	RFW#:	005	006	007	99LE1024-MB1	99LE1024-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	108 %	102 %	108 %	95 %	118 %
	Decachlorobiphenyl	105 %	99 %	106 %	93 %	114 %
Aroclor-1016		34 U	34 U	35 U	33 U	33 U
Aroclor-1221		68 U	68 U	70 U	67 U	67 U
Aroclor-1232		34 U	34 U	35 U	33 U	33 U
Aroclor-1242		34 U	34 U	35 U	33 U	33 U
Aroclor-1248		34 U	34 U	35 U	33 U	33 U
Aroclor-1254		34 U	34 U	35 U	33 U	105 %
Aroclor-1260		34 U	34 U	35 U	33 U	33 U

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

JW 09-20-99

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

DATE RECEIVED: 08/18/99 RFW LOT # :9908L778

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W541	001	S	99LE1024	08/16/99	08/25/99	09/15/99
B0W541	001 MS	S	99LE1024	08/16/99	08/25/99	09/15/99
B0W541	001 MSD	S	99LE1024	08/16/99	08/25/99	09/15/99
B0W540	002	S	99LE1024	08/16/99	08/25/99	09/15/99
B0W537	003	S	99LE1024	08/16/99	08/25/99	09/15/99
B0W536	004	S	99LE1024	08/16/99	08/25/99	09/15/99
B0W535	005	S	99LE1024	08/16/99	08/25/99	09/15/99
B0W534	006	S	99LE1024	08/16/99	08/25/99	09/15/99
B0W533	007	S	99LE1024	08/16/99	08/25/99	09/15/99

LAB QC:

PBLKTC	MB1	S	99LE1024	N/A	08/25/99	09/15/99
PBLKTC	MB1 BS	S	99LE1024	N/A	08/25/99	09/15/99

pw 09-20-99

RECRA LabNet Use Only

99081778

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) Schnell

Client: TNU - HANFORD B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: SPEC Del: STD TAT: 30 DAY

Date Rec'd: 8/18/99 Date Due: 9/17/99

Account #: TNUHANFORD

Refrigerator #		1	6						6		6		6				006
#/Type Container	Liquid																
	Solid	1g	1g						1g		1AG		1g				
Volume	Liquid																
	Solid	250	500						500		250		1Hr				
Preservatives											—						

w/BNA w/Metals

ANALYSES REQUESTED →	ORGANIC							INORG						
	VOA	BNA	Pest/PCB	Herb				Metal	CN					
RECRA LabNet Use Only	0824H	0825H	8/18/99		0DEO 0PCSC 0PCB			Met①		1DH	1CR6	Ang①		

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	0824H	0825H	8/18/99		0DEO 0PCSC	0PCB		Met①		1DH	1CR6	Ang①		
001	BDW541			S	8/16/99	0940	✓	✓	✓		✓	✓		✓		✓	✓	✓		
2	540					0931														
3	537					0910														
4	536					0903														
5	535					0850														
6	534					0834														
007	533					0815														

Special Instructions:

Say # B99-078

8/24/99 all samples ~~[illegible]~~ added OSCSC 8/24/99

COMPOSITE WASTE

DATE/REVISIONS:

Met ① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,

2. Se, Ag, V, Zn, Hg

Ang ① = 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3,

4. ICPO4, ISFD, INH3N, ICNTO, ICSO4

5. Run Matrix QC

6. * 42357952846 2 @ 4.0°c

RECRA LabNet Use Only

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

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

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

Relinquished by	Received by	Date	Time
FedEx	Johnson	8/18/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	SIGNATURE		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-09	Page 1 of 1

Collector: Brent Porter R. Nielson/D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 >15' bgs 24' - 25'	SAF No.: B99-078	
Ice Chest No.: SML 395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labret	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235 7952 8462 - 4.1	
		COA: B20CW167IC	

POSSIBLE SAMPLE HAZARDS/REMARKS										
Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045 DRO PCB	Semi-VOA - 8270A (TCL); TPH-Diesel Range WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Special Handling and/or Storage: 778

Sample No.	Matrix *	Sample Date	Sample Time										
B0W541	Soil	8-16-99	0940					X	X	X	X	X	
											B0W5L4		

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	8-16-99/1345	Ref 1B 3726	8-16-99/1345
Ref 1B	8-17-99/1200	Doug Bowers	8-17-99/1200
Doug Bowers	8-17-99/1200	Fed Ex	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-08	Page 1 of 1

Collector: Brent Porter R. Nielson Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 >15' bgs 20.5' — 21.5'	SAF No.: B99-078	
Ice Chest No.: SML 395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A99B228	Bill of Lading/Air Bill No.: 4235795 2 8462	
		COA: B20CW167IC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W540	Soil	8-16-99	0931					X	X	X	X	X	
												B0W5L4	

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers Date/Time: Doug Bowers 8-16-99/1345	Received By: RcF ID 3728 Date/Time: 8-16-99/1345	
Relinquished By: RcF ID Date/Time: 8-17-99/1200	Received By: Doug Bowers Date/Time: Doug Bowers 8-17-99/1200	
Relinquished By: Doug Bowers Date/Time: Doug Bowers 8-17-99/1200	Received By: For EX Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-05	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N	Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 14' - 15'		SAF No.: B99-078		
Ice Chest No.: SML395	Field Logbook No.: EL-1511		Method of Shipment: Federal Express		
Shipped To: TMA/RECRA Reena Labret	Offsite Property No.: A9902088		Bill of Lading/Air Bill No.: 4235 7952 8462		
			COA: B2CW167IC		

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W537	Soil	8-16-99	0910		X	X	X	X	X				
											B0W5L4		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-16-99/1345	Received By: RCF 1B 3728	Date/Time: 8-16-99/1345
Relinquished By: RCF 1B	Date/Time: 8-17-99/1200	Received By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99/1200
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-04	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 13' - 14'	SAF No.: B99-078	
Ice Chest No.: SML395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labonet	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235 7952 8462	
		COA: B20CW167IC	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix * / Sample Date / Sample Time										
B0W536	Soil / 8-16-99 / 0903		X	X	X	X	X				
									B0W5L4		

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers, Date/Time: 8-16-99/1345	Received By: Ref ID 3728, Date/Time: 8-16-99/1345	
Relinquished By: Ref ID, Date/Time: 8-17-99/1200	Received By: Doug Bowers, Date/Time: 8-17-99/1200	
Relinquished By: Doug Bowers, Date/Time: 8-17-99/1200	Received By: Fed Ex, Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-03	Page 1 of 1

Collector: Brent Porter R.Nielson / D.Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N	Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 10.5' - 11.5'		SAF No.: B99-078	
Ice Chest No.: ERC 40	Field Logbook No.: EL-1511		Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Reera Labret	Offsite Property No.: A9902Ø8		Bill of Lading/Air Bill No.: 4235795284 5 1 - 4.3	
			COA: B0CW1C71C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1			
	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix * / Sample Date / Sample Time										
5 B0W535	Soil / 8-16-99 / 0850		X	X	X	X	X				
									B0W5L4		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers Date/Time: Doug Bowers 8-16-99/1345	Received By: Ref 1B 3728 Date/Time: 8-16-99/1345		
Relinquished By: Ref 1B Date/Time: 8-17-99/1200	Received By: Doug Bowers Date/Time: Doug Bowers 8-17-99/1200		
Relinquished By: Doug Bowers Date/Time: Doug Bowers 8-17-99/1200	Received By: Fed Ex Date/Time:		
Relinquished By: Date/Time:	Received By: Date/Time:		

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-02	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 8'-9'		SAF No.: B99-078
Ice Chest No.: ERC 40	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A990208		Bill of Lading/Air Bill No.: 4235795284 51
			COA: B2UCW1671C

Price Code: 8N

Data Turnaround: 45 Days

012

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix * / Sample Date / Sample Time										
B0W534	Soil / 8-16-99 / 0834		X	X	X	X	X				
									B0W5L4		

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers, Date/Time: 8-16-99/1347	Received By: Ref 1B 3728, Date/Time: 8-16-99/1347	
Relinquished By: Ref 1B, Date/Time: 8-17-99/1200	Received By: Doug Bowers, Date/Time: 8-17-99/1200	
Relinquished By: Doug Bowers, Date/Time: 8-17-99/1200	Received By: Fed Ex, Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-01	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 5.5' - 6.5'	SAF No.: B99-078	
Ice Chest No.: ER-40	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235795284 51	
		COA: B20CW167 1C	

013

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W533	Soil	8-16-99	0815		X	X	X	X	X		
										B0W544	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 8-16-99/1345	Received By: Ref ID 3778	Date/Time: 8-16-99/1345
Relinquished By: Ref ID	Date/Time: 8-17-99/1200	Received By: Doug Bowers	Date/Time: 8-17-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-17-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Fedex	Date/Time:	Received By: Anson	Date/Time: 8/18/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9908L778
SDG/SAF#: H0492/B99-078

W.O #: 10985-001-001-9999-00
Date Received: 08-18-99

DIESEL RANGE ORGANICS

The set of samples consisted of seven (7) soil samples collected on 08-16-99.

The samples and their associated QC samples were prepared on 08-28-99 and analyzed by methodology based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 09-14,15-99. Analysis met the intent of Method WTPH-D.

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

2. All required holding times for extraction and analysis were met.

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

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

5. All surrogate recoveries were within acceptance criteria.

6. All blank spike recoveries were within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

OCT 1999
RECEIVED
Data
Log In

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-1-99
Date

R:\SHARE\LC\GCSCAN\08-778d.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 12 pages.

