H0497 - TMA/RECRA

0052281

Thermo Nutech
W.O. No. N9-08-116-7180

Bechtel Hanford Inc.
SDG H0497

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0497 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 5, 1999.

2.0 ANALYSIS NOTES

2.1 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.2 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.

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 thought recounts were performed on samples B0W651 and B0W652.

2.5 Americium-241 Analyses

No problems were encountered during the course of the analyses.

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.

2.9 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

OCT 1999
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Data
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

SAMPLE SUMMARY

SDG 7180
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0497

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0W646	GP-4,15'bgs 4.5'-5.5'	SOLID		N908116-01	B99-078	B99-078-56	08/18/99 09:24
B0W647	GP-4,15'bgs 4.5'-5.5'	SOLID		N908116-02	B99-078	B99-078-57	08/18/99 09:30
B0W649	GP-4,15'bgs 4.5'-5.5'	SOLID		N908116-03	B99-078	B99-078-58	08/18/99 09:46
B0W650	GP-4,15'bgs 4.5'-5.5'	SOLID		N908116-04	B99-078	B99-078-59	08/18/99 10:03
B0W651	GP-4,15'bgs 4.5'-5.5'	SOLID		N908116-05	B99-078	B99-078-60	08/18/99 10:15
B0W652	GP-4,15'bgs 4.5'-5.5'	SOLID		N908116-06	B99-078	B99-078-61	08/18/99 10:30
B0W658	GP-4,15'bgs 4.5'-5.5'	SOLID		N908116-07	B99-078	B99-078-62	08/18/99 10:46
Method Blank		SOLID		N908116-09	B99-078		
Lab Control Sample		SOLID		N908116-08	B99-078		
Duplicate (N908116-01)	GP-4,15'bgs 4.5'-5.5'	SOLID		N908116-10	B99-078		08/18/99 09:24
Duplicate (N908116-06)	GP-4,15'bgs 4.5'-5.5'	SOLID		N908116-11	B99-078		08/18/99 10:30

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 10/05/99

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SAMPLE DELIVERY GROUP H0497

QC SUMMARY

SDG 7180
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0497

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
7180	B99-078-56	B0W646	SOLID	90.7			08/20/99	2	N908116-01	7180-001
	B99-078-57	B0W647	SOLID	90.5			08/20/99	2	N908116-02	7180-002
	B99-078-58	B0W649	SOLID	94.5			08/20/99	2	N908116-03	7180-003
	B99-078-59	B0W650	SOLID	94.6			08/20/99	2	N908116-04	7180-004
	B99-078-60	B0W651	SOLID	95.9			08/20/99	2	N908116-05	7180-005
	B99-078-61	B0W652	SOLID	96.3			08/20/99	2	N908116-06	7180-006
	B99-078-62	B0W658	SOLID	95.1			08/20/99	2	N908116-07	7180-007
		Method Blank	SOLID						N908116-09	7180-009
		Lab Control Sample	SOLID						N908116-08	7180-008
		Duplicate (N908116-01)	SOLID	90.7			08/20/99	2	N908116-10	7180-010
		Duplicate (N908116-06)	SOLID	96.3			08/20/99	2	N908116-11	7180-011

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SAMPLE DELIVERY GROUP H0497

SDG 7180
Contact Kevin C. Johnson

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0497

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	6893-092	5.0	7			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6893-092	5.0	7			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6893-092	5.0	7			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6893-092	10.0	7			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6893-092	10.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6893-092	15.0	7			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6893-092	9.0	7			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6893-092	10.0	2			1	1	1/1		
NI_L	SOLID	Nickel 63 in Soil	6893-092	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
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SAMPLE DELIVERY GROUP H0497

SDG 7180
Contact Kevin C. Johnson

WORK SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0497

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0W646			N908116-01	7180-001	AM		09/23/99	10/05/99	NJV	Americium 241 in Soil
GP-4,15'bgs 4.5'-5.5'		SOLID	08/18/99	7180-001	GAM		10/01/99	10/05/99	NJV	Gamma Scan
B99-078-56	B99-078		08/20/99	7180-001	PU		09/20/99	10/05/99	NJV	Plutonium, Isotopic in Solids
				7180-001	SR		09/17/99	10/05/99	NJV	Total Strontium in Soil
				7180-001	TH		09/24/99	10/05/99	NJV	Thorium, Isotopic in Soil
				7180-001	U_T		09/13/99	10/05/99	NJV	Uranium, Total in Soil
B0W647			N908116-02	7180-002	AM		09/23/99	10/05/99	NJV	Americium 241 in Soil
GP-4,15'bgs 4.5'-5.5'		SOLID	08/18/99	7180-002	GAM		10/01/99	10/05/99	NJV	Gamma Scan
B99-078-57	B99-078		08/20/99	7180-002	PU		09/20/99	10/05/99	NJV	Plutonium, Isotopic in Solids
				7180-002	SR		09/17/99	10/05/99	NJV	Total Strontium in Soil
				7180-002	TH		09/24/99	10/05/99	NJV	Thorium, Isotopic in Soil
				7180-002	U_T		09/13/99	10/05/99	NJV	Uranium, Total in Soil
B0W649			N908116-03	7180-003	AM		09/23/99	10/05/99	NJV	Americium 241 in Soil
GP-4,15'bgs 4.5'-5.5'		SOLID	08/18/99	7180-003	GAM		10/04/99	10/05/99	NJV	Gamma Scan
B99-078-58	B99-078		08/20/99	7180-003	PU		09/20/99	10/05/99	NJV	Plutonium, Isotopic in Solids
				7180-003	SR		09/17/99	10/05/99	NJV	Total Strontium in Soil
				7180-003	TH		09/27/99	10/05/99	NJV	Thorium, Isotopic in Soil
				7180-003	U_T		09/13/99	10/05/99	NJV	Uranium, Total in Soil
B0W650			N908116-04	7180-004	AM		09/23/99	10/05/99	NJV	Americium 241 in Soil
GP-4,15'bgs 4.5'-5.5'		SOLID	08/18/99	7180-004	GAM		10/04/99	10/05/99	NJV	Gamma Scan
B99-078-59	B99-078		08/20/99	7180-004	PU		09/20/99	10/05/99	NJV	Plutonium, Isotopic in Solids
				7180-004	SR		09/17/99	10/05/99	NJV	Total Strontium in Soil
				7180-004	TH		09/28/99	10/05/99	NJV	Thorium, Isotopic in Soil
				7180-004	U_T		09/13/99	10/05/99	NJV	Uranium, Total in Soil
B0W651			N908116-05	7180-005	AM		09/23/99	10/05/99	NJV	Americium 241 in Soil
GP-4,15'bgs 4.5'-5.5'		SOLID	08/18/99	7180-005	GAM		10/04/99	10/05/99	NJV	Gamma Scan
B99-078-60	B99-078		08/20/99	7180-005	PU		09/23/99	10/05/99	NJV	Plutonium, Isotopic in Solids
				7180-005	SR		09/17/99	10/05/99	NJV	Total Strontium in Soil
				7180-005	TH		09/27/99	10/05/99	NJV	Thorium, Isotopic in Soil
				7180-005	U_T		09/13/99	10/05/99	NJV	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

SDG 7180
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0497

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0W652			N908116-06	7180-006	AM		09/23/99	10/05/99	NJV	Americium 241 in Soil
GP-4,15'bgs 4.5'-5.5'		SOLID	08/18/99	7180-006	GAM		10/04/99	10/05/99	NJV	Gamma Scan
B99-078-61	B99-078		08/20/99	7180-006	H		09/25/99	10/05/99	NJV	Tritium in Soil
				7180-006	NI_L		09/11/99	10/05/99	NJV	Nickel 63 in Soil
				7180-006	PU		09/23/99	10/05/99	NJV	Plutonium, Isotopic in Solids
				7180-006	SR		09/17/99	10/05/99	NJV	Total Strontium in Soil
				7180-006	TC		09/30/99	10/05/99	NJV	Technetium 99 in Soil
				7180-006	TH		09/27/99	10/05/99	NJV	Thorium, Isotopic in Soil
				7180-006	U_T		09/13/99	10/05/99	NJV	Uranium, Total in Soil
B0W658			N908116-07	7180-007	AM		09/23/99	10/05/99	NJV	Americium 241 in Soil
GP-4,15'bgs 4.5'-5.5'		SOLID	08/18/99	7180-007	GAM		10/02/99	10/05/99	NJV	Gamma Scan
B99-078-62	B99-078		08/20/99	7180-007	H		09/25/99	10/05/99	NJV	Tritium in Soil
				7180-007	NI_L		09/11/99	10/05/99	NJV	Nickel 63 in Soil
				7180-007	PU		09/20/99	10/05/99	NJV	Plutonium, Isotopic in Solids
				7180-007	SR		09/17/99	10/05/99	NJV	Total Strontium in Soil
				7180-007	TC		09/27/99	10/05/99	NJV	Technetium 99 in Soil
				7180-007	TH		09/27/99	10/05/99	NJV	Thorium, Isotopic in Soil
				7180-007	U_T		09/13/99	10/05/99	NJV	Uranium, Total in Soil
Method Blank			N908116-09	7180-009	AM		09/23/99	10/05/99	NJV	Americium 241 in Soil
		SOLID		7180-009	GAM		10/02/99	10/05/99	NJV	Gamma Scan
	B99-078			7180-009	H		09/25/99	10/05/99	NJV	Tritium in Soil
				7180-009	NI_L		09/11/99	10/05/99	NJV	Nickel 63 in Soil
				7180-009	PU		09/23/99	10/05/99	NJV	Plutonium, Isotopic in Solids
				7180-009	SR		09/17/99	10/05/99	NJV	Total Strontium in Soil
				7180-009	TC		09/27/99	10/05/99	NJV	Technetium 99 in Soil
				7180-009	TH		09/27/99	10/05/99	NJV	Thorium, Isotopic in Soil
				7180-009	U_T		09/13/99	10/05/99	NJV	Uranium, Total in Soil
Lab Control Sample			N908116-08	7180-008	AM		09/24/99	10/05/99	NJV	Americium 241 in Soil
		SOLID		7180-008	GAM		10/02/99	10/05/99	NJV	Gamma Scan
	B99-078			7180-008	H		09/25/99	10/05/99	NJV	Tritium in Soil
				7180-008	NI_L		09/11/99	10/05/99	NJV	Nickel 63 in Soil
				7180-008	PU		09/20/99	10/05/99	NJV	Plutonium, Isotopic in Solids
				7180-008	SR		09/17/99	10/05/99	NJV	Total Strontium in Soil
				7180-008	TC		09/27/99	10/05/99	NJV	Technetium 99 in Soil
				7180-008	TH		09/27/99	10/05/99	NJV	Thorium, Isotopic in Soil
				7180-008	U_T		09/13/99	10/05/99	NJV	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

SDG 7180
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0497

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (N908116-01)			N908116-10	7180-010	AM		09/23/99	10/05/99	NJV	Americium 241 in Soil
GP-4,15'bgs 4.5'-5.5'		SOLID	08/18/99	7180-010	GAM		10/02/99	10/05/99	NJV	Gamma Scan
	B99-078		08/20/99	7180-010	PU		09/23/99	10/05/99	NJV	Plutonium, Isotopic in Solids
				7180-010	SR		09/17/99	10/05/99	NJV	Total Strontium in Soil
				7180-010	TH		09/27/99	10/05/99	NJV	Thorium, Isotopic in Soil
				7180-010	U_T		09/13/99	10/05/99	NJV	Uranium, Total in Soil
Duplicate (N908116-06)			N908116-11	7180-011	H		09/25/99	10/05/99	NJV	Tritium in Soil
GP-4,15'bgs 4.5'-5.5'		SOLID	08/18/99	7180-011	NI_L		09/11/99	10/05/99	NJV	Nickel 63 in Soil
	B99-078		08/20/99	7180-011	TC		09/29/99	10/05/99	NJV	Technetium 99 in Soil

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
Protocol Hanford
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SAMPLE DELIVERY GROUP H0497

N908116-09 Method Blank

METHOD BLANK

SDG	7180	Client/Case no	Hanford	SDG-H0497	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N908116-09	Client sample id	Method Blank		
Dept sample id	7180-009	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	-0.012	0.043	0.073	400	U	H
Technetium 99	14133-76-7	0.307	0.29	0.54	15	U	TC
Total Uranium (ug/g)	7440-61-1	-0.003	0.003	0.006	1.0	U	U_T
Plutonium 238	13981-16-3	0	0.018	0.042	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.004	0.018	0.048	1.0	U	PU
Nickel 63	13981-37-8	-0.786	1.1	2.0	30	U	NI_L
Americium 241	14596-10-2	0.016	0.024	0.045	1.0	U	AM
Total Strontium	SR-RAD	-0.030	0.20	0.42	1.0	U	SR
Thorium 228	14274-82-9	0.050	0.043	0.069	1.0	U	TH
Thorium 230	14269-63-7	0	0.043	0.075	1.0	U	TH
Thorium 232	TH-232	-0.012	0.018	0.041	1.0	U	TH
Potassium 40	13966-00-2	U		0.22		U	GAM
Cobalt 60	10198-40-0	U		0.011	0.050	U	GAM
Cesium 137	10045-97-3	U		0.010	0.10	U	GAM
Europium 152	14683-23-9	U		0.026	0.10	U	GAM
Europium 154	15585-10-1	U		0.031	0.10	U	GAM
Europium 155	14391-16-3	U		0.033	0.10	U	GAM
Radium 226	13982-63-3	U		0.021	0.10	U	GAM
Radium 228	15262-20-1	U		0.051	0.20	U	GAM
Thorium 228	14274-82-9	U		0.016		U	GAM
Thorium 232	TH-232	U		0.051		U	GAM
Americium 241	14596-10-2	U		0.084		U	GAM
Uranium 238	U-238	U		1.2		U	GAM
Uranium 235	15117-96-1	U		0.044		U	GAM

200 Area Source chctzn-200-CW-1 OU

QC-BLANK 31665

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

N908116-08

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7180

Contact Kevin C. Johnson

Client/Case no Hanford SDG-H0497

Case no TRB-SBB-207925

Lab sample id N908116-08

Dept sample id 7180-008

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	13.7	0.20	0.072	400	J	H	13.8	0.55	99	84-116	80-120
Technetium 99	46.2	1.5	0.51	15		TC	48.0	1.9	96	84-116	80-120
Total Uranium (ug/g)	32.5	3.7	0.060	1.0		U_T	30.0	1.2	108	76-124	80-120
Plutonium 238	12.2	0.80	0.061	1.0		PU	12.5	0.50	98	87-113	80-120
Plutonium 239/240	13.1	0.85	0.048	1.0		PU	13.2	0.53	99	86-114	80-120
Nickel 63	136	3.8	2.2	30		NI_L	134	5.4	102	83-117	
Americium 241	13.6	2.8	0.40	1.0		AM	11.5	0.46	118	62-138	80-120
Total Strontium	11.0	0.43	0.16	1.0		SR	11.3	0.45	97	83-117	
Thorium 230	10.8	0.54	0.080	1.0		TH	10.2	0.41	106	87-113	
Cobalt 60	0.341	0.021	0.006	0.050		GAM	0.323	0.013	106	74-126	80-120
Cesium 137	0.317	0.017	0.010	0.10		GAM	0.318	0.013	100	75-125	80-120

200 Area Source chctzn-200-CW-1 OU

QC-LCS 31664

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

N908116-10

B0W646

DUPLICATE

SDG	7180			Client/Case no	Hanford SDG-H0497
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N908116-10	Lab sample id	N908116-01	Client sample id	B0W646
Dept sample id	7180-010	Dept sample id	7180-001	Location/Matrix	GP-4,15'bgs 4.5'-5.5' SOLID
		Received	08/20/99	Collected	08/18/99 09:24
% solids	90.7	% solids	90.7	Custody/SAF No	B99-078-56 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
Total Uranium (ug/g)	0.505	0.055	0.006	1.0	J	U_T	0.437	0.047	0.006	J	14	30	
Plutonium 238	0.013	0.039	0.073	1.0	U	PU	-0.014	0.014	0.046	U	-		
Plutonium 239/240	-0.007	0.039	0.081	1.0	U	PU	0.017	0.027	0.042	U	-		
Americium 241	0.006	0.035	0.064	1.0	U	AM	0.029	0.059	0.098	U	-		
Total Strontium	2.23	0.18	0.13	1.0		SR	2.22	0.22	0.18		0	29	
Thorium 228	0.116	0.054	0.067	1.0	J	TH	0.089	0.052	0.080	J	26	110	
Thorium 230	U		0.079	1.0	U	TH	U		0.082	U	-		
Thorium 232	0.081	0.034	0.032	1.0	J	TH	0.088	0.037	0.028	J	8	90	
Potassium 40	12.6	1.6	0.20			GAM	11.9	0.58	0.29		6	38	
Cobalt 60	U		0.021	0.050	U	GAM	U		0.025	U	-		
Cesium 137	12.9	0.11	0.039	0.10		GAM	13.1	0.14	0.051		2	32	
Europium 152	U		0.10	0.10	U	GAM	U		0.14	U	-		
Europium 154	U		0.066	0.10	U	GAM	U		0.089	U	-		
Europium 155	U		0.073	0.10	U	GAM	U		0.15	U	-		
Radium 226	U		0.083	0.10	U	GAM	0.622	0.085	0.086		153	65	
Radium 228	U		0.15	0.20	U	GAM	0.887	0.12	0.11		142	68	
Thorium 228	U		0.45		U	GAM	0.849	0.090	0.099		61	111	
Thorium 232	U		0.15		U	GAM	0.887	0.12	0.11		142	68	
Americium 241	U		0.043		U	GAM	U		0.39	U	-		
Uranium 238	U		2.5		U	GAM	U		3.1	U	-		
Uranium 235	U		0.12		U	GAM	U		0.19	U	-		

200 Area Source chctzn-200-CW-1 OU

QC-DUP#1 31666

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

N908116-11

B0W652

DUPLICATE

SDG	7180			Client/Case no	Hanford SDG-H0497
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N908116-11	Lab sample id	N908116-06	Client sample id	B0W652
Dept sample id	7180-011	Dept sample id	7180-006	Location/Matrix	GP-4,15'bgs 4.5'-5.5' SOLID
		Received	08/20/99	Collected	08/18/99 10:30
% solids	96.3	% solids	96.3	Custody/SAF No	B99-078-61 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	0.001	0.043	0.072	400	U	H	0.007	0.043	0.072	U	-		
Technetium 99	0.058	0.17	0.46	15	U	TC	0.310	0.15	0.32	U	-		
Nickel 63	0.150	1.2	2.0	30	U	NI_L	-0.536	1.3	2.2	U	-		

200 Area Source chctzn-200-CW-1 OU

QC-DUP#6 31667

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

N908116-01 B0W646

DATA SHEET

SDG	7180	Client/Case no	Hanford SDG-H0497
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908116-01	Client sample id	B0W646
Dept sample id	7180-001	Location/Matrix	GP-4,15'bgs 4.5'-5.5' SOLID
Received	08/20/99	Collected	08/18/99 09:24
% solids	90.7	Custody/SAF No	B99-078-56 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	0.437	0.047	0.006	1.0	J	U_T
Plutonium 238	13981-16-3	-0.014	0.014	0.046	1.0	U	PU
Plutonium 239/240	PU-239/240	0.017	0.027	0.042	1.0	U	PU
Americium 241	14596-10-2	0.029	0.059	0.098	1.0	U	AM
Total Strontium	SR-RAD	2.22	0.22	0.18	1.0		SR
Thorium 228	14274-82-9	0.089	0.052	0.080	1.0	J	TH
Thorium 230	14269-63-7	U		0.082	1.0	U	TH
Thorium 232	TH-232	0.088	0.037	0.028	1.0	J	TH
Potassium 40	13966-00-2	11.9	0.58	0.29			GAM
Cobalt 60	10198-40-0	U		0.025	0.050	U	GAM
Cesium 137	10045-97-3	13.1	0.14	0.051	0.10		GAM
Europium 152	14683-23-9	U		0.14	0.10	U	GAM
Europium 154	15585-10-1	U		0.089	0.10	U	GAM
Europium 155	14391-16-3	U		0.15	0.10	U	GAM
Radium 226	13982-63-3	0.622	0.085	0.086	0.10		GAM
Radium 228	15262-20-1	0.887	0.12	0.11	0.20		GAM
Thorium 228	14274-82-9	0.849	0.090	0.099			GAM
Thorium 232	TH-232	0.887	0.12	0.11			GAM
Americium 241	14596-10-2	U		0.39		U	GAM
Uranium 238	U-238	U		3.1		U	GAM
Uranium 235	15117-96-1	U		0.19		U	GAM

200 Area Source chctzn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

N908116-02 B0W647

DATA SHEET

SDG	7180	Client/Case no	Hanford SDG-H0497
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908116-02	Client sample id	B0W647
Dept sample id	7180-002	Location/Matrix	GP-4,15'bgs 4.5'-5.5' SOLID
Received	08/20/99	Collected	08/18/99 09:30
% solids	90.5	Custody/SAF No	B99-078-57 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	0.662	0.072	0.006	1.0	J	U_T
Plutonium 238	13981-16-3	0.008	0.022	0.043	1.0	U	PU
Plutonium 239/240	PU-239/240	0.017	0.017	0.027	1.0	U	PU
Americium 241	14596-10-2	-0.003	0.016	0.036	1.0	U	AM
Total Strontium	SR-RAD	3.46	0.23	0.15	1.0		SR
Thorium 228	14274-82-9	0.089	0.060	0.091	1.0	U	TH
Thorium 230	14269-63-7	0.102	0.059	0.077	1.0	J	TH
Thorium 232	TH-232	0.073	0.033	0.025	1.0	J	TH
Potassium 40	13966-00-2	12.2	1.6	0.22			GAM
Cobalt 60	10198-40-0	U		0.021	0.050	U	GAM
Cesium 137	10045-97-3	14.8	0.12	0.041	0.10		GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.070	0.10	U	GAM
Europium 155	14391-16-3	U		0.078	0.10	U	GAM
Radium 226	13982-63-3	U		0.084	0.10	U	GAM
Radium 228	15262-20-1	U		0.15	0.20	U	GAM
Thorium 228	14274-82-9	U		0.41		U	GAM
Thorium 232	TH-232	U		0.15		U	GAM
Americium 241	14596-10-2	U		0.045		U	GAM
Uranium 238	U-238	U		2.6		U	GAM
Uranium 235	15117-96-1	U		0.13		U	GAM

200 Area Source chctzn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

N908116-03 B0W649

DATA SHEET

SDG	7180	Client/Case no	Hanford	SDG-H0497	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N908116-03	Client sample id	B0W649		
Dept sample id	7180-003	Location/Matrix	GP-4,15'bgs 4.5'-5.5'	SOLID	
Received	08/20/99	Collected	08/18/99 09:46		
% solids	94.5	Custody/SAF No	B99-078-58	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	0.406	0.044	0.006	1.0	J	U_T
Plutonium 238	13981-16-3	-0.014	0.028	0.062	1.0	U	PU
Plutonium 239/240	PU-239/240	0.024	0.028	0.050	1.0	U	PU
Americium 241	14596-10-2	0	0.026	0.058	1.0	U	AM
Total Strontium	SR-RAD	-0.017	0.12	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.072	0.046	0.062	1.0	J	TH
Thorium 230	14269-63-7	0.031	0.046	0.076	1.0	U	TH
Thorium 232	TH-232	0.046	0.029	0.027	1.0	J	TH
Potassium 40	13966-00-2	10.1	0.62	0.31			GAM
Cobalt 60	10198-40-0	U		0.031	0.050	U	GAM
Cesium 137	10045-97-3	0.073	0.021	0.026	0.10	J	GAM
Europium 152	14683-23-9	U		0.071	0.10	U	GAM
Europium 154	15585-10-1	U		0.096	0.10	U	GAM
Europium 155	14391-16-3	U		0.086	0.10	U	GAM
Radium 226	13982-63-3	0.443	0.057	0.056	0.10		GAM
Radium 228	15262-20-1	0.569	0.14	0.14	0.20		GAM
Thorium 228	14274-82-9	0.565	0.036	0.036			GAM
Thorium 232	TH-232	0.569	0.14	0.14			GAM
Americium 241	14596-10-2	U		0.11		U	GAM
Uranium 238	U-238	U		3.8		U	GAM
Uranium 235	15117-96-1	U		0.11		U	GAM

200 Area Source chctzn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

N908116-04 B0W650

DATA SHEET

SDG	7180	Client/Case no	Hanford	SDG-H0497	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N908116-04	Client sample id	B0W650		
Dept sample id	7180-004	Location/Matrix	GP-4,15'bgs 4.5'-5.5'	SOLID	
Received	08/20/99	Collected	08/18/99 10:03		
% solids	94.6	Custody/SAF No	B99-078-59	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	0.552	0.060	0.006	1.0	J	U_T
Plutonium 238	13981-16-3	-0.019	0.032	0.069	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.010	0.019	0.046	1.0	U	PU
Americium 241	14596-10-2	-0.018	0.018	0.069	1.0	U	AM
Total Strontium	SR-RAD	0.254	0.14	0.22	1.0	J	SR
Thorium 228	14274-82-9	0.040	0.054	0.090	1.0	U	TH
Thorium 230	14269-63-7	U		0.096	1.0	U	TH
Thorium 232	TH-232	0.073	0.053	0.051	1.0	J	TH
Potassium 40	13966-00-2	10.7	0.39	0.15			GAM
Cobalt 60	10198-40-0	U		0.018	0.050	U	GAM
Cesium 137	10045-97-3	U		0.017	0.10	U	GAM
Europium 152	14683-23-9	U		0.040	0.10	U	GAM
Europium 154	15585-10-1	U		0.059	0.10	U	GAM
Europium 155	14391-16-3	U		0.044	0.10	U	GAM
Radium 226	13982-63-3	0.409	0.035	0.031	0.10		GAM
Radium 228	15262-20-1	0.560	0.076	0.074	0.20		GAM
Thorium 228	14274-82-9	0.575	0.024	0.022			GAM
Thorium 232	TH-232	0.560	0.076	0.074			GAM
Americium 241	14596-10-2	U		0.053		U	GAM
Uranium 238	U-238	U		2.0		U	GAM
Uranium 235	15117-96-1	U		0.062		U	GAM

200 Area Source chctzn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

N908116-05 B0W651

DATA SHEET

SDG	7180	Client/Case no	Hanford SDG-H0497
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908116-05	Client sample id	B0W651
Dept sample id	7180-005	Location/Matrix	GP-4,15'bgs 4.5'-5.5' SOLID
Received	08/20/99	Collected	08/18/99 10:15
% solids	95.9	Custody/SAF No	B99-078-60 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	0.328	0.036	0.006	1.0	J	U_T
Plutonium 238	13981-16-3	0.005	0.018	0.044	1.0	U	PU
Plutonium 239/240	PU-239/240	0.009	0.018	0.035	1.0	U	PU
Americium 241	14596-10-2	0.019	0.028	0.052	1.0	U	AM
Total Strontium	SR-RAD	0.116	0.14	0.19	1.0	U	SR
Thorium 228	14274-82-9	0.098	0.050	0.066	1.0	J	TH
Thorium 230	14269-63-7	-0.009	0.044	0.074	1.0	U	TH
Thorium 232	TH-232	0.056	0.025	0.024	1.0	J	TH
Potassium 40	13966-00-2	10.6	0.51	0.24			GAM
Cobalt 60	10198-40-0	U		0.022	0.050	U	GAM
Cesium 137	10045-97-3	0.064	0.021	0.024	0.10	J	GAM
Europium 152	14683-23-9	U		0.056	0.10	U	GAM
Europium 154	15585-10-1	U		0.075	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Radium 226	13982-63-3	0.431	0.040	0.039	0.10		GAM
Radium 228	15262-20-1	0.521	0.11	0.11	0.20		GAM
Thorium 228	14274-82-9	0.538	0.030	0.029			GAM
Thorium 232	TH-232	0.521	0.11	0.11			GAM
Americium 241	14596-10-2	U		0.20		U	GAM
Uranium 238	U-238	U		2.8		U	GAM
Uranium 235	15117-96-1	U		0.10		U	GAM

200 Area Source chctzn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

N908116-06 B0W652

DATA SHEET

SDG	7180	Client/Case no	Hanford	SDG-H0497	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N908116-06	Client sample id	B0W652		
Dept sample id	7180-006	Location/Matrix	GP-4,15'bgs 4.5'-5.5'	SOLID	
Received	08/20/99	Collected	08/18/99 10:30		
% solids	96.3	Custody/SAF No	B99-078-61	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.007	0.043	0.072	400	U	H
Technetium 99	14133-76-7	0.310	0.15	0.32	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.452	0.049	0.006	1.0	J	U_T
Plutonium 238	13981-16-3	0	0.009	0.035	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.023	0.019	0.062	1.0	U	PU
Nickel 63	13981-37-8	-0.536	1.3	2.2	30	U	NI_L
Americium 241	14596-10-2	-0.008	0.046	0.095	1.0	U	AM
Total Strontium	SR-RAD	0.049	0.12	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.112	0.049	0.060	1.0	J	TH
Thorium 230	14269-63-7	0.051	0.048	0.082	1.0	U	TH
Thorium 232	TH-232	0.066	0.030	0.023	1.0	J	TH
Potassium 40	13966-00-2	10.1	1.4	0.19			GAM
Cobalt 60	10198-40-0	U		0.018	0.050	U	GAM
Cesium 137	10045-97-3	0.190	0.016	0.014	0.10		GAM
Europium 152	14683-23-9	U		0.047	0.10	U	GAM
Europium 154	15585-10-1	U		0.058	0.10	U	GAM
Europium 155	14391-16-3	U		0.062	0.10	U	GAM
Radium 226	13982-63-3	U		0.058	0.10	U	GAM
Radium 228	15262-20-1	U		0.12	0.20	U	GAM
Thorium 228	14274-82-9	U		0.047		U	GAM
Thorium 232	TH-232	U		0.12		U	GAM
Americium 241	14596-10-2	U		0.026		U	GAM
Uranium 238	U-238	U		2.2		U	GAM
Uranium 235	15117-96-1	U		0.069		U	GAM

200 Area Source chctzn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

N908116-07 B0W658

DATA SHEET

SDG	7180	Client/Case no	Hanford SDG-H0497
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N908116-07	Client sample id	B0W658
Dept sample id	7180-007	Location/Matrix	GP-4,15'bgs 4.5'-5.5' SOLID
Received	08/20/99	Collected	08/18/99 10:46
% solids	95.1	Custody/SAF No	B99-078-62 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.022	0.042	0.072	400	U	H
Technetium 99	14133-76-7	0.445	0.20	0.49	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.441	0.048	0.006	1.0	J	U_T
Plutonium 238	13981-16-3	-0.006	0.022	0.047	1.0	U	PU
Plutonium 239/240	PU-239/240	0.008	0.022	0.037	1.0	U	PU
Nickel 63	13981-37-8	-0.435	1.2	2.1	30	U	NI_L
Americium 241	14596-10-2	-0.015	0.044	0.090	1.0	U	AM
Total Strontium	SR-RAD	0.024	0.12	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.033	0.048	0.083	1.0	U	TH
Thorium 230	14269-63-7	0.086	0.059	0.094	1.0	U	TH
Thorium 232	TH-232	0.045	0.030	0.028	1.0	J	TH
Potassium 40	13966-00-2	9.22	0.58	0.30			GAM
Cobalt 60	10198-40-0	U		0.026	0.050	U	GAM
Cesium 137	10045-97-3	U		0.027	0.10	U	GAM
Europium 152	14683-23-9	U		0.068	0.10	U	GAM
Europium 154	15585-10-1	U		0.10	0.10	U	GAM
Europium 155	14391-16-3	U		0.078	0.10	U	GAM
Radium 226	13982-63-3	0.339	0.050	0.048	0.10		GAM
Radium 228	15262-20-1	0.525	0.11	0.11	0.20		GAM
Thorium 228	14274-82-9	0.482	0.032	0.032			GAM
Thorium 232	TH-232	0.525	0.11	0.11			GAM
Americium 241	14596-10-2	U		0.10		U	GAM
Uranium 238	U-238	U		3.3		U	GAM
Uranium 235	15117-96-1	U		0.10		U	GAM

200 Area Source chctzn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

Test AM Matrix SOLID	Client Hanford
SDG 7180	Contract TRB-SBB-207925
Contact Kevin C. Johnson	Case no SDG-H0497

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6893-092						
B0W646	N908116-01			7180-001	U	
B0W647	N908116-02			7180-002	U	
B0W649	N908116-03			7180-003	U	
B0W650	N908116-04			7180-004	U	
B0W651	N908116-05			7180-005	U	
B0W652	N908116-06			7180-006	U	
B0W658	N908116-07			7180-007	U	
BLK (QC ID=31665)	N908116-09			7180-009	U	
LCS (QC ID=31664)	N908116-08			7180-008	ok	
Duplicate (N908116-01)	N908116-10			7180-010	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	

200 Area Source chctzn-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 6893-092	2σ prep error 5.0 %			Reference Lab Notebook 6893 pg.092												
B0W646	N908116-01			0.098	0.500			33		974			36	09/23/99	09/23	SS-005
B0W647	N908116-02			0.036	0.500			88		974			36	09/23/99	09/23	SS-010
B0W649	N908116-03			0.058	0.500			56		974			36	09/23/99	09/23	SS-013
B0W650	N908116-04			0.069	0.500			37		682			36	09/23/99	09/23	SS-059
B0W651	N908116-05			0.052	0.500			70		682			36	09/23/99	09/23	SS-061
B0W652	N908116-06			0.095	0.500			43		682			36	09/23/99	09/23	SS-062
B0W658	N908116-07			0.090	0.500			46		678			36	09/23/99	09/23	SS-063
BLK (QC ID=31665)	N908116-09			0.045	0.500			83		678				09/23/99	09/23	SS-065
LCS (QC ID=31664)	N908116-08			0.40	0.500			72		1026				09/23/99	09/24	SS-051
Duplicate (N908116-01) (QC ID=31666)	N908116-10			0.064	0.500			60		678			36	09/23/99	09/23	SS-066
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	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

Test	AM
Matrix	SOLID
SDG	7180
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0497

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

AVERAGES ± 2 SD	MDA	0.10	±	0.21
FOR 10 SAMPLES	YIELD	59	±	38

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

Test PU Matrix SOLID
SDG 7180
Contact Kevin C. Johnson

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0497

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6893-092								
B0W646	N908116-01			7180-001	U		U	
B0W647	N908116-02			7180-002	U		U	
B0W649	N908116-03			7180-003	U		U	
B0W650	N908116-04			7180-004	U		U	
B0W651	N908116-05			7180-005	U		U	
B0W652	N908116-06			7180-006	U		U	
B0W658	N908116-07			7180-007	U		U	
BLK (QC ID=31665)	N908116-09			7180-009	U		U	
LCS (QC ID=31664)	N908116-08			7180-008	ok		ok	
Duplicate (N908116-01)	N908116-10			7180-010	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	
200 Area Source chctzn-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 6893-092	2σ prep error 5.0 %			Reference Lab Notebook 6893 pg.092												
B0W646	N908116-01			0.046	0.500			69		992			33	09/18/99	09/20	SS-066
B0W647	N908116-02			0.043	0.500			86		999			33	09/18/99	09/20	SS-035
B0W649	N908116-03			0.062	0.500			69		999			33	09/18/99	09/20	SS-036
B0W650	N908116-04			0.069	0.500			76		999			33	09/18/99	09/20	SS-038
B0W651	N908116-05			0.044	0.500			81		661			36	09/18/99	09/23	SS-001
B0W652	N908116-06			0.062	0.500			79		661			36	09/18/99	09/23	SS-002
B0W658	N908116-07			0.047	0.500			90		997			33	09/18/99	09/20	SS-048
BLK (QC ID=31665)	N908116-09			0.048	0.500			79		689				09/18/99	09/23	SS-016
LCS (QC ID=31664)	N908116-08			0.061	0.500			83		997				09/18/99	09/20	SS-049
Duplicate (N908116-01) (QC ID=31666)	N908116-10			0.081	0.500			72		502			36	09/18/99	09/23	SS-058
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 10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

Test	PU
Matrix	SOLID
SDG	7180
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0497

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	0.056	±	0.025
FOR 10 SAMPLES	YIELD	78	±	14

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

Test TH Matrix SOLID	Client Hanford
SDG 7180	Contract TRB-SBB-207925
Contact Kevin C. Johnson	Case no SDG-H0497

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6893-092							
B0W646	N908116-01			7180-001	0.089 J	U	0.088 J
B0W647	N908116-02			7180-002	U	0.102 J	0.073 J
B0W649	N908116-03			7180-003	0.072 J	U	0.046 J
B0W650	N908116-04			7180-004	U	U	0.073 J
B0W651	N908116-05			7180-005	0.098 J	U	0.056 J
B0W652	N908116-06			7180-006	0.112 J	U	0.066 J
B0W658	N908116-07			7180-007	U	U	0.045 J
BLK (QC ID=31665)	N908116-09			7180-009	U	U	U
LCS (QC ID=31664)	N908116-08			7180-008		ok	
Duplicate (N908116-01)	N908116-10			7180-010	ok J	- U	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0
200 Area Source chctzn-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 6893-092	2σ prep error 5.0 %			Reference Lab Notebook 6893 pg.092												
B0W646	N908116-01			0.082	0.500			88		756			37	09/23/99	09/24	SS-038
B0W647	N908116-02			0.091	0.500			91		758			37	09/23/99	09/24	SS-040
B0W649	N908116-03			0.076	0.500			91		891			40	09/23/99	09/27	SS-034
B0W650	N908116-04			0.096	0.500			70		503			41	09/23/99	09/28	SS-041
B0W651	N908116-05			0.074	0.500			84		889			40	09/23/99	09/27	SS-044
B0W652	N908116-06			0.082	0.500			85		889			40	09/23/99	09/27	SS-045
B0W658	N908116-07			0.094	0.500			87		888			40	09/23/99	09/27	SS-047
BLK (QC ID=31665)	N908116-09			0.075	0.500			84		888				09/23/99	09/27	SS-049
LCS (QC ID=31664)	N908116-08			0.080	0.500			79		888				09/23/99	09/27	SS-048
Duplicate (N908116-01) (QC ID=31666)	N908116-10			0.079	0.500			76		888			40	09/23/99	09/27	SS-050
Nominal values and limits from method				1.0	0.500			20-105		200			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

Test	TH
Matrix	SOLID
SDG	7180
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0497

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	0.083	±	0.016
FOR 10 SAMPLES	YIELD	84	±	13

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

Test	SR
Matrix	SOLID
SDG	7180
Contact	Kevin C. Johnson

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0497

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 6893-092					
B0W646	N908116-01			7180-001	2.22
B0W647	N908116-02			7180-002	3.46
B0W649	N908116-03			7180-003	U
B0W650	N908116-04			7180-004	0.254 J
B0W651	N908116-05			7180-005	U
B0W652	N908116-06			7180-006	U
B0W658	N908116-07			7180-007	U
BLK (QC ID=31665)	N908116-09			7180-009	U
LCS (QC ID=31664)	N908116-08			7180-008	ok
Duplicate (N908116-01)	N908116-10			7180-010	ok
Nominal values and limits from method				RDLs (pCi/g)	1.0
200 Area Source chctzn-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 6893-092	2σ prep error 10.0 % Reference Lab Notebook 6893 pg.092															
B0W646	N908116-01			0.18	1.00			86		200			30	09/17/99	09/17	GRB-207
B0W647	N908116-02			0.15	1.00			96		200			30	09/17/99	09/17	GRB-217
B0W649	N908116-03			0.17	1.00			95		400			30	09/17/99	09/17	GRB-219
B0W650	N908116-04			0.22	1.00			86		200			30	09/17/99	09/17	GRB-218
B0W651	N908116-05			0.19	1.00			94		400			30	09/17/99	09/17	GRB-201
B0W652	N908116-06			0.17	1.00			97		400			30	09/17/99	09/17	GRB-202
B0W658	N908116-07			0.17	1.00			97		400			30	09/17/99	09/17	GRB-203
BLK (QC ID=31665)	N908116-09			0.42	1.00			81		107				09/17/99	09/17	GRB-227
LCS (QC ID=31664)	N908116-08			0.16	1.00			88		154				09/17/99	09/17	GRB-202
Duplicate (N908116-01) (QC ID=31666)	N908116-10			0.13	1.00			99		200			30	09/17/99	09/17	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	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

Test	SR
Matrix	SOLID
SDG	7180
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0497

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	0.20	±	0.16
FOR 10 SAMPLES	YIELD	92	±	12

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

Test	TC
Matrix	SOLID
SDG	7180
Contact	Kevin C. Johnson

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0497

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6893-092						
B0W652	N908116-06			7180-006	U	
B0W658	N908116-07			7180-007	U	
BLK (QC ID=31665)	N908116-09			7180-009	U	
LCS (QC ID=31664)	N908116-08			7180-008	ok	
Duplicate (N908116-06)	N908116-11			7180-011	-	U
Nominal values and limits from method				RDLs (pCi/g)	15	
200 Area Source chctzn-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 6893-092	2σ prep error 10.0 % Reference Lab Notebook 6893 pg.092															
B0W652	N908116-06			0.32	1.00			88		150			43	09/22/99	09/30	GRB-203
B0W658	N908116-07			0.49	1.00			71		101			40	09/22/99	09/27	GRB-203
BLK (QC ID=31665)	N908116-09			0.54	1.00			66		101				09/22/99	09/27	GRB-207
LCS (QC ID=31664)	N908116-08			0.51	1.00			74		101				09/22/99	09/27	GRB-204
Duplicate (N908116-06) (QC ID=31667)	N908116-11			0.46	1.00			76		101			42	09/22/99	09/29	GRB-228
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	0.46	±	0.17
YIELD	75	±	16

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

Test	GAM
Matrix	SOLID
SDG	7180
Contact	Kevin C. Johnson

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0497

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6893-092						
B0W646	N908116-01			7180-001	U	13.1
B0W647	N908116-02			7180-002	U	14.8
B0W649	N908116-03			7180-003	U	0.073 J
B0W650	N908116-04			7180-004	U	U
B0W651	N908116-05			7180-005	U	0.064 J
B0W652	N908116-06			7180-006	U	0.190
B0W658	N908116-07			7180-007	U	U
BLK (QC ID=31665)	N908116-09			7180-009	U	U
LCS (QC ID=31664)	N908116-08			7180-008	ok	ok
Duplicate (N908116-01)	N908116-10			7180-010	- U	ok
Nominal values and limits from method				RDLs (pCi/g)	0.050	0.10
200 Area Source chctzn-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 6893-092	2σ prep error 15.0 % Reference Lab Notebook 6893 pg.092															
B0W646	N908116-01			0.075	762					208			44	08/26/99	10/01	MB,05,00
B0W647	N908116-02			0.051	767					208			44	08/26/99	10/01	MB,07,00
B0W649	N908116-03			0.078	803					211			47	08/26/99	10/04	02,03,00
B0W650	N908116-04			0.046	807					211			47	08/26/99	10/04	02,04,00
B0W651	N908116-05			0.064	844					211			47	08/26/99	10/04	MB,05,00
B0W652	N908116-06			0.043	873					211			47	08/26/99	10/04	MB,07,00
B0W658	N908116-07			0.072	828					218			45	08/26/99	10/02	02,03,00
BLK (QC ID=31665)	N908116-09			0.022	812					218				08/26/99	10/02	MB,05,00
LCS (QC ID=31664)	N908116-08			0.006	812					218				08/26/99	10/02	01,04,00
Duplicate (N908116-01) (QC ID=31666)	N908116-10			0.049	762					217			45	08/26/99	10/02	MB,07,00
Nominal values and limits from method				0.050	812					100			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