GLOSSARY OF DIESEL DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Recra LabNet - Lionville Laboratory

DIESEL RANGE ORGANICS BY GC

Report Date: 09/16/99 11:33

RFW Batch Number: **9908L778** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

003

	Cust ID:	B0W541	B0W541	B0W541	B0W540	B0W537	B0W536
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:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Surrogate:	p-Terphenyl	72 %	69 %	58 %	48 %	49 %	59 %
Diesel Range Organics		4.2 U	79 %	65 %	4.0 U	4.1 U	4.1 U

	Cust ID:	B0W535	B0W534	B0W533	BLK	BLK BS
Sample Information	RFW#:	005	006	007	99LE1045-MB1	99LE1045-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Surrogate:	p-Terphenyl	64 %	62 %	63 %	58 %	56 %
Diesel Range Organics		4.1 U	4.1 U	4.1 U	4.0 U	69 %

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

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

DATE RECEIVED: 08/18/99 RFW LOT # :9908L778

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W541	001	S	99LE1045	08/16/99	08/28/99	09/14/99
B0W541	001 MS	S	99LE1045	08/16/99	08/28/99	09/14/99
B0W541	001 MSD	S	99LE1045	08/16/99	08/28/99	09/14/99
B0W540	002	S	99LE1045	08/16/99	08/28/99	09/14/99
B0W537	003	S	99LE1045	08/16/99	08/28/99	09/14/99
B0W536	004	S	99LE1045	08/16/99	08/28/99	09/14/99
B0W535	005	S	99LE1045	08/16/99	08/28/99	09/14/99
B0W534	006	S	99LE1045	08/16/99	08/28/99	09/15/99
B0W533	007	S	99LE1045	08/16/99	08/28/99	09/15/99

LAB QC:

BLK	MB1	S	99LE1045	N/A	08/28/99	09/14/99
BLK	MB1 BS	S	99LE1045	N/A	08/28/99	09/14/99

11"

RECRA LabNet Use Only

9908L778

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU - HANFORD B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: SPEC Del: STD TAT: 30 DAY
Date Rec'd: 8/18/99 Date Due: 9/17/99
Account #: TNUHANFORD

Refrigerator #		1	6						6		6		6				
#/Type Container	Liquid																
	Solid	1g	1g						1g		1AG		1g				
Volume	Liquid																
	Solid	250	500						500		250		1Hr				
Preservatives											—						
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN							
		RECRA LabNet Use Only															
		0E24H	0E25H	8/18/99		0DRO	0PCB		METO		1PH	1CR6	Ag Q				

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0E24H	0E25H	8/18/99		0DRO	0PCB		METO		1PH	1CR6	Ag Q				
S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish	001	BDW541			S	8/16/99	0940	✓	✓	✓		✓	✓		✓		✓	✓	✓				
	2	540					0931																
	3	537					0910																
	4	536					0903																
	5	535					0850																
	6	534					0834																
	007	533					0815																

Special Instructions:

Soj # B99-078

COMPOSITE WASTE

DATE/REVISIONS:

1. Met = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
3. Ag Q = IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ISFD, INH3N, ICNTO, ICSO4
5. Per Matrix QC
6. *42357952846 2 @ 4.0°C

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec'd Y or N
Cooler Temp. * C

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

Relinquished by	Received by	Date	Time
Fed Ex	Jackson	8/18/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	SIGNATURE		

005

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-09	Page 1 of 1

Collector: Brent Porter R. Nelson/D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 >15' bgs 24' - 25'	SAF No.: B99-078	
Ice Chest No.: SML 395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labret	Offsite Property No.: A 990288	Bill of Lading/Air Bill No.: 4235 7952 8462 - 4.1	
		COA: B20CW167IC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage: 778

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045 DRO PCB	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.
Sample No.	Matrix *	Sample Date	Sample Time								
B0W541	Soil	8-16-99	0940					X	X	X	X	X	
											B0W5L4

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers Date/Time: 8-16-99/1345	Received By: Ref 1B 3728 Date/Time: 8-16-99/1345	
Relinquished By: Ref 1B Date/Time: 8-17-99/1200	Received By: Doug Bowers Date/Time: 8-17-99/1200	
Relinquished By: Doug Bowers Date/Time: 8-17-99/1200	Received By: Fed Ex Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-08	Page 1 of 1

Collector: Brent Porter R. Nielson Bowers	Company Contact: Chris Cearlock; Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 >15' bgs 20.5' — 21.5'	SAF No.: B99-078	
Ice Chest No.: SML 395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A99 0228	Bill of Lading/Air Bill No.: 42357952 8462	
		COA: B20CW167IC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W540	Soil	8-16-99	0931					X	X	X	X	X	
												B0W5L4	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	8-16-99/1345	RcF ID 3728	8-16-99/1345
RcF ID	8-17-99/1200	Doug Bowers	8-17-99/1200
Doug Bowers	8-17-99/1200	For EX	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-05	Page 1 of 1

Collector: Brent Porter R. Nickson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 14' - 15'	SAF No.: B99-078	
Ice Chest No.: SML395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Reera Labnet	Offsite Property No.: A9902088	Bill of Lading/Air Bill No.: 42357952 8462	
		COA: B2UCW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W537	Soil	8-16-99	0910		X	X	X	X	X				
											BOW5L4		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-16-99/1345	Received By: Ref JB 3728	Date/Time: 8-16-99/1345
Relinquished By: Ref JB	Date/Time: 8-17-99/1200	Received By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99/1200
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

Matrix *
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	B99-078-04	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 13' - 14'	SAF No.: B99-078	
Ice Chest No.: SML 395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labonet	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235 7952 8462	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W536	Soil	8-16-99	0903		X	X	X	X	X				
												B0W5L4	

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers, Date/Time: Doug Bowers 8-16-99/1345	Received By: Ref 10 3728, Date/Time: 8-16-99/1347	
Relinquished By: Ref 10, Date/Time: 8-17-99/1200	Received By: Doug Bowers, Date/Time: Doug Bowers 8-17-99/1200	
Relinquished By: Doug Bowers, Date/Time: Doug Bowers 8-17-99/1200	Received By: FedEx, Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-03	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 10.5' - 11.5'	SAF No.: B99-078	
Ice Chest No.: ERC 40	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Reera Labret	Offsite Property No.: A9902Ø8	Bill of Lading/Air Bill No.: 4235795284 5/ - 4.3	
		COA: B0CW1C71C	

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
5 B0W535	Soil	8-16-99	0850		X	X	X	X	X				
												B0W5L4	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 8-16-99/1345	Received By: Ref 1B 3728	Date/Time: 8-16-99/1345
Relinquished By: Ref 1B	Date/Time: 8-17-99/1000	Received By: Doug Bowers	Date/Time: Doug Bowers 8-17-99/1200
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 8-17-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-02	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock; Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 8'-9'	SAF No.: B99-078	
Ice Chest No.: ERC 40	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235795284 5 1	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W534	Soil	8-16-99	0834		X	X	X	X	X				
												B0W5L4	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers, Doug Bowers	Date/Time: 8-16-99/1345	Received By: Ref 1B 3708	Date/Time: 8-16-99/1345
Relinquished By: Ref 1B	Date/Time: 8-17-99/1200	Received By: Doug Bowers, Doug Bowers	Date/Time: 8-17-99/1200
Relinquished By: Doug Bowers, Doug Bowers	Date/Time: 8-17-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-01	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 5.5' - 6.5'	SAF No.: B99-078	
Ice Chest No.: ER-40	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235795284 51	
		COA: B20CW167 1C	

012

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W533	Soil	8-16-99	0815		X	X	X	X	X				
											B0W544		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 8-16-99/1245	Received By: Ref ID 3778	Date/Time: 8-16-99/1245
Relinquished By: Ref ID	Date/Time: 8-17-99/1200	Received By: Doug Bowers	Date/Time: 8-17-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-17-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Fedex	Date/Time:	Received By: Anson	Date/Time: 8/18/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B99-078
RFW #: 9908L778
SDG/SAF#: H0492/B99-078

W.O. #: #: 10985-001-001-9999-00
Date Received: 08-18-99

GC SCAN

The set of samples consisted of seven (7) soil samples collected on 08-16-99.

The samples and their associated QC samples were prepared on 08-30-99 and analyzed by methodology based on EPA Method 8015B for Ethanol and Butanol on 09-01-99.

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

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

2. The required holding time for analysis was met.

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

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

5. Surrogates were not used for this analysis.

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

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

OCT 1999
RECEIVED
Data
Log In

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-20-99
Date

r:\share\lc\gcscan\08-778.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 12 pages.

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

GLOSSARY OF OGCSC DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Recra LabNet - Lionville Laboratory

GC SCAN

Report Date: 09/13/99 15:18

RFW Batch Number: **9908L778** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

003

	Cust ID:	B0W541	B0W540	B0W537	B0W536	B0W535	B0W534
Sample Information	RFW#:	001	002	003	004	005	006
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
n-Propyl Alcohol		4.6 U	5.0 U	5.0 U	3.9 U	4.2 U	4.8 U
Ethanol		4.6 U	5.0 U	5.0 U	3.9 U	4.2 U	4.8 U

	Cust ID:	B0W533	B0W533	B0W533	BLK	BLK BS
Sample Information	RFW#:	007	007 MS	007 MSD	99LLC127-MB1	99LLC127-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
n-Propyl Alcohol		4.6 U	76 %	76 %	5.0 U	74 %
Ethanol		4.6 U	5.0 U	5.5 U	5.0 U	5.0 U

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

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

DATE RECEIVED: 08/18/99 RFW LOT # :9908L778

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W541	001	S	99LLC127	08/16/99	08/30/99	09/01/99
B0W540	002	S	99LLC127	08/16/99	08/30/99	09/01/99
B0W537	003	S	99LLC127	08/16/99	08/30/99	09/01/99
B0W536	004	S	99LLC127	08/16/99	08/30/99	09/01/99
B0W535	005	S	99LLC127	08/16/99	08/30/99	09/01/99
B0W534	006	S	99LLC127	08/16/99	08/30/99	09/01/99
B0W533	007	S	99LLC127	08/16/99	08/30/99	09/01/99
B0W533	007 MS	S	99LLC127	08/16/99	08/30/99	09/01/99
B0W533	007 MSD	S	99LLC127	08/16/99	08/30/99	09/01/99

LAB QC:

BLK	MB1	S	99LLC127	N/A	08/30/99	09/01/99
BLK	MB1 BS	S	99LLC127	N/A	08/30/99	09/01/99

09/13/99

1711

RECRA LabNet Use Only

99081778

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) Schnell

RECRA LabNet

Client: TNU - HANFORD B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: SPEC Del: STD TAT: 30 DAY
Date Rec'd: 8/18/99 Date Due: 9/17/99
Account #: TNUHANFORD

Refrigerator #		1	6						6		6		6			
#/Type Container	Liquid															
	Solid	1qt	1qt						1qt		1AG		1qt			
Volume	Liquid															
	Solid	250	500						500		250		1Hr			
Preservatives											—					
ANALYSES REQUESTED	ORGANIC: VOA	BNA	Pest/PCB	Herb				INORG: Metal	CN							

w/BNA

w/Metals

RECRA LabNet Use Only

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0025H	8/18/99		0020 0025C 0026B		Met(1)		1PH	ICP6	Ang(1)			
S - Soil	001	BDW541			S	8/16/99	0940	✓	✓	✓		✓	✓	✓		✓	✓	✓			
SE - Sediment	2	540					0931														
SO - Solid	3	537					0910														
SL - Sludge	4	536					0903														
W - Water	5	535					0850														
O - Oil	6	534					0934														
A - Air	007	533					0815														
DS - Drum Solids																					
DL - Drum Liquids																					
L - EP/TCLP Leachate																					
WI - Wipe																					
X - Other																					
F - Fish																					

Special Instructions:

Seq # B99-078

8/24/99 all samples ~~[illegible]~~ added ccasc ~~[illegible]~~ 8/24/99

COMPOSITE WASTE

COO

DATE/REVISIONS:

1. Met = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
3. Ang(1) = IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ISFD, INH3N, ICNTO, ICSO4
5. Run Matrix QC
6. * 423579528462 @ 4.0°C

RECRA LabNet Use Only

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

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec'd Y or N
Cooler Temp. * °C

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

Relinquished by	Received by	Date	Time
Fed Ex	Jonson	8/18/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	WRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-09	Page 1 of 1

Collector: Brent Porter R. Nielson/D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 >15' bgs 24' - 25'	SAF No.: B99-078	
Ice Chest No.: SML 395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra labret	Offsite Property No.: A 990.228	Bill of Lading/Air Bill No.: 4235 7952 8462 - 4.1	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS										
Special Handling and/or Storage: 278	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
	Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045 DRO PCB	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W541	Soil	8-16-99	0940					X	X	X	X	X	
											B0W5L4		

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers, Date/Time: 8-16-99/1345	Received By: Ref 1B 3728, Date/Time: 8-16-99/1345	
Relinquished By: Ref 1B, Date/Time: 8-17-99/1200	Received By: Doug Bowers, Date/Time: 8-17-99/1200	
Relinquished By: Doug Bowers, Date/Time: 8-17-99/1200	Received By: For Ex, Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

006

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-08	Page 1 of 1

Collector: Brent Porter R. Nielson Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 >15' bgs 20.5' — 21.5'		SAF No.: B99-078
Ice Chest No.: SML 395	Field Logbook No.: EL-1511		Method of Shipment: Federal Express
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A99E228		Bill of Lading/Air Bill No.: 4235795Z8462
			COA: B20CW167IC

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W540	Soil	8-16-99	0931					X	X	X	X	X	
												B0W5L4	

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers, Doug Bowers, Date/Time: 8-16-99/1345	Received By: RcF ID 3728, Date/Time: 8-16-99/1345	
Relinquished By: RcF ID, Date/Time: 8-17-99/1200	Received By: Doug Bowers, Doug Bowers, Date/Time: 8-17-99/1200	
Relinquished By: Doug Bowers, Doug Bowers, Date/Time: 8-17-99/1200	Received By: For EX, Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-05	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 14' - 15'	SAF No.: B99-078	
Ice Chest No.: SML395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Reera Labnet	Offsite Property No.: A9902088	Bill of Lading/Air Bill No.: 42357952 8462	
		COA: B20CW167IC	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix * / Sample Date / Sample Time										
B0W537	Soil / 8-16-99 / 0910		X	X	X	X	X				
									BOW5L4		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-16-99/1345	Received By: Ref JB 3728	Date/Time: 8-16-99/1345
Relinquished By: Ref JB	Date/Time: 8-17-99/1200	Received By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99/1200
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

008

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-04	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 13' - 14'	SAF No.: B99-078	
Ice Chest No.: 3ML395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labonet	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235 7952 8462	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix * / Sample Date / Sample Time										
B0W536	Soil / 8-16-99 / 0903		X	X	X	X	X				
									B0W524		

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers / Doug Bowers / Date/Time: 8-16-99/1345	Received By: Ref ID 3728	Date/Time: 8-16-99/1345
Relinquished By: Ref ID / Doug Bowers / Date/Time: 8-17-99/1200	Received By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99/1200
Relinquished By: Doug Bowers / Doug Bowers / Date/Time: 8-17-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

600

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-03	Page 1 of 1

Collector: Brent Porter R.Nielson / D.Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 10.5' - 11.5'	SAF No.: B99-078	
Ice Chest No.: ERC 40	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Reera Labret	Offsite Property No.: A9902Ø8	Bill of Lading/Air Bill No.: 4235795284 5 1 - 4.3	
		COA: BJOCW1C71C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W535	Soil	8-16-99	0850		X	X	X	X	X				
											B0W5L4		

5

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 8-16-99/1345	Received By: Ref 1B 3728	Date/Time: 8-16-99/1345
Relinquished By: Ref 1B	Date/Time: 8-17-99/1000	Received By: Doug Bowers	Date/Time: Doug Bowers 8-17-99/1200
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 8-17-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

010

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-02	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 8'-9'	SAF No.: B99-078	
Ice Chest No.: ERC 40	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235795284 51	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W534	Soil	8-16-99	0834		X	X	X	X	X				
											B0W5L4		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 8-16-99/1347	Received By: Ref 1B 3728	Date/Time: 8-16-99/1347
Relinquished By: Ref 1B	Date/Time: 8-17-99/1200	Received By: Doug Bowers	Date/Time: Doug Bowers 8-17-99/1200
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 8-17-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

9

011

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-01	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 5.5' - 6.5'	SAF No.: B99-078	
Ice Chest No.: ER-40	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235795284 5 1	
		COA: B20CW167 1C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No. / Matrix * / Sample Date / Sample Time										
B0W533 / Soil / 8-16-99 / 0815		X	X	X	X	X				
								B0W5L4		

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers / Doug Bowers / Date/Time: 8-16-99/1245	Received By: Ref ID 3728 / Date/Time: 8-16-99/1245	
Relinquished By: Ref ID / Date/Time: 8-17-99/1200	Received By: Doug Bowers / Doug Bowers / Date/Time: 8-17-99/1200	
Relinquished By: Doug Bowers / Doug Bowers / Date/Time: 8-17-99/1200	Received By: Fed Ex / Date/Time:	
Relinquished By: Federal / Date/Time:	Received By: Anson / Date/Time: 8/18/99 0930	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

012

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

OCT 1999 RECEIVED Data Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9908L778
SDG/SAF# : H0492/B99-078

W.O.# : 10985-001-001-9999-00
Date Received: 08-18-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 7 soil samples.

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

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B0W541	Vanadium	100	95.8

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 28 pages.

12. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-15-99
Date

mld/m08-778

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9908L778

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 09/15/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L778

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0W541	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	3.3	MG/KG	0.33	1.0
		Barium, Total	72.1	MG/KG	0.03	1.0
		Beryllium, Total	1.6	MG/KG	0.01	1.0
		Cadmium, Total	0.08	MG/KG	0.03	1.0
		Chromium, Total	4.9	MG/KG	0.08	1.0
		Copper, Total	16.0	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.8	MG/KG	0.12	1.0
		Lead, Total	3.5	MG/KG	0.21	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Vanadium, Total	77.2	MG/KG	0.06	1.0
		Zinc, Total	54.1	MG/KG	0.08	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/15/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L778

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B0W540	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.1	MG/KG	0.29	1.0
		Barium, Total	62.8	MG/KG	0.03	1.0
		Beryllium, Total	0.89	MG/KG	0.009	1.0
		Cadmium, Total	0.05	MG/KG	0.03	1.0
		Chromium, Total	2.5	MG/KG	0.07	1.0
		Copper, Total	14.0	MG/KG	0.11	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	6.9	MG/KG	0.11	1.0
		Lead, Total	2.3	MG/KG	0.19	1.0
		Selenium, Total	0.33 u	MG/KG	0.33	1.0
		Vanadium, Total	38.5	MG/KG	0.05	1.0
		Zinc, Total	35.4	MG/KG	0.07	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/15/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L778

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0W537	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	2.3	MG/KG	0.27	1.0
		Barium, Total	71.4	MG/KG	0.02	1.0
		Beryllium, Total	0.81	MG/KG	0.008	1.0
		Cadmium, Total	0.04	MG/KG	0.02	1.0
		Chromium, Total	2.7	MG/KG	0.06	1.0
		Copper, Total	13.6	MG/KG	0.1	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	7.3	MG/KG	0.1	1.0
		Lead, Total	2.2	MG/KG	0.17	1.0
		Selenium, Total	0.30 u	MG/KG	0.30	1.0
		Vanadium, Total	33.5	MG/KG	0.05	1.0
		Zinc, Total	33.7	MG/KG	0.06	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/15/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L778

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	B0W536	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.0	MG/KG	0.30	1.0
		Barium, Total	60.0	MG/KG	0.03	1.0
		Beryllium, Total	0.96	MG/KG	0.009	1.0
		Cadmium, Total	0.04	MG/KG	0.03	1.0
		Chromium, Total	2.5	MG/KG	0.07	1.0
		Copper, Total	13.6	MG/KG	0.11	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	6.6	MG/KG	0.11	1.0
		Lead, Total	2.1	MG/KG	0.19	1.0
		Selenium, Total	0.34 u	MG/KG	0.34	1.0
		Vanadium, Total	42.7	MG/KG	0.05	1.0
		Zinc, Total	36.6	MG/KG	0.07	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/15/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L778

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B0W535	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	1.8	MG/KG	0.29	1.0
		Barium, Total	69.2	MG/KG	0.03	1.0
		Beryllium, Total	0.93	MG/KG	0.009	1.0
		Cadmium, Total	0.03	MG/KG	0.03	1.0
		Chromium, Total	2.5	MG/KG	0.07	1.0
		Copper, Total	13.7	MG/KG	0.10	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	6.9	MG/KG	0.10	1.0
		Lead, Total	2.3	MG/KG	0.18	1.0
		Selenium, Total	0.32 u	MG/KG	0.32	1.0
		Vanadium, Total	41.7	MG/KG	0.05	1.0
		Zinc, Total	36.2	MG/KG	0.07	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/15/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L778

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	B0W534	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.0	MG/KG	0.29	1.0
		Barium, Total	74.2	MG/KG	0.03	1.0
		Beryllium, Total	1.0	MG/KG	0.009	1.0
		Cadmium, Total	0.05	MG/KG	0.03	1.0
		Chromium, Total	4.4	MG/KG	0.07	1.0
		Copper, Total	13.9	MG/KG	0.11	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	9.0	MG/KG	0.11	1.0
		Lead, Total	3.2	MG/KG	0.19	1.0
		Selenium, Total	0.33 u	MG/KG	0.33	1.0
		Vanadium, Total	43.5	MG/KG	0.05	1.0
		Zinc, Total	40.7	MG/KG	0.07	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/15/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L778