Test	GAM
Matrix	SOLID
SDG	7180
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

GAMMA SCAN

GAMMA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0497

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

AVERAGES ± 2 SD	MDA	0.051	±	0.047
FOR 10 SAMPLES	YIELD		±	

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

Test U T Matrix SOLID
SDG 7180
Contact Kevin C. Johnson

METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0497

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 6893-092					
B0W646	N908116-01			7180-001	0.437 J
B0W647	N908116-02			7180-002	0.662 J
B0W649	N908116-03			7180-003	0.406 J
B0W650	N908116-04			7180-004	0.552 J
B0W651	N908116-05			7180-005	0.328 J
B0W652	N908116-06			7180-006	0.452 J
B0W658	N908116-07			7180-007	0.441 J
BLK (QC ID=31665)	N908116-09			7180-009	U
LCS (QC ID=31664)	N908116-08			7180-008	ok
Duplicate (N908116-01)	N908116-10			7180-010	ok J
Nominal values and limits from method				RDLs (ug/g)	1.0

200 Area Source chctzn-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 6893-092	2σ prep error 9.0 %			Reference Lab Notebook 6893 pg.092												
B0W646	N908116-01			0.006	0.0530								26	09/13/99	09/13	KPA-001
B0W647	N908116-02			0.006	0.0530								26	09/13/99	09/13	KPA-001
B0W649	N908116-03			0.006	0.0530								26	09/13/99	09/13	KPA-001
B0W650	N908116-04			0.006	0.0530								26	09/13/99	09/13	KPA-001
B0W651	N908116-05			0.006	0.0570								26	09/13/99	09/13	KPA-001
B0W652	N908116-06			0.006	0.0570								26	09/13/99	09/13	KPA-001
B0W658	N908116-07			0.006	0.0530								26	09/13/99	09/13	KPA-001
BLK (QC ID=31665)	N908116-09			0.006	0.0550									09/13/99	09/13	KPA-001
LCS (QC ID=31664)	N908116-08			0.060	0.0550									09/13/99	09/13	KPA-001
Duplicate (N908116-01) (QC ID=31666)	N908116-10			0.006	0.0570								26	09/13/99	09/13	KPA-001
Nominal values and limits from method				1.0	0.0550								180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

Test U T	Matrix SOLID
SDG 7180	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0497	

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	0.011 ± 0.034
FOR 10 SAMPLES	YIELD	±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

Test H Matrix SOLID
SDG 7180
Contact Kevin C. Johnson

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0497

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6893-092						
B0W652	N908116-06			7180-006	U	
B0W658	N908116-07			7180-007	U	
BLK (QC ID=31665)	N908116-09			7180-009	U	
LCS (QC ID=31664)	N908116-08			7180-008	ok	J
Duplicate (N908116-06)	N908116-11			7180-011	-	U

Nominal values and limits from method RDLs (pCi/g) 400
200 Area Source chctzn-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 6893-092 2σ prep error 10.0 % Reference Lab Notebook 6893 pg.092																
B0W652	N908116-06			0.072	20.5			100		120			38	09/24/99	09/25	LSC-007
B0W658	N908116-07			0.072	20.3			100		120			38	09/24/99	09/25	LSC-007
BLK (QC ID=31665)	N908116-09			0.073	20.4			100		120				09/24/99	09/25	LSC-007
LCS (QC ID=31664)	N908116-08			0.072	20.4			100		120				09/24/99	09/25	LSC-007
Duplicate (N908116-06) (QC ID=31667)	N908116-11			0.072	20.4			100		120			38	09/24/99	09/25	LSC-007
Nominal values and limits from method				400	20.4					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 0.072 ± 0.001
YIELD 100 ± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 10/05/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0497

Test	NI L
Matrix	SOLID
SDG	7180
Contact	Kevin C. Johnson

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0497

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6893-092						
B0W652	N908116-06			7180-006	U	
B0W658	N908116-07			7180-007	U	
BLK (QC ID=31665)	N908116-09			7180-009	U	
LCS (QC ID=31664)	N908116-08			7180-008	ok	
Duplicate (N908116-06)	N908116-11			7180-011	-	U

Nominal values and limits from method RDLs (pCi/g) 30

200 Area Source chctzn-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 6893-092	2σ prep error 10.0 %				Reference Lab Notebook 6893 pg.092											
B0W652	N908116-06			2.2	0.500			85		100			24	09/09/99	09/11	LSC-005
B0W658	N908116-07			2.1	0.500			87		100			24	09/09/99	09/11	LSC-005
BLK (QC ID=31665)	N908116-09			2.0	0.500			93		100				09/09/99	09/11	LSC-005
LCS (QC ID=31664)	N908116-08			2.2	0.500			84		100				09/09/99	09/11	LSC-005
Duplicate (N908116-06) (QC ID=31667)	N908116-11			2.0	0.500			91		100			24	09/09/99	09/11	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 FOR 5 SAMPLES				
MDA	2.1	±	0.20
YIELD	88	±	8

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	10/05/99

SDG 7180
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0497

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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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 10/05/99

SDG 7180
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0497

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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GUIDE, cont.

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DATA SHEET

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

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

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

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

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

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

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

P The RESULT is 'preliminary'.

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

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

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

The following values are underlined to indicate possible problems:

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

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GUIDE, cont.

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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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REPORT GUIDE

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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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REPORT GUIDE

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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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GUIDE, cont.

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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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GUIDE, cont.

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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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GUIDE, cont.

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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

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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.

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-56	Page 1 of 1

Collector 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-4 <15' bgs 4.5'-5.5'		SAF No. B99-078		
Ice Chest No. SML528	Field Logbook No. EL-1511		Method of Shipment Federal Express		
Shipped To TMA/~~BECRA~~ DZB 8-18-99	Offsite Property No. A990210		Bill of Lading/Air Bill No. 4235795285 32		
			COA B20CW1 671C		

POSSIBLE SAMPLE HAZARDS/REMARKS

H04-97

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										
B0W646 / Soil / 8-18-99 / 0924	X						X	B0W5L5		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Date/Time Doug Bowers 8-18-99/1315	Received By Date/Time R.P. 1B 8-18-99/1315		
Relinquished By Date/Time REF #1B 8/19/99 0900	Received By Date/Time R. Nielson/R. Nielson 8/19/99 0900		
Relinquished By Date/Time R. Nielson/R. Nielson 8/19/99 1330	Received By Date/Time FedEx 8-19-99		
Relinquished By Date/Time FedEx 8-20-99 9:30	Received By Date/Time TNV McGoldenberg 8-20-99 9:30		
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed 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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-57	Page 1 of 1

Collector 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-4 <15' bgs 7'-8'	SAF No. B99-078	
Ice Chest No. SML528	Field Logbook No. EL-1511	Method of Shipment Federal Express	
Shipped To TMA/RECRA B 8-18-99	Offsite Property No. A99021Ø	Bill of Lading/Air Bill No. 4235795285 32	
		COA B20CW1 67/C	

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										
B0W647 / Soil / 8-18-99 / 0930	X						X	BOW-L5		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Date/Time Doug Bowers 8-18-99/1315	Received By Date/Time B of IB 8-18-99/1315		
Relinquished By Date/Time Ref #IB 8/19/99 0900	Received By Date/Time Kneel Nielson/R. Nielson 8/19/99 0900		
Relinquished By Date/Time Kneel Nielson/R. Nielson 8/19/99 1330	Received By Date/Time Fed Ex 8-19-99		
Relinquished By Date/Time Fed Ex 8-20-99 9:30	Received By Date/Time TNV M. Goldenberg 8-20-99 9:30		
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed 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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-58	Page 1 of 1

Collector 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-4 <15' bgs 9.5' - 10.5'		SAF No. B99-078		
Ice Chest No. SMU528	Field Logbook No. EL-1511		Method of Shipment Federal Express		
Shipped To TMA/~~RECRA~~ 8-18-99	Offsite Property No. A99021Ø		Bill of Lading/Air Bill No. 4235795285 32		
			COA B20 cw/ 67/C		

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								
B0W649	Soil	8-18-99	0946	X*				X*	B0W545		

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By Doug Bowers Doug Bowers 8-18-99/1315	Received By R.C. IB 8-18-99/1315	Date/Time
Relinquished By Ref #IB 8/19/99 0900	Received By Kelle Nielson/R. Nielson 8/19/99 0900	Date/Time
Relinquished By Kelle Nielson/R. Nielson 8/19/99 1330	Received By FedEx 8-19-99	Date/Time
Relinquished By FedEx 8-20-99 9:30	Received By TNW M. Goldenberg 8-20-99 9:30	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	B99-078-59	Page 1 of 1

Collector 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-4 <15' bgs 12' – 13'		SAF No. B99-078		
Ice Chest No. SMU528	Field Logbook No. EL-1511		Method of Shipment Federal Express		
Shipped To TMA/RECRA 8-18-99	Offsite Property No. A99021 Ø		Bill of Lading/Air Bill No. 4235795285 32		
			COA B20CW1 671C		

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								
B0W650	Soil	8-18-99	1003	X				X	BOW25		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Date/Time Doug Bowers 8-18-99/1315	Received By Doug Bowers Date/Time 8-18-99/1315		
Relinquished By Date/Time REF#1B 8/19/99 0900	Received By Date/Time Renee Nielson/R Nielson 8/19/99 0900		
Relinquished By Date/Time Renee Nielson/R Nielson 8/19/99 (330)	Received By Date/Time FedEx 8-19-99		
Relinquished By Date/Time FedEx 9:30 8-20-99	Received By Date/Time TNU M Goldenberg 9:30 8-20-99		
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed 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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-60	Page 1 of 1

Collector 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-4 <15' bgs 14' - 15'	SAF No. B99-078	
Ice Chest No. SML-256	Field Logbook No. EL-1511	Method of Shipment Federal Express	
Shipped To TMA/RECRA 8-18-99	Offsite Property No. A9902 10	Bill of Lading/Air Bill No. 423579528543	
		COA B20CW1 671C	

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								
B0W651	Soil	8-18-99	1015	X					X	B0W545	

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By Doug Bowers Date/Time Doug Bowers 8-18-99/1315	Received By Date/Time R.F. 1B 8-18-99/1315	
Relinquished By Date/Time Kef #1B 8/19/99 0900	Received By Date/Time Renee Nielson/R. Nielson 8/19/99 0900	
Relinquished By Date/Time Renee Nielson/R. Nielson 8/19/99 1320	Received By Date/Time FedEx 8-19-99	
Relinquished By Date/Time FedEx 8-20-99 9:30	Received By Date/Time TW M. Goldenberg 8-20-99 9:30	

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	B99-078-61	Page 1 of 1

Collector 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-4 >15' bgs 19.5' - 20.5'		SAF No. B99-078
Ice Chest No. SML-256	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA RTB 8-18-99	Offsite Property No. A99021Ø		Bill of Lading/Air Bill No. 4235795285 43

Price Code 8N

Data Turnaround 45 Days

COA B20CW1 67/C

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										
B0W652	Soil	8-18-99	1030	X	X	X	X						X
													B0W5L5

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers	Date/Time 8-18-99/1315	Received By RCB 1D	Date/Time 8-18-99/1315
Relinquished By Kef #1B	Date/Time 8/19/99 0900	Received By R Nielson/R Nielson	Date/Time 8/19/99 0900
Relinquished By R Nielson/R Nielson	Date/Time 8/19/99 1330	Received By FedEx	Date/Time 8-19-99
Relinquished By FedEx	Date/Time 8-20-99 9:30	Received By TNV M. Goldenberg	Date/Time 8-20-99 9:30

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	B99-078-62	Page 1 of 1

Collector 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-4 >15' bgs 24' - 25'	SAF No. B99-078	
Ice Chest No. SNL-256	Field Logbook No. EL-1511	Method of Shipment Federal Express	
Shipped To TMA/RECRA B30 8-18-99	Offsite Property No. A99021Ø	Bill of Lading/Air Bill No. 4235795285 43	
		COA B20CW1 67/C	

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										
B0W658	Soil	8-18-99	1046	X	X	X	X						X
													BOWELS

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers 8-18-99	Date/Time 1215	Received By Bof 1B 8-18-99	Date/Time 1215
Relinquished By Bof 1B 8/19/99	Date/Time 0900	Received By R Nielson/R Nielson 8/19/99	Date/Time 0900
Relinquished By R Nielson/R Nielson 8/19/99	Date/Time B30	Received By FedEx 8-19-99	Date/Time
Relinquished By FedEx 8-20-99	Date/Time 9:30	Received By TAN M. Goldenberg 8-20-99	Date/Time 9:30

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 8-20-99 9:30

CoC No. B99-07856, 57, 58, 59

Container I.D. No. SML528 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: 4
7. Number of containers per sample: 2 (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 MiGoldenberg Date: 8-20-99 Time: 9:30

LOGIN

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

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____

Form SCP-01.2, 11-06-98

"50 years of quality nuclear services"

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 8-20-99 9:30

CoC No. B99-078-60, B99-078-61, B99-078-62

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

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 3
7. Number of containers per sample: _____ (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: 8-20-99 Time: 9:30

LOGIN

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

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____

SDR # B00-004
Revision #: 0
Date Initiated: 10/01/99

SAMPLE DISPOSITION RECORD

SAF: B99-078
OU: 200-CW-1
Project ID: 200-CW-1
Task ID: 1
Sampling Event: 200 Area Source Characterization 200-CW-1 OU

Laboratory: TMA/RECRA

Task Manager: M.E. Todd

Sampling Information:
Number of Samples: 7
ID Numbers: B0W646, B0W649, B0W651, B0W658, B0W647, B0W652, B0W650
Matrix: Soil
Collection Date: 08/18/99

Issue Background:

Class: ☒ Project Data Use ☐ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Other

Description: QC Analyses Not Performed Within Required Holding Time

Disposition:

Description: The laboratory failed to run quality control analyses for total cyanide within the required analytical holding time for the method for the listed samples. The laboratory was instructed to complete the quality control analyses and report the data.

Justification: Although the quality control analyses were not run within the required holding time, the total cyanide analytical data associated with these samples can still be used by the project.

Approval Signatures:

S. J. Trent — 10/8/99
Project Coordinator (Print/Sign Name) — Date

M. E. Todd
Task Manager (Print/Sign Name) — Date

ORIGINAL Dayres

SDR # B99-047
Revision #: 0
Date Initiated: 08/23/99

SAMPLE DISPOSITION RECORD

SAF: B99-078
OU: 200-CW-1
Project ID: 200-CW-1
Task ID: 1
Sampling Event: 200 Area Source Characterization 200-CW-1 OU

Laboratory: TMA/RECRA

Task Manager: M.E. Todd

Sampling Information:
Number of Samples: 1
ID Numbers: B0W651
Matrix: Soil
Collection Date: 08/18/99

Issue Background:

Class: ☒ Project Data Use ☐ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Broken Sample Bottle

Description: Sample Bottle Arrived At Laboratory Broken

Disposition:

Description: The sample bottle containing material for nitrate/nitrite, anions, sulfides, ammonia, and total CN analyses arrived at the laboratory broken. The laboratory was instructed to extract sample material for these analyses from the other intact bottles in this sample set.

Justification: The listed analyses are required to meet data quality objectives of the 200-CW-1 Operable Unit source characterization project. Enough material should be available in the remaining sample bottles of this sample set to meet the analytical volume requirements for the listed analyses.

Approval Signatures:

S. J. Trent — 8/27/99
Project Coordinator (Print/Sign Name) — Date

M. E. Todd — 8/30/99
Task Manager (Print/Sign Name) — Date

ORIGINAL D Ayres

SDR # B99-045
Revision #: 0
Date Initiated: 08/19/99

SAMPLE DISPOSITION RECORD

SAF: B99-078
OU: 200-CW-1
Project ID: 200-CW-1
Task ID: 1
Sampling Event: 200 Area Source Characterization 200-CW-1 OU

Laboratory: TMA/RECRA

Task Manager: M.E. Todd

Sampling Information:
Number of Samples: 1
ID Numbers: B0W647
Matrix: Soil
Collection Date: 08/18/99

Issue Background:

Class: ☒ Project Data Use ☐ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Insufficient Sample Volume

Description: Use of other sample material for analysis of Anions, CN, Sulfides, and Ammonia

Disposition:

Description: If necessary, the laboratory is to use material from other bottles in this sample set to run Anions, CN, Sulfides, and Ammonia analyses

Justification: The minimum sample volume for these analyses may not have been provided to the laboratory. However, these constituents are required analytes for the 200-CW-1 OU source characterization project.

Approval Signatures:

S. J. Trent 8/27/99
Project Coordinator (Print/Sign Name) Date

M. E. Todd 8/30/99
Task Manager (Print/Sign Name) Date

ORIGINAL

SDR # B99-044
Revision #: 0
Date Initiated: 08/19/99

SAMPLE DISPOSITION RECORD

SAF: B99-078
OU: 200-CW-1
Project ID: 200-CW-1
Task ID: 1
Sampling Event: 200 Area Source Characterization 200-CW-1 OU

Laboratory: TMA/RECRA

Task Manager: M.E. Todd

Sampling Information:
Number of Samples: 1
ID Numbers: B0W646
Matrix: Soil
Collection Date: 08/18/99

Issue Background:

Class: ☐ Project Data Use ☒ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Other
Description: Use of other sample material for analysis of ICP metals, Cr-VI, and Hg

Disposition:

Description: The laboratory is to use material from other bottles in this sample set to run ICP metals, Cr-VI, and Hg analyses

Justification: No sample material was provided by the ERC for these analyses. However, these constituents are required analytes for the 200-CW-1 OU source characterization project. Enough material to run the listed analyses should be available from other bottles in this sample set.

Approval Signatures:

S. J. Trent — 8/27/99
Project Coordinator (Print/Sign Name) — Date

M. E. Todd — 8/30/99
Task Manager (Print/Sign Name) — Date

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9908L821
SDG# : H0497
SAF# : B99-078

W.O. # : 10985-001-001-9999-00
Date Received: 08-20-99

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 indicated on the attached glossary.

3. Sample holding times as required by the method and/or contract were met.

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

5. The method blanks were within method criteria.

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

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

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

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

OCT 1999
RECEIVED
Data
Log In

for Bruce C Griffin

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-23-99
Date

njp\i08-821

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 ~~23~~ 24 pages. BCM 9-23-99

001

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

Ammonia EPA 350.3

Nitrate Nitrite EPA 353.2

002

L-WI-034/B-06/99

Recra LabNet Philadelphia
METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/20/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L821

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0W646	% Solids	92.0	%	0.01	1.0
		Chloride by IC	3.1	MG/KG	1.4	1.0
		Fluoride by IC	2.7 u	MG/KG	2.7	1.0
		Nitrite by IC	1.4 u	MG/KG	1.4	1.0
		Nitrate by IC	78	MG/KG	5.4	4.0
		Cyanide, Total	0.54 u	MG/KG	0.54	1.0
		Phosphate by IC	3.0	MG/KG	1.4	1.0
		Chromium VI	0.44 u	MG/KG	0.44	1.0
		Sulfate by IC	33.7	MG/KG	1.4	1.0
		Nitrate Nitrite	20.2	MG/KG	1.1	5.0
		Ammonia, as N	1.4 u	MG/KG	1.4	1.0
		pH	9.6	SOIL PH	0.01	1.0
		Sulfide	8.3	MG/KG	1.1	1.0
-002	B0W647	% Solids	91.5	%	0.01	1.0
		Chloride by IC	4.3	MG/KG	1.4	1.0
		Fluoride by IC	2.7 u	MG/KG	2.7	1.0
		Nitrite by IC	1.4 u	MG/KG	1.4	1.0
		Nitrate by IC	100	MG/KG	5.5	4.0
		Cyanide, Total	0.55 u	MG/KG	0.55	1.0
		Phosphate by IC	3.4	MG/KG	1.4	1.0
		Chromium VI	0.44 u	MG/KG	0.44	1.0
		Sulfate by IC	46.6	MG/KG	1.4	1.0
		Nitrate Nitrite	23.4	MG/KG	1.1	5.0
		Ammonia, as N	2.2	MG/KG	1.4	1.0
		pH	8.3	SOIL PH	0.01	1.0
		Sulfide	12.4	MG/KG	1.1	1.0
-003	B0W649	% Solids	95.0	%	0.01	1.0
		Chloride by IC	1.9	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	33	MG/KG	1.3	1.0
		Cyanide, Total	0.53 u	MG/KG	0.53	1.0
		Phosphate by IC	1.8	MG/KG	1.3	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
		Sulfate by IC	8.2	MG/KG	1.3	1.0
		Nitrate Nitrite	7.6	MG/KG	0.21	1.0
		Ammonia, as N	1.3 u	MG/KG	1.3	1.0
		pH	8.9	SOIL PH	0.01	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/20/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L821