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B0W533	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	3.0	MG/KG	0.32	1.0
		Barium, Total	79.8	MG/KG	0.03	1.0
		Beryllium, Total	0.91	MG/KG	0.01	1.0
		Cadmium, Total	0.10	MG/KG	0.03	1.0
		Chromium, Total	5.6	MG/KG	0.08	1.0
		Copper, Total	12.5	MG/KG	0.11	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	8.1	MG/KG	0.11	1.0
		Lead, Total	4.1	MG/KG	0.20	1.0
		Selenium, Total	0.60	MG/KG	0.35	1.0
		Vanadium, Total	38.6	MG/KG	0.06	1.0
		Zinc, Total	39.3	MG/KG	0.08	1.0

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

DATE RECEIVED: 08/18/99 RFW LOT # :9908L778

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W541						
SILVER, TOTAL	001	S	99L0591	08/16/99	08/26/99	08/30/99
SILVER, TOTAL	001 REP	S	99L0591	08/16/99	08/26/99	08/30/99
SILVER, TOTAL	001 MS	S	99L0591	08/16/99	08/26/99	08/30/99
ARSENIC, TOTAL	001	S	99L0591	08/16/99	08/26/99	08/30/99
ARSENIC, TOTAL	001 REP	S	99L0591	08/16/99	08/26/99	08/30/99
ARSENIC, TOTAL	001 MS	S	99L0591	08/16/99	08/26/99	08/30/99
BARIUM, TOTAL	001	S	99L0591	08/16/99	08/26/99	08/30/99
BARIUM, TOTAL	001 REP	S	99L0591	08/16/99	08/26/99	08/30/99
BARIUM, TOTAL	001 MS	S	99L0591	08/16/99	08/26/99	08/30/99
BERYLLIUM, TOTAL	001	S	99L0591	08/16/99	08/26/99	08/30/99
BERYLLIUM, TOTAL	001 REP	S	99L0591	08/16/99	08/26/99	08/30/99
BERYLLIUM, TOTAL	001 MS	S	99L0591	08/16/99	08/26/99	08/30/99
CADMIUM, TOTAL	001	S	99L0591	08/16/99	08/26/99	08/30/99
CADMIUM, TOTAL	001 REP	S	99L0591	08/16/99	08/26/99	08/30/99
CADMIUM, TOTAL	001 MS	S	99L0591	08/16/99	08/26/99	08/30/99
CHROMIUM, TOTAL	001	S	99L0591	08/16/99	08/26/99	08/30/99
CHROMIUM, TOTAL	001 REP	S	99L0591	08/16/99	08/26/99	08/30/99
CHROMIUM, TOTAL	001 MS	S	99L0591	08/16/99	08/26/99	08/30/99
COPPER, TOTAL	001	S	99L0591	08/16/99	08/26/99	08/30/99
COPPER, TOTAL	001 REP	S	99L0591	08/16/99	08/26/99	08/30/99
COPPER, TOTAL	001 MS	S	99L0591	08/16/99	08/26/99	08/30/99
MERCURY, TOTAL	001	S	99C0246	08/16/99	08/20/99	08/20/99
MERCURY, TOTAL	001 REP	S	99C0246	08/16/99	08/20/99	08/20/99
MERCURY, TOTAL	001 MS	S	99C0246	08/16/99	08/20/99	08/20/99
NICKEL, TOTAL	001	S	99L0591	08/16/99	08/26/99	08/30/99
NICKEL, TOTAL	001 REP	S	99L0591	08/16/99	08/26/99	08/30/99
NICKEL, TOTAL	001 MS	S	99L0591	08/16/99	08/26/99	08/30/99
LEAD, TOTAL	001	S	99L0591	08/16/99	08/26/99	08/30/99
LEAD, TOTAL	001 REP	S	99L0591	08/16/99	08/26/99	08/30/99
LEAD, TOTAL	001 MS	S	99L0591	08/16/99	08/26/99	08/30/99
SELENIUM, TOTAL	001	S	99L0591	08/16/99	08/26/99	08/30/99
SELENIUM, TOTAL	001 REP	S	99L0591	08/16/99	08/26/99	08/30/99
SELENIUM, TOTAL	001 MS	S	99L0591	08/16/99	08/26/99	08/30/99
VANADIUM, TOTAL	001	S	99L0591	08/16/99	08/26/99	08/30/99
VANADIUM, TOTAL	001 REP	S	99L0591	08/16/99	08/26/99	08/30/99

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

DATE RECEIVED: 08/18/99 RFW LOT # :9908L778

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	001 MS	S	99L0591	08/16/99	08/26/99	08/30/99
ZINC, TOTAL	001	S	99L0591	08/16/99	08/26/99	08/30/99
ZINC, TOTAL	001 REP	S	99L0591	08/16/99	08/26/99	08/30/99
ZINC, TOTAL	001 MS	S	99L0591	08/16/99	08/26/99	08/30/99
B0W540						
SILVER, TOTAL	002	S	99L0591	08/16/99	08/26/99	08/30/99
ARSENIC, TOTAL	002	S	99L0591	08/16/99	08/26/99	08/30/99
BARIUM, TOTAL	002	S	99L0591	08/16/99	08/26/99	08/30/99
BERYLLIUM, TOTAL	002	S	99L0591	08/16/99	08/26/99	08/30/99
CADMIUM, TOTAL	002	S	99L0591	08/16/99	08/26/99	08/30/99
CHROMIUM, TOTAL	002	S	99L0591	08/16/99	08/26/99	08/30/99
COPPER, TOTAL	002	S	99L0591	08/16/99	08/26/99	08/30/99
MERCURY, TOTAL	002	S	99C0246	08/16/99	08/20/99	08/20/99
NICKEL, TOTAL	002	S	99L0591	08/16/99	08/26/99	08/30/99
LEAD, TOTAL	002	S	99L0591	08/16/99	08/26/99	08/30/99
SELENIUM, TOTAL	002	S	99L0591	08/16/99	08/26/99	08/30/99
VANADIUM, TOTAL	002	S	99L0591	08/16/99	08/26/99	08/30/99
ZINC, TOTAL	002	S	99L0591	08/16/99	08/26/99	08/30/99
B0W537						
SILVER, TOTAL	003	S	99L0591	08/16/99	08/26/99	08/30/99
ARSENIC, TOTAL	003	S	99L0591	08/16/99	08/26/99	08/30/99
BARIUM, TOTAL	003	S	99L0591	08/16/99	08/26/99	08/30/99
BERYLLIUM, TOTAL	003	S	99L0591	08/16/99	08/26/99	08/30/99
CADMIUM, TOTAL	003	S	99L0591	08/16/99	08/26/99	08/30/99
CHROMIUM, TOTAL	003	S	99L0591	08/16/99	08/26/99	08/30/99
COPPER, TOTAL	003	S	99L0591	08/16/99	08/26/99	08/30/99
MERCURY, TOTAL	003	S	99C0246	08/16/99	08/20/99	08/20/99
NICKEL, TOTAL	003	S	99L0591	08/16/99	08/26/99	08/30/99
LEAD, TOTAL	003	S	99L0591	08/16/99	08/26/99	08/30/99
SELENIUM, TOTAL	003	S	99L0591	08/16/99	08/26/99	08/30/99
VANADIUM, TOTAL	003	S	99L0591	08/16/99	08/26/99	08/30/99
ZINC, TOTAL	003	S	99L0591	08/16/99	08/26/99	08/30/99
B0W536						
SILVER, TOTAL	004	S	99L0591	08/16/99	08/26/99	08/30/99

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

DATE RECEIVED: 08/18/99 RFW LOT # :9908L778

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TOTAL	004	S	99L0591	08/16/99	08/26/99	08/30/99
BARIUM, TOTAL	004	S	99L0591	08/16/99	08/26/99	08/30/99
BERYLLIUM, TOTAL	004	S	99L0591	08/16/99	08/26/99	08/30/99
CADMIUM, TOTAL	004	S	99L0591	08/16/99	08/26/99	08/30/99
CHROMIUM, TOTAL	004	S	99L0591	08/16/99	08/26/99	08/30/99
COPPER, TOTAL	004	S	99L0591	08/16/99	08/26/99	08/30/99
MERCURY, TOTAL	004	S	99C0246	08/16/99	08/20/99	08/20/99
NICKEL, TOTAL	004	S	99L0591	08/16/99	08/26/99	08/30/99
LEAD, TOTAL	004	S	99L0591	08/16/99	08/26/99	08/30/99
SELENIUM, TOTAL	004	S	99L0591	08/16/99	08/26/99	08/30/99
VANADIUM, TOTAL	004	S	99L0591	08/16/99	08/26/99	08/30/99
ZINC, TOTAL	004	S	99L0591	08/16/99	08/26/99	08/30/99
B0W535						
SILVER, TOTAL	005	S	99L0591	08/16/99	08/26/99	08/30/99
ARSENIC, TOTAL	005	S	99L0591	08/16/99	08/26/99	08/30/99
BARIUM, TOTAL	005	S	99L0591	08/16/99	08/26/99	08/30/99
BERYLLIUM, TOTAL	005	S	99L0591	08/16/99	08/26/99	08/30/99
CADMIUM, TOTAL	005	S	99L0591	08/16/99	08/26/99	08/30/99
CHROMIUM, TOTAL	005	S	99L0591	08/16/99	08/26/99	08/30/99
COPPER, TOTAL	005	S	99L0591	08/16/99	08/26/99	08/30/99
MERCURY, TOTAL	005	S	99C0246	08/16/99	08/20/99	08/20/99
NICKEL, TOTAL	005	S	99L0591	08/16/99	08/26/99	08/30/99
LEAD, TOTAL	005	S	99L0591	08/16/99	08/26/99	08/30/99
SELENIUM, TOTAL	005	S	99L0591	08/16/99	08/26/99	08/30/99
VANADIUM, TOTAL	005	S	99L0591	08/16/99	08/26/99	08/30/99
ZINC, TOTAL	005	S	99L0591	08/16/99	08/26/99	08/30/99
B0W534						
SILVER, TOTAL	006	S	99L0591	08/16/99	08/26/99	08/30/99
ARSENIC, TOTAL	006	S	99L0591	08/16/99	08/26/99	08/30/99
BARIUM, TOTAL	006	S	99L0591	08/16/99	08/26/99	08/30/99
BERYLLIUM, TOTAL	006	S	99L0591	08/16/99	08/26/99	08/30/99
CADMIUM, TOTAL	006	S	99L0591	08/16/99	08/26/99	08/30/99
CHROMIUM, TOTAL	006	S	99L0591	08/16/99	08/26/99	08/30/99
COPPER, TOTAL	006	S	99L0591	08/16/99	08/26/99	08/30/99

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

DATE RECEIVED: 08/18/99 RFW LOT # :9908L778

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	006	S	99C0246	08/16/99	08/20/99	08/20/99
NICKEL, TOTAL	006	S	99L0591	08/16/99	08/26/99	08/30/99
LEAD, TOTAL	006	S	99L0591	08/16/99	08/26/99	08/30/99
SELENIUM, TOTAL	006	S	99L0591	08/16/99	08/26/99	08/30/99
VANADIUM, TOTAL	006	S	99L0591	08/16/99	08/26/99	08/30/99
ZINC, TOTAL	006	S	99L0591	08/16/99	08/26/99	08/30/99
B0W533						
SILVER, TOTAL	007	S	99L0591	08/16/99	08/26/99	08/30/99
ARSENIC, TOTAL	007	S	99L0591	08/16/99	08/26/99	08/30/99
BARIUM, TOTAL	007	S	99L0591	08/16/99	08/26/99	08/30/99
BERYLLIUM, TOTAL	007	S	99L0591	08/16/99	08/26/99	08/30/99
CADMIUM, TOTAL	007	S	99L0591	08/16/99	08/26/99	08/30/99
CHROMIUM, TOTAL	007	S	99L0591	08/16/99	08/26/99	08/30/99
COPPER, TOTAL	007	S	99L0591	08/16/99	08/26/99	08/30/99
MERCURY, TOTAL	007	S	99C0246	08/16/99	08/20/99	08/20/99
NICKEL, TOTAL	007	S	99L0591	08/16/99	08/26/99	08/30/99
LEAD, TOTAL	007	S	99L0591	08/16/99	08/26/99	08/30/99
SELENIUM, TOTAL	007	S	99L0591	08/16/99	08/26/99	08/30/99
VANADIUM, TOTAL	007	S	99L0591	08/16/99	08/26/99	08/30/99
ZINC, TOTAL	007	S	99L0591	08/16/99	08/26/99	08/30/99

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
SILVER, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
ARSENIC LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
ARSENIC, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
BARIUM LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
BARIUM, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
BERYLLIUM, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
CADMIUM LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
CADMIUM, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
CHROMIUM LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
CHROMIUM, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
COPPER LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99

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

DATE RECEIVED: 08/18/99 RFW LOT # :9908L778

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
COPPER, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
MERCURY LABORATORY	LC1 BS	S	99C0246	N/A	08/20/99	08/20/99
MERCURY, TOTAL	MB1	S	99C0246	N/A	08/20/99	08/20/99
NICKEL LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
NICKEL, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
LEAD LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
LEAD, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
SELENIUM LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
SELENIUM, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
VANADIUM LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
VANADIUM, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99
ZINC LABORATORY	LC1 BS	S	99L0591	N/A	08/26/99	08/30/99
ZINC, TOTAL	MB1	S	99L0591	N/A	08/26/99	08/30/99

RECRA LabNet Use Only
9908L778

Custody Transfer Record/Lab Work Request

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RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU - HANFORD B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: SPEC Del: STD TAT: 30DAY
Date Rec'd: 8/18/99 Date Due: 9/17/99
Account #: TNUHANFORD

Refrigerator #		1	6						6		6		6				
#/Type Container	Liquid																
	Solid	1g	1g						1g		1A6		1g				
Volume	Liquid																
	Solid	250	500						500		250		4oz				
Preservatives											—						
ANALYSES REQUESTED →	ORGANIC: VOA	BNA	Pest/PCB	Herb				INORG: Metal	CN								

w/BNA

w/Metals

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	8260	8270	8151A		8081	8082		Metals		1PH	ICP6	Ang1				
001	BDW541			S	8/16/99	0940	✓	✓	✓		✓	✓		✓		✓	✓	✓				
2	540					0931																
3	537					0910																
4	536					0903																
5	535					0850																
6	534					0834																
007	533					0815																

RECRA LabNet Use Only

Special Instructions:

Sag # B99-078

COMPOSITE WASTE

DATE/REVISIONS:

1. Met ① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
3. Ang ① = IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ISFD, INH3N, ICNTO, ICSO4
5. Run Matrix QC
6. *42357952846 2 @ 4.0°C

Relinquished by	Received by	Date	Time
FedEx	Johnson	8/18/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL WRITTEN		

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec'd Y or N
Cooler Temp. * C

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

120

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-09	Page 1 of 1

Collector: Brent Porter R. Nielson/D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 >15' bgs 24' - 25'	SAF No.: B99-078	
Ice Chest No.: SML 395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra labret	Offsite Property No.: A990288	Bill of Lading/Air Bill No.: 4235 7952 8462 - 4.1.	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage: 778

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045 DRO PCB	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045 DRO PCB	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.
B0W541	Soil	8-16-99	0940					X	X	X	X	X	
											B0W5L4		

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: Doug Bowers		8-16-99/1345
Received By: Ref 1B 3728		8-16-99/1345
Relinquished By: Ref 1B		8-17-99/1200
Received By: Doug Bowers		8-17-99/1200
Relinquished By: Doug Bowers		8-17-99/1200
Received By: Fed Ex		
Relinquished By:		
Received By:		

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

022

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-08	Page 1 of 1

Collector: Brent Porter R. Nielson Bowers	Company Contact: Chris Cearlock; Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N; Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 >15' bgs 20.5' — 21.5'	SAF No.: B99-078	
Ice Chest No.: SML 395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A99E328 C 8-17-99	Bill of Lading/Air Bill No.: 4235795 2 8462	
		COA: B20CW167IC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.
Sample No. / Matrix * / Sample Date / Sample Time										
B0W540 / Soil / 8-16-99 / 0931					X	X	X	X	X	
									B0W5L4	

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers, Date/Time: 8-16-99/1345	Received By: RoF ID 3728, Date/Time: 8-16-99/1345	
Relinquished By: RoF ID, Date/Time: 8-17-99/1200	Received By: Doug Bowers, Date/Time: 8-17-99/1200	
Relinquished By: Doug Bowers, Date/Time: 8-17-99/1200	Received By: For EX, Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

023

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-05	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 14' - 15'	SAF No.: B99-078	
Ice Chest No.: SML395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Reera Labnet	Offsite Property No.: A9902E08	Bill of Lading/Air Bill No.: 42357952 8462	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W537	Soil	8-16-99	0910		X	X	X	X	X				
											B0W5L4		

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-16-99/1345	Received By: Ref 1B 3728
Relinquished By: Ref 1B	Date/Time: 8-17-99/1200	Received By: Doug Bowers / Doug Bowers
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99/1200	Received By: Fed Ex
Relinquished By	Date/Time	Received By

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

3

024

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-04	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 13' - 14'	SAF No.: B99-078	
Ice Chest No.: SML395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235 7952 8462	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W536	Soil	8-16-99	0903		X	X	X	X	X		
										B0W524	

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers, Date/Time: Doug Bowers 8-16-99/1345	Received By: Ref ID 3728, Date/Time: 8-16-99/1345	
Relinquished By: Ref ID, Date/Time: 8-16-99/1226	Received By: Doug Bowers, Date/Time: Doug Bowers 8-17-99/1200	
Relinquished By: Doug Bowers, Date/Time: Doug Bowers 8-17-99/1200	Received By: Fed Ex, Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

025

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-03	Page 1 of 1

Collector: Brent Porter R.Nielson / D.Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 10.5' - 11.5'	SAF No.: B99-078	
Ice Chest No.: ERC 40	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Reera Labret	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235795284 5 1 - 4.3	
		COA: B20CW1C71C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W535	Soil	8-16-99	0850		X	X	X	X	X		
										B0W5L4	

5

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers Doug Bowers	8-16-99/1345	Ref 1B 3728	8-16-99/1345
Ref 1B	8-17-99/1200	Doug Bowers Doug Bowers	8-17-99/1200
Doug Bowers Doug Bowers	8-17-99/1200	Fed Ex	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

026

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-02	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 8'-9'	SAF No.: B99-078	
Ice Chest No.: ERC 40	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235795284 5 1	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W534	Soil	8-16-99	0834		X	X	X	X	X		
									B0W5L4		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-16-99/1345	Received By: Ref ID 37228	Date/Time: 8-16-99/1345
Relinquished By: Ref ID	Date/Time: 8-17-99/1200	Received By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99/1200
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

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

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

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

9

027

028

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-01	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 5.5' - 6.5'	SAF No.: B99-078	
Ice Chest No.: ER-40	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235795284 51	
		COA: B20CW167 1C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No. / Matrix * / Sample Date / Sample Time										
B0W533 / Soil / 8-16-99 / 0815		X	X	X	X	X				
									B0W544	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	8-16-99/1245	Ref ID 3728	8-16-99/1245
Ref ID	8-17-99/1200	Doug Bowers	8-17-99/1200
Doug Bowers	8-17-99/1200	Fed Ex	
Fedex		Dawson	8/18/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

028

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

OCT 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9908L778
SDG# : H0492
SAF# : B99-078

W.O. # : 10985-001-001-9999-00
Date Received: 08-18-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 7 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 blanks were within method criteria.

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

7. The matrix spike recoveries were within the 75-125% control limits. The matrix spike duplicates were within the 20% Relative Percent Difference (RPD) control limit.

8. The replicate analyses were within the 20% RPD control limit with the exception of Sulfide; poor reproducibility may be attributed to sample inhomogeneity.