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0W649	Sulfide	4.1		MG/KG	1.1	1.0
-004	B0W650	% Solids	93.9		%	0.01	1.0
		Chloride by IC	6.6		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	150		MG/KG	13	10
		Cyanide, Total	0.53	u	MG/KG	0.53	1.0
		Phosphate by IC	2.4		MG/KG	1.3	1.0
		Chromium VI	0.43	u	MG/KG	0.43	1.0
		Sulfate by IC	37.5		MG/KG	1.3	1.0
		Nitrate Nitrite	27.5		MG/KG	1.1	5.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.9		SOIL PH	0.01	1.0
		Sulfide	4.1		MG/KG	1.1	1.0
-005	B0W651	% Solids	95.1		%	0.01	1.0
		Chloride by IC	4.9		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	96		MG/KG	5.3	4.0
		Cyanide, Total	0.53	u	MG/KG	0.53	1.0
		Phosphate by IC	2.0		MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	50.2		MG/KG	5.3	4.0
		Nitrate Nitrite	26.4		MG/KG	1.0	5.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.9		SOIL PH	0.01	1.0
		Sulfide	1.1	u	MG/KG	1.1	1.0
-006	B0W652	% Solids	96.6		%	0.01	1.0
		Chloride by IC	2.7		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	62		MG/KG	2.6	2.0
		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	0.41	u	MG/KG	0.41	1.0
		Sulfate by IC	79.0		MG/KG	2.6	2.0
		Nitrate Nitrite	15.4		MG/KG	1.0	5.0

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INORGANICS DATA SUMMARY REPORT 09/20/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L821

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	B0W652	Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.9		SOIL PH	0.01	1.0
		Sulfide	1.0	u	MG/KG	1.0	1.0
-007	B0W658	% Solids	94.8		%	0.01	1.0
		Chloride by IC	4.6		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	110		MG/KG	6.6	5.0
		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	63.4		MG/KG	6.6	5.0
		Nitrate Nitrite	23.9		MG/KG	1.0	5.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.5		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 09/20/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L821

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LIC076-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	99LC095-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	99LVI059-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	99LSD037-MB1	Sulfide	1.0	u	MG/KG	1.0	1.0
BLANK1	99LC096-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 09/20/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9908L821

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0W646	Chloride by IC	34.3	3.1	27.2	114.7	1.0
		Chloride by IC MSD	34.2	3.1	27.2	114.5	1.0
		Fluoride by IC	67.4	0.91	54.3	122.3	1.0
		Fluoride by IC MSD	66.8	0.91	54.3	121.3	1.0
		Nitrite by IC	32	1.4 u	27	116.2	1.0
		Nitrite by IC MSD	31	1.4 u	27	115.5	1.0
		Nitrate by IC	190	78	110	106.0	4.0
		Nitrate by IC MSD	190	78	110	106.9	4.0
		Phosphate by IC	35.4	3.0	27.2	119.3	1.0
		Phosphate by IC MSD	35.4	3.0	27.2	119.3	1.0
		Sulfate by IC	137	33.7	109	95.1	4.0
		Sulfate by IC MSD	137	33.7	109	95.2	4.0
-007	B0W658	Chromium VI	3.7	-0.3	4.2	94.5	1.0
		Chromium VI MSD	1140	-0.3	1180	97.4	100
		Sulfide	389	4.0	409	94.0	1.0
		Sulfide MSD	377	4.0	409	91.2	1.0
BLANK10	99LIC076-MB1	Chloride by IC	24.1	1.2 u	25.0	96.3	1.0
		Fluoride by IC	52.3	2.5 u	50.0	104.6	1.0
		Nitrite by IC	24	1.2 u	25	97.3	1.0
		Nitrate by IC	25	1.2 u	25	98.1	1.0
		Phosphate by IC	25.5	1.2 u	25.0	102.0	1.0
		Sulfate by IC	24.0	1.2 u	25.0	96.1	1.0
BLANK10	99LVI059-MB1	Chromium VI	4.0	0.40u	4.0	99.5	1.0
		Chromium VI MSD	1080	0.40u	1160	92.3	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	99LSD037-MB1	Sulfide	9.6	1.0 u	10.0	96.0	1.0
		Sulfide MSD	9.7	1.0 u	10.0	97.0	1.0

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INORGANICS DUPLICATE SPIKE REPORT 09/20/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L821

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	B0W646	Chloride by IC	114.7	114.5	0.16
		Fluoride by IC	122.3	121.3	0.85
		Nitrite by IC	116.2	115.5	0.67
		Nitrate by IC	106.0	106.9	0.92
		Phosphate by IC	119.3	119.3	0.034
		Sulfate by IC	95.1	95.2	0.073
-007	B0W658	Chromium VI	94.5	97.4	3.0
		Sulfide	94.0	91.2	3.0
~~LCS2~~	~~99LC095-LC2~~	~~Cyanide, Total LCS~~	~~98.2~~	~~96.7~~	~~2.6~~ bjp 9-20-99
BLANK10	99LVI059-MB1	Chromium VI	99.5	92.3	7.5
BLANK10	99LN3C43-MB1	Nitrate Nitrite	98.4	98.8	0.41
BLANK10	99LAM033-MB1	Ammonia, as N	103.2	103.5	0.24
BLANK10	99LSD037-MB1	Sulfide	96.0	97.0	1.0
~~LCS2~~	~~99LC096-LC2~~	~~Cyanide, Total LCS~~	~~102.5~~	~~95.4~~	~~7.1~~ bjp 9-20-99

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INORGANICS PRECISION REPORT 09/20/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L821

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0W646	Chloride by IC	3.1	3.2	1.8	1.0
		Fluoride by IC	2.7 u	2.7 u	NC	1.0
		Nitrite by IC	1.4 u	1.4 u	NC	1.0
		Nitrate by IC	78	77	0.99	4.0
		Phosphate by IC	3.0	3.2	4.8	1.0
		Sulfate by IC	33.7	33.8	0.26	1.0
-007REP	B0W658	% Solids	94.8	94.7	0.16	1.0
		Chromium VI	0.42u	0.42u	NC	1.0
		pH	8.5	8.5	0.1	1.0
		Sulfide	4.0	4.0	0.38	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/20/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9908L821

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99LC095-LC1	Cyanide, Total LCS	2.0	2.0	MG/KG	99.2
LCS2	99LC095-LC2	Cyanide, Total LCS	9.7	10	MG/KG	96.7
LCS1	99LC096-LC1	Cyanide, Total LCS	2.0	2.0	MG/KG	102.5
LCS2	99LC096-LC2	Cyanide, Total LCS	9.5	10	MG/KG	95.4

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

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W646						
% SOLIDS	001	S	99L%S116	08/18/99	08/24/99	08/25/99
CHLORIDE BY IC	001	S	99LIC076	08/18/99	09/13/99	09/13/99
CHLORIDE BY IC	001 REP	S	99LIC076	08/18/99	09/13/99	09/13/99
CHLORIDE BY IC	001 MS	S	99LIC076	08/18/99	09/13/99	09/13/99
CHLORIDE BY IC	001 MSD	S	99LIC076	08/18/99	09/13/99	09/13/99
FLUORIDE BY IC	001	S	99LIC076	08/18/99	09/13/99	09/13/99
FLUORIDE BY IC	001 REP	S	99LIC076	08/18/99	09/13/99	09/13/99
FLUORIDE BY IC	001 MS	S	99LIC076	08/18/99	09/13/99	09/13/99
FLUORIDE BY IC	001 MSD	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRITE BY IC	001	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRITE BY IC	001 REP	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRITE BY IC	001 MS	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRITE BY IC	001 MSD	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRATE BY IC	001	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRATE BY IC	001 REP	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRATE BY IC	001 MS	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRATE BY IC	001 MSD	S	99LIC076	08/18/99	09/13/99	09/13/99
TOTAL CYANIDE	001	S	99LC095	08/18/99	08/31/99	08/31/99
PHOSPHATE BY IC	001	S	99LIC076	08/18/99	09/13/99	09/13/99
PHOSPHATE BY IC	001 REP	S	99LIC076	08/18/99	09/13/99	09/13/99
PHOSPHATE BY IC	001 MS	S	99LIC076	08/18/99	09/13/99	09/13/99
PHOSPHATE BY IC	001 MSD	S	99LIC076	08/18/99	09/13/99	09/13/99
CHROMIUM VI	001	S	99LVI059	08/18/99	08/30/99	08/30/99
SULFATE BY IC	001	S	99LIC076	08/18/99	09/13/99	09/13/99
SULFATE BY IC	001 REP	S	99LIC076	08/18/99	09/13/99	09/13/99
SULFATE BY IC	001 MS	S	99LIC076	08/18/99	09/13/99	09/13/99
SULFATE BY IC	001 MSD	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRATE NITRITE	001	S	99LN3C43	08/18/99	08/31/99	08/31/99
AMMONIA	001	S	99LAM033	08/18/99	09/03/99	09/03/99
PH	001	S	99LPH089	08/18/99	08/24/99	08/24/99
SULFIDE	001	S	99LSD037	08/18/99	08/24/99	08/24/99
B0W647						
% SOLIDS	002	S	99L%S116	08/18/99	08/24/99	08/25/99

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

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	002	S	99LIC076	08/18/99	09/13/99	09/13/99
FLUORIDE BY IC	002	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRITE BY IC	002	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRATE BY IC	002	S	99LIC076	08/18/99	09/13/99	09/13/99
TOTAL CYANIDE	002	S	99LC095	08/18/99	08/31/99	08/31/99
PHOSPHATE BY IC	002	S	99LIC076	08/18/99	09/13/99	09/13/99
CHROMIUM VI	002	S	99LVI059	08/18/99	08/30/99	08/30/99
SULFATE BY IC	002	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRATE NITRITE	002	S	99LN3C43	08/18/99	08/31/99	08/31/99
AMMONIA	002	S	99LAM033	08/18/99	09/03/99	09/03/99
PH	002	S	99LPH089	08/18/99	08/24/99	08/24/99
SULFIDE	002	S	99LSD037	08/18/99	08/24/99	08/24/99
B0W649						
% SOLIDS	003	S	99L%S116	08/18/99	08/24/99	08/25/99
CHLORIDE BY IC	003	S	99LIC076	08/18/99	09/13/99	09/13/99
FLUORIDE BY IC	003	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRITE BY IC	003	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRATE BY IC	003	S	99LIC076	08/18/99	09/13/99	09/13/99
TOTAL CYANIDE	003	S	99LC095	08/18/99	08/31/99	08/31/99
PHOSPHATE BY IC	003	S	99LIC076	08/18/99	09/13/99	09/13/99
CHROMIUM VI	003	S	99LVI059	08/18/99	08/30/99	08/30/99
SULFATE BY IC	003	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRATE NITRITE	003	S	99LN3C43	08/18/99	08/31/99	08/31/99
AMMONIA	003	S	99LAM033	08/18/99	09/03/99	09/03/99
PH	003	S	99LPH089	08/18/99	08/24/99	08/24/99
SULFIDE	003	S	99LSD037	08/18/99	08/24/99	08/24/99
B0W650						
% SOLIDS	004	S	99L%S116	08/18/99	08/24/99	08/25/99
CHLORIDE BY IC	004	S	99LIC076	08/18/99	09/13/99	09/13/99
FLUORIDE BY IC	004	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRITE BY IC	004	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRATE BY IC	004	S	99LIC076	08/18/99	09/13/99	09/13/99
TOTAL CYANIDE	004	S	99LC095	08/18/99	08/31/99	08/31/99
PHOSPHATE BY IC	004	S	99LIC076	08/18/99	09/13/99	09/13/99

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

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	004	S	99LVI059	08/18/99	08/30/99	08/30/99
SULFATE BY IC	004	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRATE NITRITE	004	S	99LN3C43	08/18/99	08/31/99	08/31/99
AMMONIA	004	S	99LAM033	08/18/99	09/03/99	09/03/99
PH	004	S	99LPH089	08/18/99	08/24/99	08/24/99
SULFIDE	004	S	99LSD037	08/18/99	08/24/99	08/24/99
B0W651						
% SOLIDS	005	S	99L%S116	08/18/99	08/24/99	08/25/99
CHLORIDE BY IC	005	S	99LIC076	08/18/99	09/13/99	09/13/99
FLUORIDE BY IC	005	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRITE BY IC	005	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRATE BY IC	005	S	99LIC076	08/18/99	09/13/99	09/13/99
TOTAL CYANIDE	005	S	99LC095	08/18/99	08/31/99	08/31/99
PHOSPHATE BY IC	005	S	99LIC076	08/18/99	09/13/99	09/13/99
CHROMIUM VI	005	S	99LVI059	08/18/99	08/30/99	08/30/99
SULFATE BY IC	005	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRATE NITRITE	005	S	99LN3C43	08/18/99	08/31/99	08/31/99
AMMONIA	005	S	99LAM033	08/18/99	09/03/99	09/03/99
PH	005	S	99LPH089	08/18/99	08/24/99	08/24/99
SULFIDE	005	S	99LSD037	08/18/99	08/24/99	08/24/99
B0W652						
% SOLIDS	006	S	99L%S116	08/18/99	08/24/99	08/25/99
CHLORIDE BY IC	006	S	99LIC076	08/18/99	09/13/99	09/13/99
FLUORIDE BY IC	006	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRITE BY IC	006	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRATE BY IC	006	S	99LIC076	08/18/99	09/13/99	09/13/99
TOTAL CYANIDE	006	S	99LC096	08/18/99	08/31/99	09/01/99
PHOSPHATE BY IC	006	S	99LIC076	08/18/99	09/13/99	09/13/99
CHROMIUM VI	006	S	99LVI059	08/18/99	08/30/99	08/30/99
SULFATE BY IC	006	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRATE NITRITE	006	S	99LN3C43	08/18/99	08/31/99	08/31/99
AMMONIA	006	S	99LAM033	08/18/99	09/03/99	09/03/99
PH	006	S	99LPH089	08/18/99	08/24/99	08/24/99
SULFIDE	006	S	99LSD037	08/18/99	08/24/99	08/24/99

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

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W658						
% SOLIDS	007	S	99L%S116	08/18/99	08/24/99	08/25/99
% SOLIDS	007 REP	S	99L%S116	08/18/99	08/24/99	08/25/99
CHLORIDE BY IC	007	S	99LIC076	08/18/99	09/13/99	09/13/99
FLUORIDE BY IC	007	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRITE BY IC	007	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRATE BY IC	007	S	99LIC076	08/18/99	09/13/99	09/13/99
TOTAL CYANIDE	007	S	99LC096	08/18/99	08/31/99	09/01/99
PHOSPHATE BY IC	007	S	99LIC076	08/18/99	09/13/99	09/13/99
CHROMIUM VI	007	S	99LVI059	08/18/99	08/30/99	08/30/99
CHROMIUM VI	007 REP	S	99LVI059	08/18/99	08/30/99	08/30/99
CHROMIUM VI	007 MS	S	99LVI059	08/18/99	08/30/99	08/30/99
CHROMIUM VI	007 MSD	S	99LVI059	08/18/99	08/30/99	08/30/99
SULFATE BY IC	007	S	99LIC076	08/18/99	09/13/99	09/13/99
NITRATE NITRITE	007	S	99LN3C43	08/18/99	08/31/99	08/31/99
AMMONIA	007	S	99LAM033	08/18/99	09/03/99	09/03/99
PH	007	S	99LPH089	08/18/99	08/24/99	08/24/99
PH	007 REP	S	99LPH089	08/18/99	08/24/99	08/24/99
SULFIDE	007	S	99LSD037	08/18/99	08/24/99	08/24/99
SULFIDE	007 REP	S	99LSD037	08/18/99	08/24/99	08/24/99
SULFIDE	007 MS	S	99LSD037	08/18/99	08/24/99	08/24/99
SULFIDE	007 MSD	S	99LSD037	08/18/99	08/24/99	08/24/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LIC076	N/A	09/13/99	09/13/99
CHLORIDE BY IC	MB1 BS	S	99LIC076	N/A	09/13/99	09/13/99
FLUORIDE BY IC	MB1	S	99LIC076	N/A	09/13/99	09/13/99
FLUORIDE BY IC	MB1 BS	S	99LIC076	N/A	09/13/99	09/13/99
NITRITE BY IC	MB1	S	99LIC076	N/A	09/13/99	09/13/99
NITRITE BY IC	MB1 BS	S	99LIC076	N/A	09/13/99	09/13/99
NITRATE BY IC	MB1	S	99LIC076	N/A	09/13/99	09/13/99
NITRATE BY IC	MB1 BS	S	99LIC076	N/A	09/13/99	09/13/99
TOTAL CYANIDE	LC1 L	S	99LC095	N/A	08/31/99	08/31/99
TOTAL CYANIDE	LC2 L	S	99LC095	N/A	08/31/99	08/31/99
TOTAL CYANIDE	MB1	S	99LC095	N/A	08/31/99	08/31/99

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

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PHOSPHATE BY IC	MB1	S	99LIC076	N/A	09/13/99	09/13/99
PHOSPHATE BY IC	MB1 BS	S	99LIC076	N/A	09/13/99	09/13/99
CHROMIUM VI	MB1	S	99LVI059	N/A	08/30/99	08/30/99
CHROMIUM VI	MB1 BS	S	99LVI059	N/A	08/30/99	08/30/99
CHROMIUM VI	MB1 BSD	S	99LVI059	N/A	08/30/99	08/30/99
SULFATE BY IC	MB1	S	99LIC076	N/A	09/13/99	09/13/99
SULFATE BY IC	MB1 BS	S	99LIC076	N/A	09/13/99	09/13/99
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	99LSD037	N/A	08/24/99	08/24/99
SULFIDE	MB1 BS	S	99LSD037	N/A	08/24/99	08/24/99
SULFIDE	MB1 BSD	S	99LSD037	N/A	08/24/99	08/24/99
TOTAL CYANIDE	LC1 L	S	99LC096	N/A	08/31/99	09/01/99
TOTAL CYANIDE	LC2 L	S	99LC096	N/A	08/31/99	09/01/99
TOTAL CYANIDE	MB1	S	99LC096	N/A	08/31/99	09/01/99

RECRA LabNet Use Only
99081821

ALL

(8) Retain wet chem

Custody Transfer Record/Lab Work Request

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 30DAY
Date Rec'd 8/20/99 Date Due 9/19/99
Account # TNUHANFORD

Refrigerator #		1	6						6		6	6	6			
#/Type Container	Liquid															
	Solid	1g	1g						1g		1PB		1g			
Volume	Liquid															
	Solid	250	500	w/BNA		w/BNA			500		250	w/metals	Utr			
Preservatives									-		-					
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	~~Pest~~ PCB	Herb				Metal	CN						

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

RECRA LabNet Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OG24H	OG25H	ORG		ODRO			Met ①		IPH	ICRG	INORG ①	
001	BDW646			S	8/18/99	0924	✓	✓	✓		✓			✓		✓	✓	✓	
2	647					0930	✓	✓	✓		✓			✓		✓	✓	✓	
3	649					0946	✓	✓	✓		✓			✓		✓	✓	✓	
4	650					1003	✓	✓	✓		✓			✓		✓	✓	✓	
5	651					1015	✓	✓	✓		✓			✓		✓	✓	✓	
6	652					1030	✓	✓	✓		✓			✓		✓	✓	✓	
007	658					1046	✓	✓	✓		✓			✓		✓	✓	✓	

COMPOSITE WASTE

-001 no bottle received for metals or Cr^{6+} take aliquots from other jars.

stat logged 8/21/99

sample broken upon receipt. Take aliquots from other jars.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

Soq # B99.078

Run Matrix QC
8/26/99 added OGCSC 1→7
OGCSC = ethanol, propanol

DATE/REVISIONS:

1. Met ① = As, Ba, Be, Cd, Cr, Cu, Pb,
2. Ni, Se, Ag, V, Zn, Hg
3. INORG ① = IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ISFD, IN3N, ICNTD, ICSO4
5. k 423579528576 @ 4.1°C Cooler
6. k 423579528565 @ 4.3°C temp

RECRA LabNet Use Only

Samples were:
1) Shipped X or
Hand Delivered ___
Airbill # k
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

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

Relinquished by	Received by	Date	Time
FedEx	B Miller	8/20/99	

Relinquished by	Received by	Date	Time
ORIGINAL			
REWRITTEN			

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-56	Page 1 of 1

Collector: 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-4 <15' bgs 4.5'-5.5'	SAF No.: B99-078	
Ice Chest No.: ERC96-005	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA DJB 8-18-99	Offsite Property No.: A990221	Bill of Lading/Air Bill No.: 4235795285 65	
		COA: B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

621

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	0 RJN 8/19/99	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								
B0W646	Soil	8-18-99	0924		X	X	X	X	X		B0W565

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 8-18-99/1315	Received By: Ref 1B	Date/Time: 8-18-99/1315
Relinquished By: REF# 1B	Date/Time: 8/19/99 0900	Received By: R. Nielson	Date/Time: 8/19/99 (0900)
Relinquished By: R. Nielson	Date/Time: 8/19/99 1330	Received By: FedEx	Date/Time:
Relinquished By: FedEx	Date/Time:	Received By: B Miller	Date/Time: 8/20/99 0930
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed 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

* Note: Material necessary for Item (1) analysis to be extracted from other sample material provided

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-57	Page 1 of 1

Collector 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-4 <15' bgs 7'-8'		SAF No. B99-078		
Ice Chest No. ERC96-005	Field Logbook No. EL-1511		Method of Shipment Federal Express		
Shipped To TMA/RECRA BSAG 8-18-99	Offsite Property No. A990221		Bill of Lading/Air Bill No. 4235795285 65		
			COA D20CW 671C		

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										
B0W647	Soil / 8-18-99 / 0930		X	X	X	X	X		B0W565		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers / Doug Bowers	Date/Time 8-18-99/1315	Received By RCFID	Date/Time 8-18-99/1315
Relinquished By Ref#1B	Date/Time 8/19/99 0900	Received By R.Nielson/R.Nielson	Date/Time 0900 8/19/99
Relinquished By R.Nielson/R.Nielson	Date/Time 8/19/99 1330	Received By FedEx	Date/Time
Relinquished By FedEx	Date/Time	Received By B Mulley	Date/Time 8/20/99
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed 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

*Note: if additional sample material is required for Item (2) analysis use material from other sample material provided.