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

Bruce C Iglein
for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-23-99
Date

njp\i08-778

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 24 pages.*

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

Recra LabNet Philadelphia

WET CHEMISTRY
METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	__ D2216-80		
% Moisture	__ D2216-80		__ ILMO4.0 (e)
% Solids	__		✓ 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: Chloride, Fluoride, Nitrate **Method:** EPA 300.0

Other: Nitrite, Phosphate, Sulfate **Method** EPA 300.0

Nitrate-Nitrite EPA 353.2

Ammonia EPA 350.3

002

L-WI-034/B-06/99

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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 09/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L778

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0W541	% Solids	95.6	%	0.01	1.0
		Chloride by IC	11.8	MG/KG	1.3	1.0
		Fluoride by IC	56.1	MG/KG	2.6	1.0
		Nitrite by IC	1.3 u	MG/KG	1.3	1.0
		Nitrate by IC	34	MG/KG	1.3	1.0
		Cyanide, Total	0.52 u	MG/KG	0.52	1.0
		Phosphate by IC	1.5	MG/KG	1.3	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
		Sulfate by IC	31.3	MG/KG	1.3	1.0
		Nitrate Nitrite	10.2	MG/KG	0.21	1.0
		Ammonia, as N	1.3 u	MG/KG	1.3	1.0
		pH	6.9	SOIL PH	0.01	1.0
		Sulfide	4.0	MG/KG	1.0	1.0
-002	B0W540	% Solids	97.4	%	0.01	1.0
		Chloride by IC	1.5	MG/KG	1.3	1.0
		Fluoride by IC	2.6 u	MG/KG	2.6	1.0
		Nitrite by IC	1.3 u	MG/KG	1.3	1.0
		Nitrate by IC	2.3	MG/KG	1.3	1.0
		Cyanide, Total	0.51 u	MG/KG	0.51	1.0
		Phosphate by IC	1.3 u	MG/KG	1.3	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
		Sulfate by IC	1.7	MG/KG	1.3	1.0
		Nitrate Nitrite	0.65	MG/KG	0.20	1.0
		Ammonia, as N	1.3 u	MG/KG	1.3	1.0
		pH	8.7	SOIL PH	0.01	1.0
		Sulfide	1.0 u	MG/KG	1.0	1.0
-003	B0W537	% Solids	97.1	%	0.01	1.0
		Chloride by IC	1.3 u	MG/KG	1.3	1.0
		Fluoride by IC	2.6 u	MG/KG	2.6	1.0
		Nitrite by IC	1.3 u	MG/KG	1.3	1.0
		Nitrate by IC	2.1	MG/KG	1.3	1.0
		Cyanide, Total	0.52 u	MG/KG	0.52	1.0
		Phosphate by IC	1.3 u	MG/KG	1.3	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
		Sulfate by IC	2.0	MG/KG	1.3	1.0
		Nitrate Nitrite	0.58	MG/KG	0.20	1.0
		Ammonia, as N	1.3 u	MG/KG	1.3	1.0
		pH	9.1	SOIL PH	0.01	1.0

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INORGANICS DATA SUMMARY REPORT 09/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L778

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0W537	Sulfide	1.0 u	MG/KG	1.0	1.0
-004	B0W536	% Solids	97.7	%	0.01	1.0
		Chloride by IC	1.4	MG/KG	1.3	1.0
		Fluoride by IC	2.6 u	MG/KG	2.6	1.0
		Nitrite by IC	1.3 u	MG/KG	1.3	1.0
		Nitrate by IC	2.5	MG/KG	1.3	1.0
		Cyanide, Total	0.51 u	MG/KG	0.51	1.0
		Phosphate by IC	1.3 u	MG/KG	1.3	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
		Sulfate by IC	2.0	MG/KG	1.3	1.0
		Nitrate Nitrite	0.96	MG/KG	0.20	1.0
		Ammonia, as N	1.3 u	MG/KG	1.3	1.0
		pH	9.2	SOIL PH	0.01	1.0
		Sulfide	4.0	MG/KG	1.0	1.0
-005	B0W535	% Solids	97.3	%	0.01	1.0
		Chloride by IC	1.4	MG/KG	1.3	1.0
		Fluoride by IC	2.6 u	MG/KG	2.6	1.0
		Nitrite by IC	1.3 u	MG/KG	1.3	1.0
		Nitrate by IC	2.6	MG/KG	1.3	1.0
		Cyanide, Total	0.51 u	MG/KG	0.51	1.0
		Phosphate by IC	1.3 u	MG/KG	1.3	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
		Sulfate by IC	2.0	MG/KG	1.3	1.0
		Nitrate Nitrite	0.78	MG/KG	0.20	1.0
		Ammonia, as N	1.3 u	MG/KG	1.3	1.0
		pH	9.0	SOIL PH	0.01	1.0
		Sulfide	1.0 u	MG/KG	1.0	1.0
-006	B0W534	% Solids	95.4	%	0.01	1.0
		Chloride by IC	28.0	MG/KG	1.3	1.0
		Fluoride by IC	2.7 u	MG/KG	2.7	1.0
		Nitrite by IC	1.3 u	MG/KG	1.3	1.0
		Nitrate by IC	64	MG/KG	2.7	2.0
		Cyanide, Total	0.52 u	MG/KG	0.52	1.0
		Phosphate by IC	1.3 u	MG/KG	1.3	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
		Sulfate by IC	62.4	MG/KG	2.7	2.0
		Nitrate Nitrite	15.2	MG/KG	1.0	5.0

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INORGANICS DATA SUMMARY REPORT 09/22/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9908L778

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	B0W534	Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.2		SOIL PH	0.01	1.0
		Sulfide	1.0	u	MG/KG	1.0	1.0
-007	B0W533	% Solids	94.3		%	0.01	1.0
		Chloride by IC	29.4		MG/KG	1.3	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	36		MG/KG	1.3	1.0
		Cyanide, Total	0.53	u	MG/KG	0.53	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	109		MG/KG	6.6	5.0
		Nitrate Nitrite	14.6		MG/KG	1.1	5.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.6		SOIL PH	0.01	1.0
		Sulfide	4.0		MG/KG	1.1	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L778

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LICA74-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.2	u	MG/KG	1.2	1.0
		Nitrate by IC	1.2	u	MG/KG	1.2	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK1	99LC093-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	99LVI057-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	99LN3C43-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	99LAM033-MB1	Ammonia, as N	1.2	u	MG/KG	1.2	1.0
BLANK10	99LSD036-MB1	Sulfide	1.0	u	MG/KG	1.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 09/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L778

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0W541	Chloride by IC	39.1	11.8	26.2	104.4	1.0
		Chloride by IC MSD	38.4	11.8	26.2	101.5	1.0
		Fluoride by IC	56.8	0.53	52.3	107.6	1.0
		Nitrite by IC	26	1.3 u	26	100.9	1.0
		Nitrite by IC MSD	26	1.3 u	26	100.4	1.0
		Nitrate by IC	63	34	26	110.3	1.0
		Nitrate by IC MSD	62	34	26	106.8	1.0
		Phosphate by IC	27.7	1.5	26.2	100.4	1.0
		Phosphate by IC MSD	27.6	1.5	26.2	99.7	1.0
		Sulfate by IC	59.5	31.3	26.2	107.8	1.0
		Sulfate by IC MSD	59.1	31.3	26.2	106.1	1.0
		Nitrate Nitrite	16.2	10.2	5.2	115.1	5.0
		Nitrate Nitrite MSD	16.9	10.2	5.2	129.3	5.0
		Ammonia, as N	110	1.3 u	98.8	111.0	1.0
		Ammonia, as N MSD	101	1.3 u	103	98.0	1.0
-007	B0W533	Cyanide, Total	5.5	0.53u	5.3	102.8	1.0
		Cyanide, Total MSD	5.5	0.53u	5.3	104.2	1.0
		Soluble Chromium VI	4.4	0.0	4.2	103.7	1.0
		Insoluble Chromium VI	960	0.0	1180	81.7	100
		Sulfide	375	4.0	427	87.1	1.0
		Sulfide MSD	369	4.0	427	85.5	1.0
BLANK10	99LICA74-MB1	Chloride by IC	24.0	1.2 u	25.0	96.0	1.0
		Fluoride by IC	52.4	2.5 u	50.0	104.8	1.0
		Nitrite by IC	25	1.2 u	25	98.2	1.0
		Nitrate by IC	24	1.2 u	25	96.5	1.0
		Phosphate by IC	25.5	1.2 u	25.0	102.1	1.0
		Sulfate by IC	23.7	1.2 u	25.0	94.9	1.0
BLANK10	99LVI057-MB1	Soluble Chromium VI	4.3	0.40u	4.0	106.7	1.0
		Insoluble Chromium VI	1140	0.40u	1160	97.4	100
BLANK10	99LN3C43-MB1	Nitrate Nitrite	4.9	0.20u	5.0	98.4	1.0
		Nitrate Nitrite MSD	4.9	0.20u	5.0	98.8	1.0
BLANK10	99LAM033-MB1	Ammonia, as N	51.6	1.2 u	50.0	103.2	1.0
		Ammonia, as N MSD	51.8	1.2 u	50.0	103.5	1.0
BLANK10	99LSD036-MB1	Sulfide	9.5	1.0 u	10.0	95.0	1.0
		Sulfide MSD	9.8	1.0 u	10.0	98.0	1.0

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INORGANICS DUPLICATE SPIKE REPORT 09/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L778

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	B0W541	Chloride by IC	104.4	101.5	2.8
		Nitrite by IC	100.9	100.4	0.54
		Nitrate by IC	110.3	106.8	3.2
		Phosphate by IC	100.4	99.7	0.70
		Sulfate by IC	107.8	106.1	1.6
		Nitrate Nitrite	115.1	129.3	11.6
		Ammonia, as N	111.0	98.0	12.4
-007	B0W533	Cyanide, Total	102.8	104.2	1.3
		Chromium VI	103.7	81.7	23.8
		Sulfide	87.1	85.5	1.8
BLANK10	99LN3C43-MB1	Nitrate Nitrite	98.4	98.8	0.41
BLANK10	99LAM033-MB1	Ammonia, as N	103.2	103.5	0.24
BLANK10	99LSD036-MB1	Sulfide	95.0	98.0	3.1

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INORGANICS PRECISION REPORT 09/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L778

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0W541	Chloride by IC	11.8	12.0	1.1	1.0
		Fluoride by IC	2.6 u	2.6 u	NC	1.0
		Nitrite by IC	1.3 u	1.3 u	NC	1.0
		Nitrate by IC	34	34	0.15	1.0
		Phosphate by IC	1.5	1.4	8.4	1.0
		Sulfate by IC	31.3	31.4	0.12	1.0
		Nitrate Nitrite	10.2	8.5	18.0	1.0
		Ammonia, as N	1.3 u	1.3 u	NC	1.0
-007REP	B0W533	% Solids	94.3	94.2	0.15	1.0
		Cyanide, Total	0.53u	0.53u	NC	1.0
		Chromium VI	0.42u	0.42u	NC	1.0
		pH	8.6	8.6	0.2	1.0
		Sulfide	4.0	8.1	67.4	1.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L778