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-58	Page 1 of 1

Collector R. Nielson/D. 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-4 <15' bgs 9.5' - 10.5'		SAF No. B99-078		
Ice Chest No. ERC96-005	Field Logbook No. EL-1511		Method of Shipment Federal Express		
Shipped To TMA/RECRA DJB 8-18-99	Offsite Property No. AQ10221		Bill of Lading/Air Bill No. 4235795285 65		
			COA B20CW1 671C		

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								
B0W649	Soil	8-18-99	0946		X	X	X	X	X		Bowers

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By Doug Bowers	Doug Bowers	8-18-99/2315
Received By	Rob Ib	8-18-99/2315
Relinquished By	Rob Ib	8/19/99 0900
Received By	R Nielson/R Nielson	8/19/99 0900
Relinquished By	R Nielson/R Nielson	8/19/99 1330
Received By	FedEx	
Relinquished By	FedEx	
Received By	B Milley	8/20/99 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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-59	Page 1 of 1

Collector 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-4 <15' bgs 12' - 13'		SAF No. B99-078		
Ice Chest No. ERC96-005	Field Logbook No. EL-1511		Method of Shipment Federal Express		
Shipped To TMA/RECRA 8-18-99	Offsite Property No. A6R0221		Bill of Lading/Air Bill No. 4235795285 65		
			COA B20CW 671C		

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										
B0W650	Soil	8-18-99	1003		X	X	X	X	X		Bowsc5		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers 8-18-99/1315	Date/Time	Received By Ref 1B 8-18-99/1315	Date/Time
Relinquished By REF #1B 8/19/99 0900	Date/Time	Received By Dave Nielson/R Nielson 8/19/99	Date/Time 0900
Relinquished By Dave Nielson/R Nielson 8/19/99	Date/Time 1330	Received By FedEx	Date/Time
Relinquished By FedEx	Date/Time	Received By B Mulley	Date/Time 8/20/99 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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-61	Page 1 of 1

Collector 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-4 >15' bgs 19.5' - 20.5'		SAF No. B99-078
Ice Chest No. SML-552	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA DXB 8-18-99	Offsite Property No. A990221		Bill of Lading/Air Bill No. 42357952 8576
			COA B20CW1 67/C

Price Code 8N

Data Turnaround 45 Days

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
Special Handling and/or Storage	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) {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										
B0W652	Soil / 8-18-99 / 1030					X	X	X	X	X	
											B0W5L4

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	Doug Bowers	8-18-99/1315	Bob Ib	8-18-99/1315
Relinquished By	BEF #1B	8/19/99 0900	Received By	Kelvin Nielson/R. Nielson 8/19/99 0900
Relinquished By	Kelvin Nielson/R. Nielson	8/19/99 1830	Received By	FedEx
Relinquished By	FedEx		Received By	B. Miller 8/20/99

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	B99-078-62	Page 1 of 1

Collector 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-4 >15' bgs 24' -25'	SAF No. B99-078	
Ice Chest No. SML-552	Field Logbook No. EL-1511	Method of Shipment Federal Express	
Shipped To TMA/RECRA 8-18-99	Offsite Property No. A9940221	Bill of Lading/Air Bill No. 4235795285 76	
		COA B20CW1 671C	

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
Special Handling and/or Storage	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										
B0W658	Soil / 8-18-99 / 1046					X	X	X	X	X	
											B0W5L5

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Date/Time 8-18-99 / 1315	Received By B.F. 18 8-18-99 / 1315		
Relinquished By REF #18 8/19/99 0900	Received By Renee Nielson/R. Nielson 8/19/99 0900		
Relinquished By Renee Nielson/R. Nielson 8/19/99 1330	Received By Fed Ex		
Relinquished By FedEx Date/Time	Received By B. Mulley 8/20/99 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 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# : 9908L821
SDG/SAF# : H0497/B99-078

W.O.# : 10985-001-001-9999-00
Date Received: 08-20-99

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. All cooler temperatures have been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL) or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. All matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 25 pages.

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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-16-99
Date

mld/m08-821

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9908L821

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 09/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L821

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0W646	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	2.3	MG/KG	0.26	1.0
		Barium, Total	92.6	MG/KG	0.02	1.0
		Beryllium, Total	1.2	MG/KG	0.008	1.0
		Cadmium, Total	0.09	MG/KG	0.02	1.0
		Chromium, Total	6.4	MG/KG	0.06	1.0
		Copper, Total	12.8	MG/KG	0.1	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.1	MG/KG	0.1	1.0
		Lead, Total	4.2	MG/KG	0.17	1.0
		Selenium, Total	0.29 u	MG/KG	0.29	1.0
		Vanadium, Total	48.8	MG/KG	0.05	1.0
		Zinc, Total	45.4	MG/KG	0.06	1.0
-002	B0W647	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Arsenic, Total	1.9	MG/KG	0.36	1.0
		Barium, Total	83.6	MG/KG	0.03	1.0
		Beryllium, Total	0.41	MG/KG	0.01	1.0
		Cadmium, Total	0.09	MG/KG	0.03	1.0
		Chromium, Total	6.4	MG/KG	0.09	1.0
		Copper, Total	12.6	MG/KG	0.13	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.1	MG/KG	0.13	1.0
		Lead, Total	3.8	MG/KG	0.23	1.0
		Selenium, Total	0.41	MG/KG	0.40	1.0
		Vanadium, Total	49.0	MG/KG	0.06	1.0
		Zinc, Total	44.4	MG/KG	0.09	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L821

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0W649	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.2	MG/KG	0.30	1.0
		Barium, Total	57.2	MG/KG	0.03	1.0
		Beryllium, Total	0.34	MG/KG	0.009	1.0
		Cadmium, Total	0.05	MG/KG	0.03	1.0
		Chromium, Total	3.6	MG/KG	0.07	1.0
		Copper, Total	14.5	MG/KG	0.11	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	7.4	MG/KG	0.11	1.0
		Lead, Total	3.4	MG/KG	0.19	1.0
		Selenium, Total	0.34 u	MG/KG	0.34	1.0
		Vanadium, Total	44.4	MG/KG	0.06	1.0
		Zinc, Total	37.1	MG/KG	0.07	1.0
-004	B0W650	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.7	MG/KG	0.29	1.0
		Barium, Total	50.9	MG/KG	0.03	1.0
		Beryllium, Total	0.36	MG/KG	0.009	1.0
		Cadmium, Total	0.07	MG/KG	0.03	1.0
		Chromium, Total	3.3	MG/KG	0.07	1.0
		Copper, Total	15.2	MG/KG	0.10	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	7.3	MG/KG	0.10	1.0
		Lead, Total	3.8	MG/KG	0.18	1.0
		Selenium, Total	0.32 u	MG/KG	0.32	1.0
		Vanadium, Total	36.5	MG/KG	0.05	1.0
		Zinc, Total	35.3	MG/KG	0.07	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/16/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9908L821

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B0W651	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	2.2	MG/KG	0.23	1.0
		Barium, Total	40.3	MG/KG	0.02	1.0
		Beryllium, Total	0.30	MG/KG	0.007	1.0
		Cadmium, Total	0.02 u	MG/KG	0.02	1.0
		Chromium, Total	3.0	MG/KG	0.06	1.0
		Copper, Total	13.6	MG/KG	0.08	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	6.2	MG/KG	0.08	1.0
		Lead, Total	2.9	MG/KG	0.15	1.0
		Selenium, Total	0.29	MG/KG	0.26	1.0
		Vanadium, Total	34.0	MG/KG	0.04	1.0
		Zinc, Total	32.5	MG/KG	0.06	1.0
-006	B0W652	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.0	MG/KG	0.29	1.0
		Barium, Total	41.6	MG/KG	0.03	1.0
		Beryllium, Total	0.30	MG/KG	0.009	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	2.2	MG/KG	0.07	1.0
		Copper, Total	14.4	MG/KG	0.10	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	6.0	MG/KG	0.10	1.0
		Lead, Total	2.8	MG/KG	0.18	1.0
		Selenium, Total	0.46	MG/KG	0.32	1.0
		Vanadium, Total	30.8	MG/KG	0.05	1.0
		Zinc, Total	32.0	MG/KG	0.07	1.0

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INORGANICS DATA SUMMARY REPORT 09/16/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9908L821

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B0W658	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	1.3	MG/KG	0.28	1.0
		Barium, Total	37.8	MG/KG	0.03	1.0
		Beryllium, Total	0.25	MG/KG	0.009	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	6.3	MG/KG	0.07	1.0
		Copper, Total	11.8	MG/KG	0.10	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	14.1	MG/KG	0.10	1.0
		Lead, Total	2.5	MG/KG	0.18	1.0
		Selenium, Total	0.31 u	MG/KG	0.31	1.0
		Vanadium, Total	27.9	MG/KG	0.05	1.0
		Zinc, Total	24.7	MG/KG	0.07	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L821

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0591-MB1	Silver, Total	0.20	MG/KG	0.10	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Barium, Total	0.03 u	MG/KG	0.03	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.1	MG/KG	0.08	1.0
		Copper, Total	0.12 u	MG/KG	0.12	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Lead, Total	0.25	MG/KG	0.21	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.12	MG/KG	0.08	1.0
BLANK1	99C0253-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

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INORGANICS ACCURACY REPORT 09/16/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9908L821

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0W646	Silver, Total	4.7	0.08u	4.8	97.9	1.0
		Arsenic, Total	190	2.3	192	97.7	1.0
		Barium, Total	264	92.6	192	89.3	1.0
		Beryllium, Total	5.9	1.2	4.8	97.9	1.0
		Cadmium, Total	4.8	0.09	4.8	98.1	1.0
		Chromium, Total	26.1	6.4	19.2	102.6	1.0
		Copper, Total	35.1	12.8	24.1	92.5	1.0
		Mercury, Total	0.18	0.02u	0.18	101.1	1.0
		Nickel, Total	55.9	8.1	48.1	99.4	1.0
		Lead, Total	51.9	4.2	48.1	99.2	1.0
		Selenium, Total	184	0.29u	192	95.6	1.0
		Vanadium, Total	95.6	48.8	48.1	97.3	1.0
		Zinc, Total	91.7	45.4	48.1	96.3	1.0

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INORGANICS PRECISION REPORT 09/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L821

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0W646	Silver, Total	0.08u	0.09u	NC	1.0
		Arsenic, Total	2.3	2.2	4.4	1.0
		Barium, Total	92.6	88.0	5.1	1.0
		Beryllium, Total	1.2	1.2	0.00	1.0
		Cadmium, Total	0.09	0.06	47.2	1.0
		Chromium, Total	6.4	6.7	4.6	1.0
		Copper, Total	12.8	13.1	2.3	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	8.1	9.4	14.9	1.0
		Lead, Total	4.2	4.4	4.7	1.0
		Selenium, Total	0.29u	0.32u	NC	1.0
		Vanadium, Total	48.8	48.6	0.41	1.0
		Zinc, Total	45.4	46.8	3.0	1.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 09/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9908L821

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0591-LC1	Silver, LCS	49.4	50.0	MG/KG	98.8
		Arsenic, LCS	969	1000	MG/KG	96.9
		Barium, LCS	492	500	MG/KG	98.4
		Beryllium, LCS	24.6	25.0	MG/KG	98.4
		Cadmium, LCS	24.4	25.0	MG/KG	97.6
		Chromium, LCS	50.0	50.0	MG/KG	100
		Copper, LCS	123	125	MG/KG	98.5
		Nickel, LCS	194	200	MG/KG	96.9
		Lead, LCS	243	250	MG/KG	97.2
		Selenium, LCS	951	1000	MG/KG	95.1
		Vanadium, LCS	249	250	MG/KG	99.6
		Zinc, LCS	96.1	100	MG/KG	96.1
LCS1	99C0253-LC1	Mercury, LCS	0.96	1.0	MG/KG	95.8

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

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W646						
SILVER, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
SILVER, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
SILVER, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
ARSENIC, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
ARSENIC, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
ARSENIC, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
BARIUM, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
BARIUM, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
BARIUM, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
BERYLLIUM, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
BERYLLIUM, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
BERYLLIUM, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
CADMIUM, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
CADMIUM, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
CADMIUM, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
CHROMIUM, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
CHROMIUM, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
CHROMIUM, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
COPPER, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
COPPER, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
COPPER, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
MERCURY, TOTAL	001	S	99C0253	08/18/99	08/26/99	08/27/99
MERCURY, TOTAL	001 REP	S	99C0253	08/18/99	08/26/99	08/27/99
MERCURY, TOTAL	001 MS	S	99C0253	08/18/99	08/26/99	08/27/99
NICKEL, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
NICKEL, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
NICKEL, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
LEAD, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
LEAD, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
LEAD, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
SELENIUM, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
SELENIUM, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
SELENIUM, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
VANADIUM, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
VANADIUM, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99

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

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
ZINC, TOTAL	001	S	99L0591	08/18/99	08/26/99	08/30/99
ZINC, TOTAL	001 REP	S	99L0591	08/18/99	08/26/99	08/30/99
ZINC, TOTAL	001 MS	S	99L0591	08/18/99	08/26/99	08/30/99
B0W647						
SILVER, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
ARSENIC, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
BARIUM, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
BERYLLIUM, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
CADMIUM, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
CHROMIUM, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
COPPER, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
MERCURY, TOTAL	002	S	99C0253	08/18/99	08/26/99	08/27/99
NICKEL, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
LEAD, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
SELENIUM, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
VANADIUM, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
ZINC, TOTAL	002	S	99L0591	08/18/99	08/26/99	08/31/99
B0W649						
SILVER, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
ARSENIC, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
BARIUM, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
BERYLLIUM, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
CADMIUM, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
CHROMIUM, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
COPPER, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
MERCURY, TOTAL	003	S	99C0253	08/18/99	08/26/99	08/27/99
NICKEL, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
LEAD, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
SELENIUM, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
VANADIUM, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
ZINC, TOTAL	003	S	99L0591	08/18/99	08/26/99	08/31/99
B0W650						
SILVER, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99

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

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
BARIUM, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
BERYLLIUM, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
CADMIUM, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
CHROMIUM, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
COPPER, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
MERCURY, TOTAL	004	S	99C0253	08/18/99	08/26/99	08/27/99
NICKEL, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
LEAD, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
SELENIUM, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
VANADIUM, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
ZINC, TOTAL	004	S	99L0591	08/18/99	08/26/99	08/31/99
B0W651						
SILVER, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
ARSENIC, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
BARIUM, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
BERYLLIUM, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
CADMIUM, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
CHROMIUM, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
COPPER, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
MERCURY, TOTAL	005	S	99C0253	08/18/99	08/26/99	08/27/99
NICKEL, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
LEAD, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
SELENIUM, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
VANADIUM, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
ZINC, TOTAL	005	S	99L0591	08/18/99	08/26/99	08/31/99
B0W652						
SILVER, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
ARSENIC, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
BARIUM, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
BERYLLIUM, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
CADMIUM, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
CHROMIUM, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
COPPER, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99

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

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	006	S	99C0253	08/18/99	08/26/99	08/27/99
NICKEL, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
LEAD, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
SELENIUM, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
VANADIUM, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
ZINC, TOTAL	006	S	99L0591	08/18/99	08/26/99	08/31/99
B0W658						
SILVER, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
ARSENIC, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
BARIUM, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
BERYLLIUM, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
CADMIUM, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
CHROMIUM, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
COPPER, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
MERCURY, TOTAL	007	S	99C0253	08/18/99	08/26/99	08/27/99
NICKEL, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
LEAD, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
SELENIUM, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
VANADIUM, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99
ZINC, TOTAL	007	S	99L0591	08/18/99	08/26/99	08/31/99

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: 08/20/99 RFW LOT # :9908L821

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	99C0253	N/A	08/26/99	08/27/99
MERCURY, TOTAL	MB1	S	99C0253	N/A	08/26/99	08/27/99
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

qc VOA schnell (8) perrone wet chem

RECRA LabNet Use Only

9908L821

ALL

Custody Transfer Record/Lab Work Request

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 30DAY
Date Rec'd 8/20/99 Date Due 9/19/99
Account # TNUHANFORD

Refrigerator #		1	6						6		6	6	6			
#/Type Container	Liquid															
	Solid	1g	1g						1g		1Ab		1g			
Volume	Liquid			w/BNA		w/BNA						w/metals				
	Solid	250	500						500		250		4tr			
Preservatives									–		–					

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	0624H	0625H	ORG		ODRO	OGCSC		Met ①		IPH	ICRG	INORG ①			
001	BØW646			S	8/18/99	0924	✓	✓	✓		✓	✓		✓		✓	✓	✓			
2	647					0930	✓	✓	✓		✓	✓		✓		✓	✓	✓			
3	649					0946	✓	✓	✓		✓	✓		✓		✓	✓	✓			
4	650					1003	✓	✓	✓		✓	✓		✓		✓	✓	✓			
5	651					1015	✓	✓	✓		✓	✓		✓		✓	✓	(✓)			
6	652					1030	✓	✓	✓		✓	✓		✓		✓	✓	✓			
007	658					1046	✓	✓	✓		✓	✓		✓		✓	✓	✓			
	COMPOSITE WASTE																				

001 → no bottle rec'd for metals or CRG take aliquots from other jars.

Not logged 8/21/99 sample broken upon receipt. Take aliquots from other jars.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

Soq # B99-078

Run Matrix QC
8/26/99 added OGCSC 1→7
OGCSC = ethanol + propanol

DATE/REVISIONS:

→ 1. Met ① = As, Ba, Be, Cd, Cr, Cu, Pb,
2. Ni, Se, Ag, V, Zn, Hg
→ 3. INORG ① = 1N3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ISFD, INH3N, ICNTD, ICSO4
5. K 423579528576 @ 4.1°c
6. K 423579528565 @ 4.3°c

RECRA LabNet Use Only

Samples were:
1) Shipped X or
Hand Delivered ___
Airbill # K
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

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

Relinquished by	Received by	Date	Time
FedEx	[signature]	8/20/99	

Relinquished by	Received by	Date	Time
ORIGINAL			
REWRITTEN			

Page 1 of 1

018

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-56	Page 1 of 1

Collector 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-4 <15' bgs 4.5'-5.5'		SAF No. B99-078
Ice Chest No. ERC96-005	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA 11 DJB 8-18-99	Offsite Property No. A990221		Bill of Lading/Air Bill No. 4235795285 65
			COA B20CW1 671C

Price Code 8N

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

621

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	0 RIN 0 8/19 pm	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									
B0W646	Soil	8-18-99	0924		X	X	X	X	X		B0W565	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers 8-18-99/1315	Date/Time	Received By Ref 1B 8-18-99/1315	Date/Time
Relinquished By Ref 1B 8/19/99 0900	Date/Time	Received By R. Nielson/R. Nielson 8/19/99	Date/Time 0900
Relinquished By R. Nielson/R. Nielson 8/19/99	Date/Time 1330	Received By FedEx	Date/Time
Relinquished By FedEx	Date/Time	Received By B Miller/	Date/Time 8/2/99 0930
			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

* Note: Material necessary for Item (1) analysis to be extracted from other sample material provide

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

019

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-57	Page 1 of 1

Collector: 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-4 <15' bgs 7'-8'	SAF No.: B99-078	
Ice Chest No.: ERC96-005	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 8-20-99	Offsite Property No.: A990721	Bill of Lading/Air Bill No.: 4235795285565	
		COA: D20CW 671C	

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										
B0W647	Soil	8-18-99	0930		X	X	X	X	X		BOW545		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-18-99/1315	Received By: BCFD	Date/Time: 8-18-99/1315
Relinquished By: Ref #1B	Date/Time: 8/19/99 0900	Received By: Rene Nieto / R. Nielson	Date/Time: 0900 8/19/99
Relinquished By: Rene Nieto / R. Nielson	Date/Time: 8/19/99 B30	Received By: FedEx	Date/Time:
Relinquished By: FedEx	Date/Time:	Received By: [signature]	Date/Time: 8/20/99
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed 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

*Note: If additional sample material is required for Item (2) analysis use material from other sample material provided.

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

020

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-58	Page 1 of 1

Collector 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-4 <15' bgs 9.5' - 10.5'		SAF No. B99-078
Ice Chest No. ER-C96-005	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA DJB 8-18-99	Offsite Property No. A990221		Bill of Lading/Air Bill No. 423579528565
			COA B20CW1 671C

Price Code 8N

Data Turnaround 45 Days

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										
B0W649	Soil	8-18-99	0946		X	X	X	X	X		BOWS	LS	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers 8-18-99/2315	Date/Time	Received By Rob B 8-18-99/2315	Date/Time
Relinquished By Ref # 1B 8/19/99 0900	Date/Time	Received By Renee Nielson/R Nielson 8/19/99 0900	Date/Time
Relinquished By Renee Nielson/R Nielson 8/19/99 1330	Date/Time	Received By FedEx	Date/Time
Relinquished By FedEx	Date/Time	Received By B Melly 8/20/99 0930	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

021

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-59	Page 1 of 1

Collector 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-4 <15' bgs 12' - 13'	SAF No. B99-078	
Ice Chest No. ERC96-005	Field Logbook No. EL-1511	Method of Shipment Federal Express	
Shipped To TMA/RECRA 8-18 8-18-99	Offsite Property No. A990721	Bill of Lading/Air Bill No. 4235795285 65	
		COA B20CW671C	

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								
B0W650	Soil	8-18-99	1003		X	X	X	X	X		B0W5L5

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers	Date/Time 8-18-99/1315	Received By Ref 1B	Date/Time 8-18-99/1315
Relinquished By Ref # 1B 8/19/99	Date/Time 0900	Received By Dave Nielson/R Nielson 8/19/99	Date/Time 0900
Relinquished By Dave Nielson/R Nielson 8/19/99	Date/Time 1330	Received By FedEx	Date/Time
Relinquished By FedEx	Date/Time	Received By B Mulley	Date/Time 8/20/99 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

022

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-60	Page 1 of 1

Collector 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-4 <15' bgs 14' - 15'		SAF No. B99-078
Ice Chest No. SML-552	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA 8-18-99	Offsite Property No. A990221		Bill of Lading/Air Bill No. 4235795285 76

Price Code 8N

Data Turnaround 45 Days

COA B20CW167C

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								
B0W651	Soil	8-18-99	1015		X	X	X	X	X		BOWS LS

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers	Date/Time 8-18-99/1315	Received By RF 1B	Date/Time 8-18-99/1315
Relinquished By RF #1B	Date/Time 8/19/99 0900	Received By Renee Nielson/R. Nielson	Date/Time 8/19/99 0900
Relinquished By Renee Nielson/R. Nielson	Date/Time 8/19/99 1330	Received By Fed Ex	Date/Time
Relinquished By FedEx	Date/Time	Received By	Date/Time 8/20/99

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

023

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-61	Page 1 of 1

Collector 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-4 >15' bgs 19.5' – 20.5'		SAF No. B99-078
Ice Chest No. SML-552	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA DXB 8-18-99	Offsite Property No. A990221		Bill of Lading/Air Bill No. 42357952 8576
			COA B20CW1 67/C

Price Code 8N

Data Turnaround 45 Days

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										
B0W652	Soil	8-18-99	1030					X	X	X	X	X	
													BOW5L

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	8-18-99/1315	R. Nielson	8-18-99/1315
BEF #18	8/19/99 0900	Renee Nielson/R. Nielson	8/19/99 0900
Renee Nielson/R. Nielson	8/19/99 1330	FedEx	
FedEx		B. Miller	8/20/99

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

024

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-62	Page 1 of 1

Collector 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-4 >15' bgs 24' -25'		SAF No. B99-078
Ice Chest No. SML-552	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA 8-18-99	Offsite Property No. A9910221		Bill of Lading/Air Bill No. 4235795285 76
			COA B20CW1 671C

Price Code 8N

Data Turnaround 45 Days

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										
B0W658 / Soil / 8-18-99 / 1046					X	X	X	X	X	
										Bowsl

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers, Date/Time: 8-18-99/1315	Received By: B.F. 1B, Date/Time: 8-18-99/1315		
Relinquished By: Ref #1B, Date/Time: 8/19/99 0900	Received By: Renee Nielson/R. Nielson, Date/Time: 8/19/99 0900		
Relinquished By: Renee Nielson/R. Nielson, Date/Time: 8/19/99 1330	Received By: Fed Ex, Date/Time:		
Relinquished By: FedEx, Date/Time:	Received By: B. Mellen, Date/Time: 8/20/99 0930		
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed 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

025

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9908L821
SDG/SAF #: H0497/ B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 08-20-99

GC/MS VOLATILE

Seven (7) soil samples were collected on 08-18-99.

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

2. The required holding time for analysis was met.

3. Non-target compounds were detected in the method blank 99LVN247-MB1.

4. All surrogate recoveries were within EPA QC limits.

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

6. The blank spike recovery was within EPA QC limits.

7. The method blank contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than 3x the CRQL.

OCT 1999
RECEIVED
Data
Log In

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

09-30-99
Date

som\group\data\ voa\tnu08821.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 - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 09/27/99 17:19

RFW Batch Number: **9908L821** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0W646		B0W647		B0W649		B0W649		B0W649		B0W650	
Sample Information	RFW#:	001		002		003		003 MS		003 MSD		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	Toluene-d8	110	%	113	%	109	%	104	%	103	%	110	%
	Bromofluorobenzene	97	%	99	%	96	%	95	%	94	%	97	%
	1,2-Dichloroethane-d4	111	%	114	%	112	%	108	%	114	%	110	%
Chloromethane		11	U	11	U	11	U	11	U	11	U	11	U
Bromomethane		11	U	11	U	11	U	11	U	11	U	11	U
Vinyl Chloride		11	U	11	U	11	U	11	U	11	U	11	U
Chloroethane		11	U	11	U	11	U	11	U	11	U	11	U
Methylene Chloride		14	B	13	B	13	B	13	B	12	B	13	B
Acetone		3	JB	3	JB	6	JB	6	JB	4	JB	4	JB
Carbon Disulfide		6	U	6	U	6	U	6	U	6	U	6	U
1,1-Dichloroethene		6	U	6	U	6	U	105	%	100	%	6	U
1,1-Dichloroethane		6	U	6	U	6	U	6	U	6	U	6	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	6	U	6	U	6	U
Chloroform		6	U	6	U	6	U	6	U	6	U	6	U
1,2-Dichloroethane		6	U	6	U	6	U	6	U	6	U	6	U
2-Butanone		2	J	11	U	2	J	2	J	2	J	2	J
1,1,1-Trichloroethane		6	U	6	U	6	U	6	U	6	U	6	U
Carbon Tetrachloride		6	U	6	U	6	U	6	U	6	U	6	U
Bromodichloromethane		6	U	6	U	6	U	6	U	6	U	6	U
1,2-Dichloropropane		6	U	6	U	6	U	6	U	6	U	6	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	6	U	6	U	6	U
Trichloroethene		6	U	6	U	6	U	108	%	106	%	6	U
Dibromochloromethane		6	U	6	U	6	U	6	U	6	U	6	U
1,1,2-Trichloroethane		6	U	6	U	6	U	6	U	6	U	6	U
Benzene		6	U	6	U	6	U	115	%	113	%	6	U
Trans-1,3-Dichloropropene		6	U	6	U	6	U	6	U	6	U	6	U
Bromoform		6	U	6	U	6	U	6	U	6	U	6	U
4-Methyl-2-pentanone		11	U	11	U	11	U	11	U	11	U	11	U
2-Hexanone		11	U	11	U	11	U	11	U	11	U	11	U
Tetrachloroethene		6	U	6	U	6	U	6	U	6	U	6	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	6	U	6	U	6	U
Toluene		6	U	6	U	6	U	117	%	114	%	6	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9908L821 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1b

Cust ID:	B0W646	B0W647	B0W649	B0W649	B0W649	B0W650
RFW#:	001	002	003	003 MS	003 MSD	004
Chlorobenzene	6 U	6 U	6 U	109 %	106 %	6 U
Ethylbenzene	6 U	6 U	6 U	6 U	6 U	6 U
Styrene	6 U	6 U	6 U	6 U	6 U	6 U
Xylene (total)	6 U	6 U	6 U	6 U	6 U	6 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory
Volatiles by GC/MS, HSL List
Report Date: 09/27/99 17:19

RFW Batch Number: **9908L821** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

	Cust ID:	B0W651		B0W652		B0W658		VBLKON		VBLKON BS	
Sample Information	RFW#:	005		006		007		99LVN247-MB1		99LVN247-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	Toluene-d8	111	%	107	%	106	%	102	%	104	%
	Bromofluorobenzene	97	%	98	%	98	%	103	%	97	%
	1,2-Dichloroethane-d4	113	%	108	%	107	%	116	%	113	%
Chloromethane		11	U	10	U	11	U	10	U	10	U
Bromomethane		11	U	10	U	11	U	10	U	10	U
Vinyl Chloride		11	U	10	U	11	U	10	U	10	U
Chloroethane		11	U	10	U	11	U	10	U	10	U
Methylene Chloride		12	B	11	B	12	B	11		9	B
Acetone		4	JB	4	JB	3	JB	2	J	2	JB
Carbon Disulfide		6	U	5	U	6	U	5	U	5	U
1,1-Dichloroethene		6	U	5	U	6	U	5	U	103	%
1,1-Dichloroethane		6	U	5	U	6	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	5	U	6	U	5	U	5	U
Chloroform		6	U	5	U	6	U	5	U	5	U
1,2-Dichloroethane		6	U	5	U	6	U	5	U	5	U
2-Butanone		11	U	2	J	1	J	10	U	10	U
1,1,1-Trichloroethane		6	U	5	U	6	U	5	U	5	U
Carbon Tetrachloride		6	U	5	U	6	U	5	U	5	U
Bromodichloromethane		6	U	5	U	6	U	5	U	5	U
1,2-Dichloropropane		6	U	5	U	6	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	5	U	6	U	5	U	5	U
Trichloroethene		6	U	5	U	6	U	5	U	106	%
Dibromochloromethane		6	U	5	U	6	U	5	U	5	U
1,1,2-Trichloroethane		6	U	5	U	6	U	5	U	5	U
Benzene		6	U	5	U	6	U	5	U	114	%
Trans-1,3-Dichloropropene		6	U	5	U	6	U	5	U	5	U
Bromoform		6	U	5	U	6	U	5	U	5	U
4-Methyl-2-pentanone		11	U	10	U	11	U	10	U	10	U
2-Hexanone		11	U	10	U	11	U	10	U	10	U
Tetrachloroethene		6	U	5	U	6	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	5	U	6	U	5	U	5	U
Toluene		6	U	5	U	6	U	5	U	112	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9908L821 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 2b

Cust ID:	B0W651	B0W652	B0W658	VBLKON	VBLKON BS
RFW#:	005	006	007	99LVN247-MB1	99LVN247-MB1
Chlorobenzene	6 U	5 U	6 U	5 U	106 %
Ethylbenzene	6 U	5 U	6 U	5 U	5 U
Styrene	6 U	5 U	6 U	5 U	5 U
Xylene (total)	6 U	5 U	6 U	5 U	5 U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W646

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 9908L821-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: n090120

Level: (low/med) LOW Date Received: 08/20/99

% Moisture: not dec. 8 Date Analyzed: 09/01/99

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W647

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 9908L821-002

Sample wt/vol: 5.00 (g/mL) G Lab File ID: n090121

Level: (low/med) LOW Date Received: 08/20/99

% Moisture: not dec. 8 Date Analyzed: 09/01/99

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W649

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 9908L821-003

Sample wt/vol: 5.00 (g/mL) G Lab File ID: n090113

Level: (low/med) LOW Date Received: 08/20/99

% Moisture: not dec. 5 Date Analyzed: 09/01/99

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W650

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 9908L821-004

Sample wt/vol: 5.00 (g/mL) G Lab File ID: n090114

Level: (low/med) LOW Date Received: 08/20/99

% Moisture: not dec. 6 Date Analyzed: 09/01/99

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W651

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 9908L821-005

Sample wt/vol: 5.00 (g/mL) G Lab File ID: n090115

Level: (low/med) LOW Date Received: 08/20/99

% Moisture: not dec. 5 Date Analyzed: 09/01/99

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W652

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 9908L821-006

Sample wt/vol: 5.00 (g/mL) G Lab File ID: n090116

Level: (low/med) LOW Date Received: 08/20/99

% Moisture: not dec. 3 Date Analyzed: 09/01/99

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W658

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 9908L821-007

Sample wt/vol: 5.00 (g/mL) G Lab File ID: n090117

Level: (low/med) LOW Date Received: 08/20/99

% Moisture: not dec. 5 Date Analyzed: 09/01/99

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKON

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 99LVN247-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: n090111

Level: (low/med) LOW Date Received: 09/01/99

% Moisture: not dec. 0 Date Analyzed: 09/01/99

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.546	10	J
2.	UNKNOWN	16.623	3	J

FORM 1 VOA-TIC 1/87 Rev.

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

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W646	001	S	99LVN247	08/18/99	N/A	09/01/99
B0W647	002	S	99LVN247	08/18/99	N/A	09/01/99
B0W649	003	S	99LVN247	08/18/99	N/A	09/01/99
B0W649	003 MS	S	99LVN247	08/18/99	N/A	09/01/99
B0W649	003 MSD	S	99LVN247	08/18/99	N/A	09/01/99
B0W650	004	S	99LVN247	08/18/99	N/A	09/01/99
B0W651	005	S	99LVN247	08/18/99	N/A	09/01/99
B0W652	006	S	99LVN247	08/18/99	N/A	09/01/99
B0W658	007	S	99LVN247	08/18/99	N/A	09/01/99

LAB QC:

VBLKON	MB1	S	99LVN247	N/A	N/A	09/01/99
VBLKON	MB1 BS	S	99LVN247	N/A	N/A	09/01/99

RECRA LabNet Use Only
99081821

ALL

(8) perform wet chem

Custody Transfer Record/Lab Work Request

RECRA LabNet

Client: TNU-HANFORD B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: DJ
QC: SPEC Del: STD TAT: 30DAY
Date Rec'd: 8/20/99 Date Due: 9/19/99
Account #: TNUHANFORD

Refrigerator #		1	6						6		6	6	6			
#/Type Container	Liquid															
	Solid	19	19						19		1Ab		1g			
Volume	Liquid															
	Solid	250	500						500		250		1tr			
Preservatives				c/pH		w/pH			-		-	w/metals				
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	~~Pest~~/PCB	Herb				Metal	CN						

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625H	ORG		ORGO			Met ①		IPH	ICRG	INORG ①			
001	BDW646			S	8/18/99	0924	✓	✓	✓		✓			✓		✓	✓	✓			
2	647					0930	✓	✓	✓		✓			✓		✓	✓	✓			
3	649					0946	✓	✓	✓		✓			✓		✓	✓	✓			
4	650					1003	✓	✓	✓		✓			✓		✓	✓	✓			
5	651					1015	✓	✓	✓		✓			✓		✓	✓	✓			
6	652					1030	✓	✓	✓		✓			✓		✓	✓	✓			
007	658					1046	✓	✓	✓		✓			✓		✓	✓	✓			

COMPOSITE WASTE

Not logged 8/21/99 sample broken upon receipt. Take aliquots from other jars.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Saf. # B99-078

Run Matrix QC

DATE/REVISIONS:
1. Met ① = As, Ba, Be, Cd, Cr, Co, Pb,
2. Ni, Se, Ag, V, Zn, Hg
3. INORG ① = IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ISFD, INH3N, ICNTO, ICSO4
5. K 42357952 8576 @ 4.1°C
6. K 42357952 8565 @ 4.3°C

RECRA LabNet Use Only

Samples were:
1) Shipped X or Hand Delivered ___
Airbill # K
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

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

Relinquished by	Received by	Date	Time
FedEx	BMiller	8/20/99	

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 #: 9908L821
SDG/SAF#: H0497/B99-078

W.O. #: #: 10985-001-001-9999-00
Date Received: 08-20-99

GC SCAN

The set of samples consisted of seven (7) soil samples collected on 08-18-99.

The samples and their associated QC samples were prepared on 08-31-99 and analyzed by methodology based on EPA Method 8015B for Ethanol and Butanol on 09-01,02-99.

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. Continuing calibration criteria (±15%) were exceeded for the continuing calibration verification standard analyzed prior to the sample extracts. Outlying standard(s) generally exhibited increased instrument response. However sample data were not impacted as target analytes were not detected in the associated samples analyzed immediately after such standard(s). A copy of the Sample Discrepancy Report (SDR) has been enclosed in the data package.

5. Surrogates were not used for this analysis.

6. The blank spike recovery was 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\08-821.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 13 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 Philadelphia Sample Discrepancy Report (SDR) SDR #: 99L052

Initiator: C Schnell
Date: 9/16/99
Client: TNU-Hanford

RFW Batch: 9908L821 9908L851 9908L880 9908L931 9908L906 9908L863
Samples: 99091006
Method: SW846/MCAWW/CLP/

Parameter: OGCSC
Matrix:
Prep Batch: Multiple

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)

CCV response somewhat erratic during sample analysis, most being high. In cases whereby instrument response decreased, the decrease did not exceed -20% Deviation.

2. Known or Probable Causes(s)

- Heavy analysis load combined with aqueous matrix contributes to reduced stability of instrument response compared to solvent type matrices.

3. Discussion and Proposed Action

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

Other Description:

- No positives found in any samples.
- The laboratory limit of ±15% Deviation is derived from common analyses and may not be applicable to extended runs of aqueous samples, where such criteria may not be readily achievable.

4. Project Manager Instructions...signature/date: [signature] 9/16/99

__ 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]

Other Explanation:

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

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
2	X Initiator		__ 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
4	X QA (file): Racioppi		__ Log-in: Toder
3	__ Data Management: Feldman		__ Admin: Soos
	__ Sample Prep: Schnell/Doughty/Kauffman		__ Other: _____

L-WI-006/E-03/99

Recra LabNet - Lionville Laboratory

GC SCAN

Report Date: 09/13/99 15:19

RFW Batch Number: **9908L821** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

	Cust ID:	B0W646	B0W646	B0W646	B0W647	B0W649	B0W650
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
n-Propyl Alcohol		3.6 U	80 %	80 %	5.5 U	4.6 U	4.4 U
Ethanol		3.6 U	2.6 U	4.8 U	5.5 U	4.6 U	4.4 U

	Cust ID:	B0W651	B0W652	B0W658	BLK	BLK BS
Sample Information	RFW#:	005	006	007	99LLC128-MB1	99LLC128-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		4.8 U	3.8 U	3.4 U	5.0 U	95 %
Ethanol		4.8 U	3.8 U	3.4 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.

9/16/99

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

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W646	001	S	99LLC128	08/18/99	08/31/99	09/01/99
B0W646	001 MS	S	99LLC128	08/18/99	08/31/99	09/02/99
B0W646	001 MSD	S	99LLC128	08/18/99	08/31/99	09/02/99
B0W647	002	S	99LLC128	08/18/99	08/31/99	09/01/99
B0W649	003	S	99LLC128	08/18/99	08/31/99	09/02/99
B0W650	004	S	99LLC128	08/18/99	08/31/99	09/02/99
B0W651	005	S	99LLC128	08/18/99	08/31/99	09/02/99
B0W652	006	S	99LLC128	08/18/99	08/31/99	09/02/99
B0W658	007	S	99LLC128	08/18/99	08/31/99	09/02/99

LAB QC:

BLK	MB1	S	99LLC128	N/A	08/31/99	09/01/99
BLK	MB1 BS	S	99LLC128	N/A	08/31/99	09/01/99

09/13/99

RECRA LabNet Use Only
9908L821

ALL Custody Transfer Record/Lab Work Request

(8) [illegible] wet chem

RECRA LabNet

006

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 8/20/99 Date Due 9/19/99
Account # TNUHANFORD

Refrigerator #		1	6						6		6	6	6			
#/Type Container	Liquid															
	Solid	1g	1g						1g		1Pb	w/metals	1g			
Volume	Liquid															
	Solid	250	500	w/BNA		w/BNA			500		250		4tr			
Preservatives									-		-					
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	~~Pest~~ PCB	Herb				Metal	CN						

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

RECRA LabNet Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OG624H	OG625H	ORB		ORO			Met ①		IPH	ICRG	INORG ①	
001	BDW646			S	8/18/99	0924	✓	✓	✓		✓			✓		✓	✓	✓	
2	647					0930	✓	✓	✓		✓			✓		✓	✓	✓	
3	649					0946	✓	✓	✓		✓			✓		✓	✓	✓	
4	650					1003	✓	✓	✓		✓			✓		✓	✓	✓	
5	651					1015	✓	✓	✓		✓			✓		✓	✓	✓	
6	652					1030	✓	✓	✓		✓			✓		✓	✓	✓	
007	658					1046	✓	✓	✓		✓			✓		✓	✓	✓	
	COMPOSITE WASTE																		

[illegible] 8/21/99 sample broken upon receipt. Take aliquots from other jars.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Saf # B99-078

Run Matrix QC

DATE/REVISIONS:
1. Met ① = As, Ba, Be, Cd, Cr, Cu, Pb,
2. Ni, Se, Ag, V, Zn, Hg
3. INORG ① = IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ISFD, INH3N, ICNTD, ICSO4
5. K 423579528576 @ 4.1°C
6. K 423579528565 @ 4.3°C

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

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

Relinquished by	Received by	Date	Time
FedEx	[illegible]	8/20/99	

Relinquished by	Received by	Date	Time
ORIGINAL			
REWRITTEN			

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-56	Page 1 of 1

Collector: 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-4 <15' bgs 4.5'-5.5'	SAF No.: B99-078	
Ice Chest No.: ERC96-005	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA D7B 8-18-99	Offsite Property No.: A990221	Bill of Lading/Air Bill No.: 423579528565	
		COA: B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

621

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	0 ~~1~~ RJN 8/19/99	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										
B0W646 / Soil / 8-18-99 / 0924		X	X	X	X	X		B0W565		

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	Doug Bowers	8-18-99/1315	Received By	8-18-99/1315
Relinquished By	Ref# 1B	8/19/99 0900	Received By	R. Nielson 8/19/99 (0900)
Relinquished By	R. Nielson/R. Nielson	8/19/99 1330	Received By	FedEx
Relinquished By	FedEx		Received By	B Miller 8/20/99 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

* Note: Material necessary for Item (1) analysis to be extracted from other sample material provided

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	B99-078-57	Page 1 of 80

Collector 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-4 <15' bgs 7'-8'		SAF No. B99-078
Ice Chest No. ERC96-005	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA 8/20 8-20-99	Offsite Property No. A990221		Bill of Lading/Air Bill No. 423579528565
			COA 020CW 671C

Price Code 8N

Data Turnaround 45 Days

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										
B0W647	Soil	8-18-99	0930		X	X	X	X	X		B0W565		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers	Date/Time 8-18-99/1315	Received By Ref 1B	Date/Time 8-18-99/1315
Relinquished By Ref #1B	Date/Time 8/19/99 0900	Received By Rene Nieto/R. Nielson	Date/Time 0900 8/19/99
Relinquished By Rene Nieto/R. Nielson	Date/Time 8/19/99 1330	Received By FedEx	Date/Time
Relinquished By FedEx	Date/Time	Received By B Mulley	Date/Time 8/20/99

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

*Note: If additional sample material is required for Item (2) analysis use material from other sample material provided.