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99LC093-LC1	Cyanide, Total LCS	1.9	2.0	MG/KG	97.2
LCS2	99LC093-LC2	Cyanide, Total LCS	9.0	10	MG/KG	89.9

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

DATE RECEIVED: 08/18/99 RFW LOT # :9908L778

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W541						
% SOLIDS	001	S	99L%S114	08/16/99	08/18/99	08/19/99
CHLORIDE BY IC	001	S	99LICA74	08/16/99	09/05/99	09/05/99
CHLORIDE BY IC	001 REP	S	99LICA74	08/16/99	09/05/99	09/05/99
CHLORIDE BY IC	001 MS	S	99LICA74	08/16/99	09/05/99	09/05/99
CHLORIDE BY IC	001 MSD	S	99LICA74	08/16/99	09/05/99	09/05/99
FLUORIDE BY IC	001	S	99LICA74	08/16/99	09/05/99	09/05/99
FLUORIDE BY IC	001 REP	S	99LICA74	08/16/99	09/05/99	09/05/99
FLUORIDE BY IC	001 MS	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRITE BY IC	001	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRITE BY IC	001 REP	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRITE BY IC	001 MS	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRITE BY IC	001 MSD	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRATE BY IC	001	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRATE BY IC	001 REP	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRATE BY IC	001 MS	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRATE BY IC	001 MSD	S	99LICA74	08/16/99	09/05/99	09/05/99
TOTAL CYANIDE	001	S	99LC093	08/16/99	08/27/99	08/27/99
PHOSPHATE BY IC	001	S	99LICA74	08/16/99	09/05/99	09/05/99
PHOSPHATE BY IC	001 REP	S	99LICA74	08/16/99	09/05/99	09/05/99
PHOSPHATE BY IC	001 MS	S	99LICA74	08/16/99	09/05/99	09/05/99
PHOSPHATE BY IC	001 MSD	S	99LICA74	08/16/99	09/05/99	09/05/99
CHROMIUM VI	001	S	99LVI057	08/16/99	08/23/99	08/23/99
SULFATE BY IC	001	S	99LICA74	08/16/99	09/05/99	09/05/99
SULFATE BY IC	001 REP	S	99LICA74	08/16/99	09/05/99	09/05/99
SULFATE BY IC	001 MS	S	99LICA74	08/16/99	09/05/99	09/05/99
SULFATE BY IC	001 MSD	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRATE NITRITE	001	S	99LN3C43	08/16/99	08/31/99	08/31/99
NITRATE NITRITE	001 REP	S	99LN3C43	08/16/99	08/31/99	08/31/99
NITRATE NITRITE	001 MS	S	99LN3C43	08/16/99	08/31/99	08/31/99
NITRATE NITRITE	001 MSD	S	99LN3C43	08/16/99	08/31/99	08/31/99
AMMONIA	001	S	99LAM033	08/16/99	09/03/99	09/03/99
AMMONIA	001 REP	S	99LAM033	08/16/99	09/03/99	09/03/99
AMMONIA	001 MS	S	99LAM033	08/16/99	09/03/99	09/03/99
AMMONIA	001 MSD	S	99LAM033	08/16/99	09/03/99	09/03/99
PH	001	S	99LPH086	08/16/99	08/18/99	08/18/99

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

DATE RECEIVED: 08/18/99 RFW LOT # :9908L778

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SULFIDE	001	S	99LSD036	08/16/99	08/23/99	08/23/99
B0W540						
% SOLIDS	002	S	99L%S114	08/16/99	08/18/99	08/19/99
CHLORIDE BY IC	002	S	99LICA74	08/16/99	09/05/99	09/05/99
FLUORIDE BY IC	002	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRITE BY IC	002	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRATE BY IC	002	S	99LICA74	08/16/99	09/05/99	09/05/99
TOTAL CYANIDE	002	S	99LC093	08/16/99	08/27/99	08/27/99
PHOSPHATE BY IC	002	S	99LICA74	08/16/99	09/05/99	09/05/99
CHROMIUM VI	002	S	99LVI057	08/16/99	08/23/99	08/23/99
SULFATE BY IC	002	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRATE NITRITE	002	S	99LN3C43	08/16/99	08/31/99	08/31/99
AMMONIA	002	S	99LAM033	08/16/99	09/03/99	09/03/99
PH	002	S	99LPH086	08/16/99	08/18/99	08/18/99
SULFIDE	002	S	99LSD036	08/16/99	08/23/99	08/23/99
B0W537						
% SOLIDS	003	S	99L%S114	08/16/99	08/18/99	08/19/99
CHLORIDE BY IC	003	S	99LICA74	08/16/99	09/05/99	09/05/99
FLUORIDE BY IC	003	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRITE BY IC	003	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRATE BY IC	003	S	99LICA74	08/16/99	09/05/99	09/05/99
TOTAL CYANIDE	003	S	99LC093	08/16/99	08/27/99	08/27/99
PHOSPHATE BY IC	003	S	99LICA74	08/16/99	09/05/99	09/05/99
CHROMIUM VI	003	S	99LVI057	08/16/99	08/23/99	08/23/99
SULFATE BY IC	003	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRATE NITRITE	003	S	99LN3C43	08/16/99	08/31/99	08/31/99
AMMONIA	003	S	99LAM033	08/16/99	09/03/99	09/03/99
PH	003	S	99LPH086	08/16/99	08/18/99	08/18/99
SULFIDE	003	S	99LSD036	08/16/99	08/23/99	08/23/99
B0W536						
% SOLIDS	004	S	99L%S114	08/16/99	08/18/99	08/19/99
CHLORIDE BY IC	004	S	99LICA74	08/16/99	09/05/99	09/05/99

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

DATE RECEIVED: 08/18/99 RFW LOT # :9908L778

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
FLUORIDE BY IC	004	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRITE BY IC	004	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRATE BY IC	004	S	99LICA74	08/16/99	09/05/99	09/05/99
TOTAL CYANIDE	004	S	99LC093	08/16/99	08/27/99	08/27/99
PHOSPHATE BY IC	004	S	99LICA74	08/16/99	09/05/99	09/05/99
CHROMIUM VI	004	S	99LVI057	08/16/99	08/23/99	08/23/99
SULFATE BY IC	004	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRATE NITRITE	004	S	99LN3C43	08/16/99	08/31/99	08/31/99
AMMONIA	004	S	99LAM033	08/16/99	09/03/99	09/03/99
PH	004	S	99LPH086	08/16/99	08/18/99	08/18/99
SULFIDE	004	S	99LSD036	08/16/99	08/23/99	08/23/99
B0W535						
% SOLIDS	005	S	99L%S114	08/16/99	08/18/99	08/19/99
CHLORIDE BY IC	005	S	99LICA74	08/16/99	09/05/99	09/05/99
FLUORIDE BY IC	005	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRITE BY IC	005	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRATE BY IC	005	S	99LICA74	08/16/99	09/05/99	09/05/99
TOTAL CYANIDE	005	S	99LC093	08/16/99	08/27/99	08/27/99
PHOSPHATE BY IC	005	S	99LICA74	08/16/99	09/05/99	09/05/99
CHROMIUM VI	005	S	99LVI057	08/16/99	08/23/99	08/23/99
SULFATE BY IC	005	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRATE NITRITE	005	S	99LN3C43	08/16/99	08/31/99	08/31/99
AMMONIA	005	S	99LAM033	08/16/99	09/03/99	09/03/99
PH	005	S	99LPH086	08/16/99	08/18/99	08/18/99
SULFIDE	005	S	99LSD036	08/16/99	08/23/99	08/23/99
B0W534						
% SOLIDS	006	S	99L%S114	08/16/99	08/18/99	08/19/99
CHLORIDE BY IC	006	S	99LICA74	08/16/99	09/05/99	09/05/99
FLUORIDE BY IC	006	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRITE BY IC	006	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRATE BY IC	006	S	99LICA74	08/16/99	09/05/99	09/05/99
TOTAL CYANIDE	006	S	99LC093	08/16/99	08/27/99	08/27/99
PHOSPHATE BY IC	006	S	99LICA74	08/16/99	09/05/99	09/05/99
CHROMIUM VI	006	S	99LVI057	08/16/99	08/23/99	08/23/99

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

DATE RECEIVED: 08/18/99 RFW LOT # :9908L778

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SULFATE BY IC	006	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRATE NITRITE	006	S	99LN3C43	08/16/99	08/31/99	08/31/99
AMMONIA	006	S	99LAM033	08/16/99	09/03/99	09/03/99
PH	006	S	99LPH086	08/16/99	08/18/99	08/18/99
SULFIDE	006	S	99LSD036	08/16/99	08/23/99	08/23/99
B0W533						
% SOLIDS	007	S	99L%S114	08/16/99	08/18/99	08/19/99
% SOLIDS	007 REP	S	99L%S114	08/16/99	08/18/99	08/19/99
CHLORIDE BY IC	007	S	99LICA74	08/16/99	09/05/99	09/05/99
FLUORIDE BY IC	007	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRITE BY IC	007	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRATE BY IC	007	S	99LICA74	08/16/99	09/05/99	09/05/99
TOTAL CYANIDE	007	S	99LC093	08/16/99	08/27/99	08/27/99
TOTAL CYANIDE	007 REP	S	99LC093	08/16/99	08/27/99	08/27/99
TOTAL CYANIDE	007 MS	S	99LC093	08/16/99	08/27/99	08/27/99
TOTAL CYANIDE	007 MSD	S	99LC093	08/16/99	08/27/99	08/27/99
PHOSPHATE BY IC	007	S	99LICA74	08/16/99	09/05/99	09/05/99
CHROMIUM VI	007	S	99LVI057	08/16/99	08/23/99	08/23/99
CHROMIUM VI	007 REP	S	99LVI057	08/16/99	08/23/99	08/23/99
CHROMIUM VI	007 MS	S	99LVI057	08/16/99	08/23/99	08/23/99
CHROMIUM VI	007 MSD	S	99LVI057	08/16/99	08/23/99	08/23/99
SULFATE BY IC	007	S	99LICA74	08/16/99	09/05/99	09/05/99
NITRATE NITRITE	007	S	99LN3C43	08/16/99	08/31/99	08/31/99
AMMONIA	007	S	99LAM033	08/16/99	09/03/99	09/03/99
PH	007	S	99LPH086	08/16/99	08/18/99	08/18/99
PH	007 REP	S	99LPH086	08/16/99	08/18/99	08/18/99
SULFIDE	007	S	99LSD036	08/16/99	08/23/99	08/23/99
SULFIDE	007 REP	S	99LSD036	08/16/99	08/23/99	08/23/99
SULFIDE	007 MS	S	99LSD036	08/16/99	08/23/99	08/23/99
SULFIDE	007 MSD	S	99LSD036	08/16/99	08/23/99	08/23/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LICA74	N/A	09/05/99	09/05/99
CHLORIDE BY IC	MB1 BS	S	99LICA74	N/A	09/05/99	09/05/99
FLUORIDE BY IC	MB1	S	99LICA74	N/A	09/05/99	09/05/99