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	B99-078-58	Page 1 of 1

Collector 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-4 <15' bgs 9.5' - 10.5'		SAF No. B99-078
Ice Chest No. ERC96-005	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA DJB 8-18-99	Offsite Property No. AA90221		Bill of Lading/Air Bill No. 423579528565
			COA B28CW1 671C

Price Code 8N

Data Turnaround 45 Days

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										
B0W649	Soil	8-18-99	0946		X	X	X	X	X		BOWFLS		

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By Doug Bowers Date/Time Doug Bowers 8-18-99/1315	Received By Rob IB 8-18-99/1315 Date/Time	
Relinquished By Date/Time Rob IB 8/19/99 0900	Received By Date/Time R Nielson/R Nielson 8/19/99 0900	
Relinquished By Date/Time R Nielson/R Nielson 8/19/99 1330	Received By FedEx Date/Time	
Relinquished By Date/Time FedEx	Received By Date/Time B Milley 8/20/99 0830	

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	B99-078-59	Page 1 of 1

Collector 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-4 <15' bgs 12' - 13'		SAF No. B99-078		
Ice Chest No. ERC96-005	Field Logbook No. EL-1511		Method of Shipment Federal Express		
Shipped To TMA/RECRA 8-18-99	Offsite Property No. A990221		Bill of Lading/Air Bill No. 4235795285 65		
			COA B20CW 671C		

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										
B0W650	Soil	8-18-99	1003		X	X	X	X	X		Bowers		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers 8-18-99/1315	Date/Time	Received By Bef JB 8-18-99/1315	Date/Time
Relinquished By REF #1B 8/19/99	Date/Time 0900	Received By Rene Nielson/R Nielson 8/19/99	Date/Time 0900
Relinquished By Rene Nielson/R Nielson 8/19/99	Date/Time 1330	Received By FedEx	Date/Time
Relinquished By FedEx	Date/Time	Received By B Mulley	Date/Time 8/20/99 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

4908L821

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-60	Page 1 of 1

Collector 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-4 <15' bgs 14' - 15'		SAF No. B99-078
Ice Chest No. SML-552	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA 8-18-99	Offsite Property No. A990221		Bill of Lading/Air Bill No. 4235795285 76
			COA B20CW167C

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								
B0W651	Soil	8-18-99	1015		X	X	X	X	X		Bowers

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Date/Time Doug Bowers 8-18-99/1315	Received By Date/Time Ref 1B 8-18-99/1315		
Relinquished By Date/Time KEF #1B 8/19/99 0900	Received By Date/Time Kenneth Nielson/R. Nielson 8/19/99 0900		
Relinquished By Date/Time Kenneth Nielson/R. Nielson 8/19/99 1330	Received By Date/Time Fed Ex		
Relinquished By Date/Time FedEx	Received By Date/Time B Miller 8/20/99		
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed 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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-61	Page 1 of 1

Collector 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-4 >15' bgs 19.5' - 20.5'		SAF No. B99-078		
Ice Chest No. SML-552	Field Logbook No. EL-1511		Method of Shipment Federal Express		
Shipped To TMA/RECRA DAB 8-18-99	Offsite Property No. A990221		Bill of Lading/Air Bill No. 423579528576		
			COA B20CW1 67/C		

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
Special Handling and/or Storage	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										
B0W652	Soil / 8-18-99 / 1030					X	X	X	X	X	
											B0W5L5

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers 8-18-99/1315	Received By Bob B 8-18-99/1315		
Relinquished By Bob B 8/19/99 0900	Received By Kelly Nielson/R. Nielson 8/19/99 0900		
Relinquished By Kelly Nielson/R. Nielson 8/19/99 1232	Received By FedEx		
Relinquished By FedEx	Received By B Miller 8/20/99		

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	B99-078-62	Page 1 of 1

Collector 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-4 >15' bgs 24' -25'		SAF No. B99-078
Ice Chest No. SML-552	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA 8-18-99	Offsite Property No. A9902 21		Bill of Lading/Air Bill No. 4235795285 76
			COA B20 CW1 671C

Price Code 8N

Data Turnaround 45 Days

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
Special Handling and/or Storage	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										
B0W658	Soil / 8-18-99 / 1046					X	X	X	X	X	
											Bowles

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	Doug Bowers	8-18-99 / 1315	Received By	B.F. 1B 8-18-99 / 1315
Relinquished By	REF #1B	8/19/99 0900	Received By	Renee Nielson / R. Nielson 8/19/99 0900
Relinquished By	Renee Nielson / R. Nielson	8/19/99 1330	Received By	Fed Ex
Relinquished By	FedEx		Received By	B. Mullen 8/20/99 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# : 9908L821
SDG/SAF#: H0497/B99-078

W.O #: 10985-001-001-9999-00
Date Received: 08-20-99

DIESEL RANGE ORGANICS

The set of samples consisted of seven (7) soil samples collected on 08-18-99.

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. The 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

Pat EC

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-27-99
Date

R:\SHARE\LC\GCSCAN\08-821d.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 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 11:41

RFW Batch Number: **9908L821** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

003

	Cust ID:	B0W646	B0W646	B0W646	B0W647	B0W649	B0W650
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	52 %	73 %	59 %	57 %	54 %	71 %
Diesel Range Organics		4.2 U	66 %	61 %	4.3 U	4.2 U	4.2 U

	Cust ID:	B0W651	B0W652	B0W658	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	59 %	59 %	69 %	58 %	56 %
Diesel Range Organics		4.2 U	4.1 U	4.2 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.

9/22/99

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

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W646	001	S	99LE1045	08/18/99	08/28/99	09/15/99
B0W646	001 MS	S	99LE1045	08/18/99	08/28/99	09/15/99
B0W646	001 MSD	S	99LE1045	08/18/99	08/28/99	09/15/99
B0W647	002	S	99LE1045	08/18/99	08/28/99	09/15/99
B0W649	003	S	99LE1045	08/18/99	08/28/99	09/15/99
B0W650	004	S	99LE1045	08/18/99	08/28/99	09/15/99
B0W651	005	S	99LE1045	08/18/99	08/28/99	09/15/99
B0W652	006	S	99LE1045	08/18/99	08/28/99	09/15/99
B0W658	007	S	99LE1045	08/18/99	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

09/22/99

RECRA LabNet Use Only
99081821

ALL

Custody Transfer Record/Lab Work Request

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 30DAY
Date Rec'd 8/20/99 Date Due 9/19/99
Account # TNUHANFORD

Refrigerator #		1	6						6		6	6				005
#/Type Container	Liquid															
	Solid	1g	1g						1g		1Pb					
Volume	Liquid															
	Solid	250	500	w/Bug		w/Bug			500		250	w/preb				
Preservatives									-		-					
ANALYSES REQUESTED →	ORGANIC: VOA								INORG: Metal							
	BNA								CN							
	~~Pest~~/PCB															
	Herb															

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	8624H	8625H	CRB		ODRO		Met ①		IPH	ICRG	INORG ①	
001	BDW646			S	8/18/99	0924	✓	✓	✓		✓		✓		✓	✓	✓	
2	647					0930	✓	✓	✓		✓		✓		✓	✓	✓	
3	649					0946	✓	✓	✓		✓		✓		✓	✓	✓	
4	650					1003	✓	✓	✓		✓		✓		✓	✓	✓	
5	651					1015	✓	✓	✓		✓		✓		✓	✓	✓	
6	652					1030	✓	✓	✓		✓		✓		✓	✓	✓	
007	658					1046	✓	✓	✓		✓		✓		✓	✓	✓	

COMPOSITE WASTE

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
Soq # B99-078

Run Matrix QC

DATE/REVISIONS:
1. Met ① = As, Ba, Be, Cd, Cr, Cu, Pb,
2. Ni, Se, Ag, V, Zn, Hg
3. INORG ① = 1N3N2, 1CCL, 1CFL, 1CNO2, 1CNO3,
4. 1CPO4, 1SFD, 1NH3N, 1CNTO, 1CSO4
5. K 42357952857 6 @ 4.1°c
6. K 42357952856 5 @ 4.3°c

RECRA LabNet Use Only

Samples were:
1) Shipped X or
Hand Delivered ___
Airbill # K
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

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

Relinquished by	Received by	Date	Time
FedEx	B Miller	8/20/99	

Relinquished by	Received by	Date	Time
ORIGINAL			
REWRITTEN			

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-56	Page 1 of 1

Collector 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-4 <15' bgs 4.5'-5.5'		SAF No. B99-078
Ice Chest No. ERC96-005	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA 11 DJB 8-18-99	Offsite Property No. A990721		Bill of Lading/Air Bill No. 4235795285 65
			COA B20CW1 671C

Price Code 8N

Data Turnaround 45 Days

9000

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

621

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	0 RJN 8/19/99	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										
B0W646 / Soil / 8-18-99 / 0924		X	X	X	X	X		B0W525		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Date/Time 8-18-99/1315	Received By Ref 1B Date/Time 8-18-99/1315		
Relinquished By Ref# 1B 8/19/99 0900	Received By R. Nielson/R. Nielson 8/19/99 0900		
Relinquished By R. Nielson/R. Nielson 8/19/99 1330	Received By FedEx Date/Time		
Relinquished By FedEx Date/Time	Received By B Miller 8/20/99 0930		
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed 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

* Note: Material necessary for Item (1) analysis to be extracted from other sample material provided

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-57	Page 1 of 1

Collector 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-4 <15' bgs 7' - 8'		SAF No. B99-078		
Ice Chest No. ERC96-005	Field Logbook No. EL-1511		Method of Shipment Federal Express		
Shipped To TMA/RECRA B20 8-20-99	Offsite Property No. A990721		Bill of Lading/Air Bill No. 423579528565		
			COA D20CW7 671C		

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								
B0W647	Soil	8-18-99	0930		X	X	X	X	X		B0W565

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers	Date/Time 8-18-99/1315	Received By BofD	Date/Time 8-18-99/1315
Relinquished By Rec #1B	Date/Time 8/19/99 0900	Received By Renee Nielson/R. Nielson	Date/Time 0900 8/19/99
Relinquished By Renee Nielson/R. Nielson	Date/Time 8/19/99 1330	Received By FedEx	Date/Time
Relinquished By FedEx	Date/Time	Received By B Mulry	Date/Time 8/20/99
LABORATORY SECTION	Received By	Title	Date
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed 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

*Note: If additional sample material is required for item (2) analysis use material from other sample material provided.

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-58	Page 1 of 1

Collector 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-4 <15' bgs 9.5' - 10.5'		SAF No. B99-078		
Ice Chest No. ER-C96-005	Field Logbook No. EL-1511		Method of Shipment Federal Express		
Shipped To TMA/RECRA DJB 8-18-99	Offsite Property No. A990221		Bill of Lading/Air Bill No. 423579528565		
			COA B20CW1 671C		

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								
B0W649	Soil	8-18-99	0946		X	X	X	X	X		BOWS LS

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers 8-18-99/1315	Date/Time	Received By Rob IB 8-18-99/1315	Date/Time
Relinquished By Ref # IB 8/19/99 0900	Date/Time	Received By Renee Nielson/R Nielson 8/19/99 1400	Date/Time
Relinquished By Renee Nielson/R Nielson 8/19/99 1330	Date/Time	Received By FedEx	Date/Time
Relinquished By FedEx	Date/Time	Received By B Miller 8/20/99 0930	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	B99-078-59	Page 1 of 1

Collector 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-4 <15' bgs 12' - 13'	SAF No. B99-078	
Ice Chest No. ERC96-005	Field Logbook No. EL-1511	Method of Shipment Federal Express	
Shipped To TMA/RECRA 8-18-99	Offsite Property No. A990221	Bill of Lading/Air Bill No. 4235795285 65	
		COA B20CW671C	

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								
B0W650	Soil	8-18-99	1003		X	X	X	X	X		BOWS LS

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers	Date/Time 8-18-99/1315	Received By Bob B	Date/Time 8-18-99/1315
Relinquished By REF # 1B	Date/Time 8/19/99 0900	Received By Dave Nielson/R Nielson	Date/Time 8/19/99 0900
Relinquished By Dave Nielson/R Nielson	Date/Time 8/19/99 1330	Received By FedEx	Date/Time
Relinquished By FedEx	Date/Time	Received By B Mulley	Date/Time 8/20/99 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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-60	Page 1 of 1

Collector 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-4 <15' bgs 14' - 15'		SAF No. B99-078		
Ice Chest No. SML-552	Field Logbook No. EL-1511		Method of Shipment Federal Express		
Shipped To TMA/RECRA 8-18-99	Offsite Property No. A990221		Bill of Lading/Air Bill No. 4235795285 76		
			COA B20CW167C		

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										
B0W651	Soil	8-18-99	1015		X	X	X	X	X		BowsLS		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers	Date/Time 8-18-99/1315	Received By BCF 10	Date/Time 8-18-99/1315
Relinquished By KCF #1B	Date/Time 8/19/99 0900	Received By Kenel Nielson/R. Nielson	Date/Time 8/19/99 0900
Relinquished By Kenel Nielson/R. Nielson	Date/Time 8/19/99 1330	Received By Fed Ex	Date/Time
Relinquished By FedEx	Date/Time	Received By B Mullen	Date/Time 8/20/99

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	B99-078-61	Page 1 of 1

Collector 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-4 >15' bgs 19.5' – 20.5'		SAF No. B99-078
Ice Chest No. SML-552	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA DXB 8-18-99	Offsite Property No. A990221		Bill of Lading/Air Bill No. 42357952 8576
			COA B20CW1 67/C

Price Code 8N

Data Turnaround 45 Days

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
Special Handling and/or Storage	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										
B0W652	Soil	8-18-99	1030					X	X	X	X	X	
													B0W5L5

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers 8-18-99/1315	Date/Time	Received By B.O.B. 8-18-99/1315	Date/Time
Relinquished By B.O.B. #1B 8/19/99 0900	Date/Time	Received By Helen Nielson/R. Nielson 8/19/99	Date/Time 0900
Relinquished By Helen Nielson/R. Nielson 8/19/99	Date/Time 1330	Received By FedEx	Date/Time
Relinquished By FedEx	Date/Time	Received By B. Miller 8/20/99	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	B99-078-62	Page 1 of 1

Collector 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-4 >15' bgs 24' -25'		SAF No. B99-078		
Ice Chest No. SML-552	Field Logbook No. EL-1511		Method of Shipment Federal Express		
Shipped To TMA/RECRA 8-18-99	Offsite Property No. A9940221		Bill of Lading/Air Bill No. 4235795285 76		
			COA B20CW1 671C		

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
Special Handling and/or Storage	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										
B0W658	Soil / 8-18-99 / 1046					X	X	X	X	X	
											BowLS

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers 8-18-99	Date/Time 1315	Received By B.F. 1B 8-18-99	Date/Time 1315
Relinquished By REF #1B 8/19/99	Date/Time 0900	Received By Rene Nielson/R. Nielson	Date/Time 0900 8/19/99
Relinquished By Rene Nielson/R. Nielson 8/19/99	Date/Time 1330	Received By Fed Ex	Date/Time
Relinquished By FedEx	Date/Time	Received By B Mulley	Date/Time 8/20/99 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#: 9908L821
SDG/SAF#: H0497/B99-078

W.O.#: 10985-001-001-9999-00
Date Received: 08-20-99

PCB

The set of samples consisted of seven (7) soil samples collected on 08-18-99.

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 09-15,16-99. 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

for Steven D Weston
J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

09-27-99
Date

pef\r:\group\data\pest\08L-821.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 09:56

RFW Batch Number: **9908L821** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1

004

	Cust ID:	B0W646	B0W646	B0W646	B0W647	B0W649	B0W650
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	88 %	98 %	98 %	100 %	102 %	98 %
	Decachlorobiphenyl	86 %	93 %	94 %	94 %	100 %	96 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		36 U	36 U	36 U	35 U	34 U	35 U
Aroclor-1221		72 U	71 U	71 U	71 U	69 U	70 U
Aroclor-1232		36 U	36 U	36 U	35 U	34 U	35 U
Aroclor-1242		36 U	36 U	36 U	35 U	34 U	35 U
Aroclor-1248		36 U	36 U	36 U	35 U	34 U	35 U
Aroclor-1254		36 U	98 %	94 %	35 U	34 U	35 U
Aroclor-1260		36 U	36 U	36 U	35 U	34 U	35 U

	Cust ID:	B0W651	B0W652	B0W658	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 %	100 %	108 %	95 %	118 %
	Decachlorobiphenyl	102 %	96 %	104 %	93 %	114 %
		fl	fl	fl	fl	fl
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

09-20-99

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

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W646	001	S	99LE1024	08/18/99	08/25/99	09/15/99
B0W646	001 MS	S	99LE1024	08/18/99	08/25/99	09/15/99
B0W646	001 MSD	S	99LE1024	08/18/99	08/25/99	09/15/99
B0W647	002	S	99LE1024	08/18/99	08/25/99	09/15/99
B0W649	003	S	99LE1024	08/18/99	08/25/99	09/16/99
B0W650	004	S	99LE1024	08/18/99	08/25/99	09/16/99
B0W651	005	S	99LE1024	08/18/99	08/25/99	09/16/99
B0W652	006	S	99LE1024	08/18/99	08/25/99	09/16/99
B0W658	007	S	99LE1024	08/18/99	08/25/99	09/16/99

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

AJ 09-20-99

RECRA LabNet Use Only

99081821

ALL

(4) 1 wet chem

Custody Transfer Record/Lab Work Request

RECRA LabNet

006

Client: TNU-HANFORD B99-078
Est. Final Proj. Sampling Date
Project #: 10985-001-001-9999-00
Project Contact/Phone #: OJ
RECRA Project Manager: OJ
QC: SPEC Del: STD TAT: 30 DAY
Date Rec'd: 8/20/99 Date Due: 9/19/99
Account #: TNUHANFORD

Refrigerator #		1	6						6		6	6	6				
#/Type Container	Liquid																
	Solid	1g	1g	1g/bag					1g		1Pb	w/metals	1g				
Volume	Liquid																
	Solid	250	500			w/bag			500		250		4oz				
Preservatives									—		—						
ANALYSES REQUESTED		ORGANIC							INORG								
		VOA	BNA	~~Pest~~ PCB	Herb				Metal	CN							
RECRA LabNet Use Only		0624H	0625H	ORG		ODRO			Met ①		IPH	ICRG	INORG ①				

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625H	ORG		ODRO			Met ①		IPH	ICRG	INORG ①			
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EPT/CLP Leachate, WI - Wipe, X - Other, F - Fish	001	BOW646			S	8/18/99	0924	✓	✓	✓		✓			✓		✓	✓	✓			
	2	647					0930	✓	✓	✓		✓			✓		✓	✓	✓			
	3	649					0946	✓	✓	✓		✓			✓		✓	✓	✓			
	4	650					1003	✓	✓	✓		✓			✓		✓	✓	✓			
	5	651					1015	✓	✓	✓		✓			✓		✓	✓	✓			
	6	652					1030	✓	✓	✓		✓			✓		✓	✓	✓			
	007	658					1046	✓	✓	✓		✓			✓		✓	✓	✓			
		COMPOSITE WASTE																				

Pat Cook 8/21/99 sample broken upon receipt. Take aliquots from other jars.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

Saf # B99-078

Run Matrix QC

DATE/REVISIONS:

1. Met ① = As, Ba, Be, Cd, Cr, Cu, Pb,
2. Ni, Se, Ag, V, Zn, Hg
3. INORG ① = IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ISFD, IN3N, ICNTO, ICSO4
5. K 42357952857 6 @ 4.1°C
6. K 42357952856 5 @ 4.3°C

RECRA LabNet Use Only

Samples were:
1) Shipped X or
Hand Delivered ___
Airbill # K
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

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

Relinquished by	Received by	Date	Time
FedEx	BMiller	8/20/99	

Relinquished by	Received by	Date	Time
ORIGINAL			
REWRITTEN			

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-56	Page 1 of 1

Collector 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-4 <15' bgs 4.5'-5.5'	SAF No. B99-078	
Ice Chest No. ERC96-005	Field Logbook No. EL-1511	Method of Shipment Federal Express	
Shipped To TMA/RECRA DZB 8-18-99	Offsite Property No. A990221	Bill of Lading/Air Bill No. 4235795285 65	
		COA B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

621

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	0 RIN 8/19/99	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									
B0W646	Soil	8-18-99	0924		X	X	X	X	X		B0W565	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers	Date/Time 8-18-99/1315	Received By Ref 1B	Date/Time 8-18-99/1315
Relinquished By Ref# 1B	Date/Time 8/19/99 0900	Received By R. Nielson	Date/Time 8/19/99 0900
Relinquished By R. Nielson/R. Nielson	Date/Time 8/19/99 1330	Received By FedEx	Date/Time
Relinquished By FedEx	Date/Time	Received By B Miller	Date/Time 8/20/99 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

* Note: Material necessary for Item (1) analysis to be extracted from other sample material provided.

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	B99-078-57	Page 1 of 1

Collector: 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-4 <15' bgs 7' - 8'	SAF No.: B99-078	
Ice Chest No.: ERC96-005	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 8-18-99	Offsite Property No.: A990721	Bill of Lading/Air Bill No.: 4235795285 65	
		COA: D20CW7 671C	

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								
B0W647	Soil	8-18-99	0930		X	X	X	X	X		B0W545

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 8-18-99/1315	Received By: RCF 1D	Date/Time: 8-18-99/1315
Relinquished By: RCF #1B	Date/Time: 8/19/99 0900	Received By: Rene Nielson/R. Nielson	Date/Time: 0900 8/19/99
Relinquished By: Rene Nielson/R. Nielson	Date/Time: 8/19/99 1330	Received By: FedEx	Date/Time:
Relinquished By: FedEx	Date/Time:	Received By: [illegible]	Date/Time: 8/20/99
LABORATORY SECTION: Received By		Title	Date/Time
FINAL SAMPLE DISPOSITION: Disposal Method		Disposed 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

*Note: If additional sample material is required for Item (2) analysis use material from other sample material provided.