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

DATE RECEIVED: 08/18/99 RFW LOT # :9908L778

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
FLUORIDE BY IC	MB1 BS	S	99LICA74	N/A	09/05/99	09/05/99
NITRITE BY IC	MB1	S	99LICA74	N/A	09/05/99	09/05/99
NITRITE BY IC	MB1 BS	S	99LICA74	N/A	09/05/99	09/05/99
NITRATE BY IC	MB1	S	99LICA74	N/A	09/05/99	09/05/99
NITRATE BY IC	MB1 BS	S	99LICA74	N/A	09/05/99	09/05/99
TOTAL CYANIDE	LC1 L	S	99LC093	N/A	08/27/99	08/27/99
TOTAL CYANIDE	LC2 L	S	99LC093	N/A	08/27/99	08/27/99
TOTAL CYANIDE	MB1	S	99LC093	N/A	08/27/99	08/27/99
PHOSPHATE BY IC	MB1	S	99LICA74	N/A	09/05/99	09/05/99
PHOSPHATE BY IC	MB1 BS	S	99LICA74	N/A	09/05/99	09/05/99
CHROMIUM VI	MB1	S	99LVI057	N/A	08/23/99	08/23/99
CHROMIUM VI	MB1 BS	S	99LVI057	N/A	08/23/99	08/23/99
CHROMIUM VI	MB1 BSD	S	99LVI057	N/A	08/23/99	08/23/99
SULFATE BY IC	MB1	S	99LICA74	N/A	09/05/99	09/05/99
SULFATE BY IC	MB1 BS	S	99LICA74	N/A	09/05/99	09/05/99
NITRATE NITRITE	MB1	S	99LN3C43	N/A	08/31/99	08/31/99
NITRATE NITRITE	MB1 BS	S	99LN3C43	N/A	08/31/99	08/31/99
NITRATE NITRITE	MB1 BSD	S	99LN3C43	N/A	08/31/99	08/31/99
AMMONIA	MB1	S	99LAM033	N/A	09/03/99	09/03/99
AMMONIA	MB1 BS	S	99LAM033	N/A	09/03/99	09/03/99
AMMONIA	MB1 BSD	S	99LAM033	N/A	09/03/99	09/03/99
SULFIDE	MB1	S	99LSD036	N/A	08/23/99	08/23/99
SULFIDE	MB1 BS	S	99LSD036	N/A	08/23/99	08/23/99
SULFIDE	MB1 BSD	S	99LSD036	N/A	08/23/99	08/23/99

1411

RECRA LabNet Use Only

99081778

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU - HANFORD B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: SPEC Del: STD TAT: 30 DAY
Date Rec'd: 8/18/99 Date Due: 9/17/99
Account #: TNUHANFORD

Refrigerator #		1	6						6		6		6		
#/Type Container	Liquid														
	Solid	1g	1g						1g		1A6		1g		
Volume	Liquid														
	Solid	250	500						500		250		4oz		
Preservatives											—				

w/BNA w/Metals

ANALYSES REQUESTED →

ORGANIC				INORG	
VOA	BNA	Pest/PCB	Herb	Metal	CN

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	0824H	0825H	8/18/99		ODEO	OPCB		METO		1PH	1CR6		ANIO				
001	BDW541			S	8/16/99	0940	✓	✓	✓		✓	✓		✓		✓	✓		✓				
2	540					0931																	
3	537					0910																	
4	536					0903																	
5	535					0850																	
6	534					0934																	
007	533					0815																	

Special Instructions:

Saf # B99-078

COMPOSITE WASTE

DATE/REVISIONS:

Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
Ana (1) = 3. IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ISFD, INH3N, ICNTO, ICSO4
5. Rem Matrix QC
6. * 423579528462 @ 4.0°c

RECRA LabNet Use Only

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

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

Relinquished by	Received by	Date	Time
FedEx	Johnson	8/18/99	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	B99-078-09	Page 1 of 1

Collector: Brent Porter R. Nielson/D. Bowers	Company Contact: Chris Cearlock; Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N; Date Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 >15' bgs 24' - 25'	SAF No.: B99-078	
Ice Chest No.: SML 395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra labret	Offsite Property No.: A 990228	Bill of Lading/Air Bill No.: 4235 7952 8462 - 4.1	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

778

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045 DRO PCB	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W541	Soil	8-16-99	0940					X	X	X	X	X	
											B0W5L4		

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers, Date/Time: 8-16-99/1345	Received By: Ref 1B 3728, Date/Time: 8-16-99/1345	
Relinquished By: Ref 1B, Date/Time: 8-17-99/1200	Received By: Doug Bowers, Date/Time: 8-17-99/1200	
Relinquished By: Doug Bowers, Date/Time: 8-17-99/1200	Received By: Fed Ex, Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-08	Page 1 of 1

Collector: Brent Porter R. Nielson Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: ~~45~~ 30 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 >15' bgs 20.5' — 21.5'	SAF No.: B99-078	
Ice Chest No.: SML 395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A99B288	Bill of Lading/Air Bill No.: 4235795Z8462	
		COA: B20CW167IC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	Cool 4C	None	Cool 4C	None	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B0W540	Soil	8-16-99	0931					X	X	X	X	X	
												B0W5L4	

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers Date/Time: Doug Bowers 8-16-99/1345	Received By: RPF ID 3728 Date/Time: 8-16-99/1345	
Relinquished By: RPF ID 8-17-99/1200	Received By: Doug Bowers Date/Time: Doug Bowers 8-17-99/1200	
Relinquished By: Doug Bowers Date/Time: Doug Bowers 8-17-99/1200	Received By: For EX Date/Time:	
Relinquished By: Date/Time:	Received By: Date/Time:	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

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

Matrix *

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	B99-078-05	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N	Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 14' - 15'		SAF No.: B99-078		
Ice Chest No.: SML395	Field Logbook No.: EL-1511		Method of Shipment: Federal Express		
Shipped To: TMA/RECRA Reena Labnet	Offsite Property No.: A9902E8		Bill of Lading/Air Bill No.: 42357952 8462		
			COA: B20CW167IC		

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W537	Soil	8-16-99	0910		X	X	X	X	X		
										BOW5L4	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-16-99/1345	Received By: Rcf JB 3728	Date/Time: 8-16-99/1345
Relinquished By: Rcf JB	Date/Time: 8-17-99/1200	Received By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99/1200
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-04	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 13' - 14'	SAF No.: B99-078	
Ice Chest No.: SML395	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labonet	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235 7952 8462	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix * / Sample Date / Sample Time										
B0W536	Soil / 8-16-99 / 0903		X	X	X	X	X				
									B0W5L4		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 8-16-99/1345	Received By: Ref ID 3728	Date/Time: 8-16-99/1345
Relinquished By: Ref ID	Date/Time: 8-17-99/1200	Received By: Doug Bowers	Date/Time: 8-17-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-17-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-03	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 10.5' - 11.5'	SAF No.: B99-078	
Ice Chest No.: ERC 40	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Reera Labret	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235795284 5 1 - 4.3	
		COA: B20CW1C71C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No. / Matrix * / Sample Date / Sample Time										
5 B0W535 / Soil / 8-16-99 / 0850		X	X	X	X	X				
								B0W5L4		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers Date/Time: Doug Bowers 8-16-99/1345	Received By: Doug Bowers Date/Time: Doug Bowers 8-16-99/1345		
Relinquished By: Doug Bowers Date/Time: Doug Bowers 8-17-99/1200	Received By: Doug Bowers Date/Time: Doug Bowers 8-17-99/1200		
Relinquished By: Doug Bowers Date/Time: Doug Bowers 8-17-99/1200	Received By: Fed Ex Date/Time:		
Relinquished By: Date/Time:	Received By: Date/Time:		

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
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	B99-078-02	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 8'-9'	SAF No.: B99-078	
Ice Chest No.: ERC 40	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A990208	Bill of Lading/Air Bill No.: 4235795284 5 1	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL): VOA - 8260A (Add-On) (I-Propanol, Ethanol)	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No. / Matrix * / Sample Date / Sample Time										
B0W534 / Soil / 8-16-99 / 0834		X	X	X	X	X				
								B0W5L4		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-16-99/1347	Received By: Ref 1B 3728	Date/Time: 8-16-99/1347
Relinquished By: Ref 1B	Date/Time: 8-17-99/1200	Received By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99/1200
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-17-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

Matrix *
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	B99-078-01	Page 1 of 1

Collector: Brent Porter R. Nielson / D. Bowers	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N	Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-15 <15' bgs 5.5' - 6.5'		SAF No.: B99-078		
Ice Chest No.: ER-40	Field Logbook No.: EL-1511		Method of Shipment: Federal Express		
Shipped To: TMA/RECRA Recra Labnet	Offsite Property No.: A990208		Bill of Lading/Air Bill No.: 4235795284 51		
			COA: B20CW1671C		

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	None	Cool 4C	None			
Type of Container	aG	aG	aG	aG	aG	aG	aG			
No. of Container(s)	1	1	1	1	1	1	1			
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
B0W533	Soil	8-16-99	0815		X	X	X	X	X		
										B0W544	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 8-16-99/1245	Received By: Ref 10 3728	Date/Time: 8-16-99/1245
Relinquished By: Ref 10	Date/Time: 8-17-99/1200	Received By: Doug Bowers	Date/Time: 8-17-99/1200
Relinquished By: Doug Bowers	Date/Time: 8-17-99/1200	Received By: Fed Ex	Date/Time:
Relinquished By: Fedex	Date/Time:	Received By: Anson	Date/Time: 8/18/99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Nickel, Selenium, Silver, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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