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-58	Page 1 of 1

Collector: 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-4 <15' bgs 9.5' - 10.5'	SAF No.: B99-078	
Ice Chest No.: ERC96-005	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA DJB 8-18-99	Offsite Property No.: A990221	Bill of Lading/Air Bill No.: 4235795285 65	
		COA: B20CW1 671C	

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								
B0W649	Soil	8-18-99	0946		X	X	X	X	X		Bowers

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 8-18-99 / 2315	Received By: Rob IB	Date/Time: 8-18-99 / 1315
Relinquished By: Rob IB	Date/Time: 8/19/99 0900	Received By: R Nielson / R Nielson	Date/Time: 8/19/99 0900
Relinquished By: R Nielson / R Nielson	Date/Time: 8/19/99 1330	Received By: FedEx	Date/Time:
Relinquished By: FedEx	Date/Time:	Received By: B Mulley	Date/Time: 8/20/99 0530

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	B99-078-59	Page 1 of 1

Collector 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-4 <15' bgs 12' - 13'		SAF No. B99-078
Ice Chest No. ERC96-005	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA 8-18-99	Offsite Property No. A0010221		Bill of Lading/Air Bill No. 4235795285 65
			COA B20CW 671C

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								
B0W650	Soil	8-18-99	1003		X	X	X	X	X		Bowers

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	8-18-99/1315	BOF 1B	8-18-99/1315
REF #1B	8/19/99 0900	Neil Nielson/R Nielson	8/19/99 0900
Neil Nielson/R Nielson	8/19/99 1330	FedEx	
FedEx		B Mulley	8/20/99 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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-60	Page 1 of 1

Collector: 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-4 <15' bgs 14' - 15'	SAF No.: B99-078	
Ice Chest No.: SML-552	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 8-18-99	Offsite Property No.: A990221	Bill of Lading/Air Bill No.: 4235795285 76	
		COA: B20CW167C	

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								
B0W651	Soil	8-18-99	1015		X	X	X	X	X		BOWSLS

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 8-18-99/1315	Received By: RCF 1B	Date/Time: 8-18-99/1315
Relinquished By: RCF #1B	Date/Time: 8/19/99 0900	Received By: Renee Nielson/R. Nielson	Date/Time: 8/19/99 0900
Relinquished By: Renee Nielson/R. Nielson	Date/Time: 8/19/99 1330	Received By: Fed Ex	Date/Time:
Relinquished By: FedEx	Date/Time:	Received By: [illegible]	Date/Time: 8/20/99

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	B99-078-61	Page 1 of 1

Collector 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-4 >15' bgs 19.5' - 20.5'		SAF No. B99-078
Ice Chest No. SML-552	Field Logbook No. EL-1511		Method of Shipment Federal Express
Shipped To TMA/RECRA 8-18-99	Offsite Property No. A990221		Bill of Lading/Air Bill No. 42357952 8576

Price Code 8N

Data Turnaround 45 Days

COA B20CW1 67/C

0012

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										
B0W652	Soil	8-18-99	1030					X	X	X	X	X	
													B0W5L5

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By Doug Bowers Doug Bowers 8-18-99/1315	Received By Bob 1B 8-18-99/1315	Date/Time
Relinquished By SEF #1B 8/19/99 0900	Received By Renee Nielson/R. Nielson 8/19/99	Date/Time 0900
Relinquished By Renee Nielson/R. Nielson 8/19/99 1330	Received By FedEx	Date/Time
Relinquished By FedEx	Received By B Miller 8/20/99	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	B99-078-62	Page 1 of 1

Collector: 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-4 >15' bgs 24' -25'	SAF No.: B99-078	
Ice Chest No.: SML-552	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 8-18-99	Offsite Property No.: A9A0221	Bill of Lading/Air Bill No.: 4235795285 76	
		COA: B20 CW1 671C	

013

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
Special Handling and/or Storage	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										
B0W658	Soil / 8-18-99 / 1046					X	X	X	X	X	
											Bowels

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	Doug Bowers	8-18-99 / 1315	Received By: B.F. 1B	8-18-99 / 1315
Relinquished By	Ref #1B	8/19/99 0900	Received By: Renee Nielson / R. Nielson	8/19/99 0900
Relinquished By	Renee Nielson / R. Nielson	8/19/99 1330	Received By: Fed Ex	
Relinquished By	FEDEX		Received By: B. Mulley	8/20/99 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# : 9908L821
SDG/SAF #: H0497/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 08-20-99

SEMIVOLATILE

Seven (7) soil samples were collected on 08-18-99.

The samples and their associated QC samples were extracted on 08-27-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 09-01,08-99.

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 temperatures upon receipt have 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\tnu08821.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.

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Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 09/18/99 15:10

RFW Batch Number: **9908L821** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0W646		B0W646		B0W646		B0W647		B0W649		B0W650	
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	70	%	71	%	66	%	71	%	68	%	69	%
	2-Fluorobiphenyl	71	%	71	%	63	%	66	%	74	%	69	%
	Terphenyl-d14	66	%	69	%	61	%	64	%	61	%	63	%
	Phenol-d5	69	%	72	%	63	%	72	%	69	%	69	%
	2-Fluorophenol	65	%	70	%	62	%	65	%	64	%	63	%
	2,4,6-Tribromophenol	55	%	57	%	52	%	54	%	50	%	51	%
			fl		fl		fl		fl		fl		fl
Phenol		360	U	68	%	59	%	360	U	340	U	340	U
bis(2-Chloroethyl)ether		360	U	360	U	360	U	360	U	340	U	340	U
2-Chlorophenol		360	U	69	%	58	%	360	U	340	U	340	U
1,3-Dichlorobenzene		360	U	360	U	360	U	360	U	340	U	340	U
1,4-Dichlorobenzene		360	U	67	%	61	%	360	U	340	U	340	U
1,2-Dichlorobenzene		360	U	360	U	360	U	360	U	340	U	340	U
2-Methylphenol		360	U	360	U	360	U	360	U	340	U	340	U
2,2'-oxybis(1-Chloropropane)		360	U	360	U	360	U	360	U	340	U	340	U
4-Methylphenol		360	U	360	U	360	U	360	U	340	U	340	U
N-Nitroso-di-n-propylamine		360	U	72	%	69	%	360	U	340	U	340	U
Hexachloroethane		360	U	360	U	360	U	360	U	340	U	340	U
Nitrobenzene		360	U	360	U	360	U	360	U	340	U	340	U
Isophorone		360	U	360	U	360	U	360	U	340	U	340	U
2-Nitrophenol		360	U	360	U	360	U	360	U	340	U	340	U
2,4-Dimethylphenol		360	U	360	U	360	U	360	U	340	U	340	U
bis(2-Chloroethoxy)methane		360	U	360	U	360	U	360	U	340	U	340	U
2,4-Dichlorophenol		360	U	360	U	360	U	360	U	340	U	340	U
1,2,4-Trichlorobenzene		360	U	77	%	73	%	360	U	340	U	340	U
Naphthalene		360	U	360	U	360	U	360	U	340	U	340	U
4-Chloroaniline		360	U	360	U	360	U	360	U	340	U	340	U
Hexachlorobutadiene		360	U	360	U	360	U	360	U	340	U	340	U
4-Chloro-3-methylphenol		360	U	54	%	54	%	360	U	340	U	340	U
2-Methylnaphthalene		360	U	360	U	360	U	360	U	340	U	340	U
Hexachlorocyclopentadiene		360	U	360	U	360	U	360	U	340	U	340	U
2,4,6-Trichlorophenol		360	U	360	U	360	U	360	U	340	U	340	U
2,4,5-Trichlorophenol		900	U	900	U	900	U	900	U	860	U	860	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0W646		B0W646		B0W646		B0W647		B0W649		B0W650	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	360	U	360	U	360	U	360	U	340	U	340	U
2-Nitroaniline	900	U	900	U	900	U	900	U	860	U	860	U
Dimethylphthalate	360	U	360	U	360	U	360	U	340	U	340	U
Acenaphthylene	360	U	360	U	360	U	360	U	340	U	340	U
2,6-Dinitrotoluene	360	U	360	U	360	U	360	U	340	U	340	U
3-Nitroaniline	900	U	900	U	900	U	900	U	860	U	860	U
Acenaphthene	360	U	68	%	60	%	360	U	340	U	340	U
2,4-Dinitrophenol	900	U	900	U	900	U	900	U	860	U	860	U
4-Nitrophenol	900	U	38	%	41	%	900	U	860	U	860	U
Dibenzofuran	360	U	360	U	360	U	360	U	340	U	340	U
2,4-Dinitrotoluene	360	U	54	%	61	%	360	U	340	U	340	U
Diethylphthalate	360	U	360	U	360	U	360	U	340	U	340	U
4-Chlorophenyl-phenylether	360	U	360	U	360	U	360	U	340	U	340	U
Fluorene	360	U	360	U	360	U	360	U	340	U	340	U
4-Nitroaniline	900	U	900	U	900	U	900	U	860	U	860	U
4,6-Dinitro-2-methylphenol	900	U	900	U	900	U	900	U	860	U	860	U
N-Nitrosodiphenylamine (1)	360	U	360	U	360	U	360	U	340	U	340	U
4-Bromophenyl-phenylether	360	U	360	U	360	U	360	U	340	U	340	U
Hexachlorobenzene	360	U	360	U	360	U	360	U	340	U	340	U
Pentachlorophenol	900	U	67	%	69	%	900	U	860	U	860	U
Phenanthrene	360	U	360	U	360	U	360	U	340	U	340	U
Anthracene	360	U	360	U	360	U	360	U	340	U	340	U
Carbazole	360	U	360	U	360	U	360	U	340	U	340	U
Di-n-butylphthalate	100	J	360	U	360	U	360	U	340	U	17	J
Fluoranthene	360	U	360	U	360	U	360	U	340	U	340	U
Pyrene	360	U	71	%	63	%	360	U	340	U	340	U
Butylbenzylphthalate	360	U	360	U	360	U	360	U	340	U	340	U
3,3'-Dichlorobenzidine	360	U	360	U	360	U	360	U	340	U	340	U
Benzo(a)anthracene	360	U	360	U	360	U	360	U	340	U	340	U
Chrysene	360	U	360	U	360	U	360	U	340	U	340	U
bis(2-Ethylhexyl)phthalate	59	J	360	U	360	U	360	U	340	U	340	U
Di-n-octyl phthalate	360	U	360	U	360	U	360	U	340	U	340	U
Benzo(b)fluoranthene	360	U	360	U	360	U	360	U	340	U	340	U
Benzo(k)fluoranthene	360	U	360	U	360	U	360	U	340	U	340	U
Benzo(a)pyrene	360	U	360	U	360	U	360	U	340	U	340	U
Indeno(1,2,3-cd)pyrene	360	U	360	U	360	U	360	U	340	U	340	U
Dibenz(a,h)anthracene	360	U	360	U	360	U	360	U	340	U	340	U
Benzo(g,h,i)perylene	360	U	360	U	360	U	360	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: 09/18/99 15:10

RFW Batch Number: **9908L821** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

	Cust ID:	B0W651		B0W652		B0W658		SBLKBW		SBLKBW BS	
Sample Information	RFW#:	005		006		007		99LE1041-MB1		99LE1041-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	66	%	69	%	67	%	81	%	81	%
	2-Fluorobiphenyl	66	%	70	%	63	%	73	%	74	%
	Terphenyl-d14	66	%	58	%	74	%	71	%	73	%
	Phenol-d5	72	%	70	%	70	%	69	%	70	%
	2-Fluorophenol	64	%	65	%	66	%	68	%	71	%
	2,4,6-Tribromophenol	45	%	43	%	49	%	63	%	71	%
Phenol		340	U	340	U	350	U	330	U	62	%
bis(2-Chloroethyl)ether		340	U	340	U	350	U	330	U	330	U
2-Chlorophenol		340	U	340	U	350	U	330	U	64	%
1,3-Dichlorobenzene		340	U	340	U	350	U	330	U	330	U
1,4-Dichlorobenzene		340	U	340	U	350	U	330	U	75	%
1,2-Dichlorobenzene		340	U	340	U	350	U	330	U	330	U
2-Methylphenol		340	U	340	U	350	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		340	U	340	U	350	U	330	U	330	U
4-Methylphenol		340	U	340	U	350	U	330	U	330	U
N-Nitroso-di-n-propylamine		340	U	340	U	350	U	330	U	88	%
Hexachloroethane		340	U	340	U	350	U	330	U	330	U
Nitrobenzene		340	U	340	U	350	U	330	U	330	U
Isophorone		340	U	340	U	350	U	330	U	330	U
2-Nitrophenol		340	U	340	U	350	U	330	U	330	U
2,4-Dimethylphenol		340	U	340	U	350	U	330	U	330	U
bis(2-Chloroethoxy)methane		340	U	340	U	350	U	330	U	330	U
2,4-Dichlorophenol		340	U	340	U	350	U	330	U	330	U
1,2,4-Trichlorobenzene		340	U	340	U	350	U	330	U	79	%
Naphthalene		340	U	340	U	350	U	330	U	330	U
4-Chloroaniline		340	U	340	U	350	U	330	U	330	U
Hexachlorobutadiene		340	U	340	U	350	U	330	U	330	U
4-Chloro-3-methylphenol		340	U	340	U	350	U	330	U	72	%
2-Methylnaphthalene		340	U	340	U	350	U	330	U	330	U
Hexachlorocyclopentadiene		340	U	340	U	350	U	330	U	330	U
2,4,6-Trichlorophenol		340	U	340	U	350	U	330	U	330	U
2,4,5-Trichlorophenol		860	U	840	U	870	U	840	U	840	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0W651		B0W652		B0W658		SBLKBW		SBLKBW BS	
RFW#:	005		006		007		99LE1041-MB1		99LE1041-MB1	
2-Chloronaphthalene	340	U	340	U	350	U	330	U	330	U
2-Nitroaniline	860	U	840	U	870	U	840	U	840	U
Dimethylphthalate	340	U	340	U	350	U	330	U	330	U
Acenaphthylene	340	U	340	U	350	U	330	U	330	U
2,6-Dinitrotoluene	340	U	340	U	350	U	330	U	330	U
3-Nitroaniline	860	U	840	U	870	U	840	U	840	U
Acenaphthene	340	U	340	U	350	U	330	U	70	%
2,4-Dinitrophenol	860	U	840	U	870	U	840	U	840	U
4-Nitrophenol	860	U	840	U	870	U	840	U	53	%
Dibenzofuran	340	U	340	U	350	U	330	U	330	U
2,4-Dinitrotoluene	340	U	340	U	350	U	330	U	76	%
Diethylphthalate	340	U	340	U	350	U	330	U	330	U
4-Chlorophenyl-phenylether	340	U	340	U	350	U	330	U	330	U
Fluorene	340	U	340	U	350	U	330	U	330	U
4-Nitroaniline	860	U	840	U	870	U	840	U	840	U
4,6-Dinitro-2-methylphenol	860	U	840	U	870	U	840	U	840	U
N-Nitrosodiphenylamine (1)	340	U	340	U	350	U	330	U	330	U
4-Bromophenyl-phenylether	340	U	340	U	350	U	330	U	330	U
Hexachlorobenzene	340	U	340	U	350	U	330	U	330	U
Pentachlorophenol	860	U	840	U	870	U	840	U	79	%
Phenanthrene	340	U	340	U	350	U	330	U	330	U
Anthracene	340	U	340	U	350	U	330	U	330	U
Carbazole	340	U	340	U	350	U	330	U	330	U
Di-n-butylphthalate	340	U	26	J	28	J	330	U	330	U
Fluoranthene	340	U	340	U	350	U	330	U	330	U
Pyrene	340	U	340	U	350	U	330	U	74	%
Butylbenzylphthalate	340	U	340	U	350	U	330	U	330	U
3,3'-Dichlorobenzidine	340	U	340	U	350	U	330	U	330	U
Benzo(a)anthracene	340	U	340	U	350	U	330	U	330	U
Chrysene	340	U	340	U	350	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	340	U	340	U	350	U	330	U	330	U
Di-n-octyl phthalate	340	U	340	U	350	U	330	U	330	U
Benzo(b)fluoranthene	340	U	340	U	350	U	330	U	330	U
Benzo(k)fluoranthene	340	U	340	U	350	U	330	U	330	U
Benzo(a)pyrene	340	U	340	U	350	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	340	U	340	U	350	U	330	U	330	U
Dibenz(a,h)anthracene	340	U	340	U	350	U	330	U	330	U
Benzo(g,h,i)perylene	340	U	340	U	350	U	330	U	330	U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W646

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L821-001

Sample wt/vol: 30.1 (g/mL) G Lab File ID: A090808

Level: (low/med) LOW Date Received: 08/20/99

% Moisture: 8 decanted: (Y/N) Date Extracted: 08/27/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/08/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 9 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	19.53	100	JB
2.	UNKNOWN	20.52	90	J
3.	UNKNOWN	20.88	100	J
4.	UNKNOWN	21.60	200	J
5.	UNKNOWN	21.88	200	JB
6.	ADIPATE	22.04	100	J
7.	UNKNOWN	22.57	500	J
8.	UNKNOWN	22.63	100	J
9.	ALKANE	24.73	100	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W647

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L821-002

Sample wt/vol: 30.4 (g/mL) G Lab File ID: A090811

Level: (low/med) LOW Date Received: 08/20/99

% Moisture: 8 decanted: (Y/N) __ Date Extracted: 08/27/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/08/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALDOL CONDENSATE	6.37	100	JA
2.	UNKNOWN	21.89	100	JB
3.	UNKNOWN	22.58	200	J
4.	UNKNOWN	22.63	200	J
5.	UNKNOWN	23.71	100	J
6.	ALKANE	24.73	200	J
7.	UNKNOWN	26.55	70	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W649

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L821-003

Sample wt/vol: 30.8 (g/mL) G Lab File ID: A090812

Level: (low/med) LOW Date Received: 08/20/99

% Moisture: 5 decanted: (Y/N) __ Date Extracted: 08/27/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/08/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.00

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

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	21.90	100	JB
2.	UNKNOWN	22.63	200	J
3.	UNKNOWN	24.15	100	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W650

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L821-004

Sample wt/vol: 30.9 (g/mL) G Lab File ID: A090813

Level: (low/med) LOW Date Received: 08/20/99

% Moisture: 6 decanted: (Y/N) __ Date Extracted: 08/27/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 09/08/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.00

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	21.89	100	JB
2.	UNKNOWN	22.59	70	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W651

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L821-005

Sample wt/vol: 30.8 (g/mL) G Lab File ID: A090814

Level: (low/med) LOW Date Received: 08/20/99

% Moisture: 5 decanted: (Y/N) __ Date Extracted: 08/27/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/08/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	20.89	80	J
2.	UNKNOWN	21.90	100	JB
3.	UNKNOWN	24.16	80	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W652

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L821-006

Sample wt/vol: 30.6 (g/mL) G Lab File ID: A090815

Level: (low/med) LOW Date Received: 08/20/99

% Moisture: 3 decanted: (Y/N) __ Date Extracted: 08/27/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/08/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	20.89	100	J
2.	UNKNOWN	21.90	100	JB
3.	UNKNOWN	22.65	70	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W658

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9908L821-007

Sample wt/vol: 30.3 (g/mL) G Lab File ID: A090816

Level: (low/med) LOW Date Received: 08/20/99

% Moisture: 5 decanted: (Y/N) __ Date Extracted: 08/27/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/08/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	20.90	100	J
2.	UNKNOWN	21.91	100	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKBW

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 99LE1041-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A090114

Level: (low/med) LOW Date Received: 08/27/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 08/27/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/01/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ORGANIC ACID	19.50	90	J
2.	UNKNOWN	21.86	70	J

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

DATE RECEIVED: 08/20/99 RFW LOT # :9908L821

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W646	001	S	99LE1041	08/18/99	08/27/99	09/08/99
B0W646	001 MS	S	99LE1041	08/18/99	08/27/99	09/08/99
B0W646	001 MSD	S	99LE1041	08/18/99	08/27/99	09/08/99
B0W647	002	S	99LE1041	08/18/99	08/27/99	09/08/99
B0W649	003	S	99LE1041	08/18/99	08/27/99	09/08/99
B0W650	004	S	99LE1041	08/18/99	08/27/99	09/08/99
B0W651	005	S	99LE1041	08/18/99	08/27/99	09/08/99
B0W652	006	S	99LE1041	08/18/99	08/27/99	09/08/99
B0W658	007	S	99LE1041	08/18/99	08/27/99	09/08/99

LAB QC:

SBLKBW	MB1	S	99LE1041	N/A	08/27/99	09/01/99
SBLKBW	MB1 BS	S	99LE1041	N/A	08/27/99	09/01/99

RECRA LabNet Use Only
99081821

ALL

(8) perrone wet chem

Custody Transfer Record/Lab Work Request

RECRA LabNet

Client: TNU-HANFORD B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: DJ
QC: SPEC Del.: STD TAT: 30DAY
Date Rec'd: 8/20/99 Date Due: 9/19/99
Account #: TNUHANFORD

Refrigerator #		1	6						6		6	6	6			
#/Type Container	Liquid															
	Solid	19	19						19		1AG	1g				
Volume	Liquid															
	Solid	250	500						500		250	4/metals				
Preservatives																

ANALYSES REQUESTED →

ORGANIC				INORG	
VOA	BNA	~~Pest~~ PCB	Herb	Metal	CN

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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	OG624H	OG625H	ORG		ODRO			Met ①		IPH	ICRG	INORG ①		
001	BXDW646			S	8/18/99	0924	✓	✓	✓		✓			✓		✓	✓	✓		
2	647					0930	✓	✓	✓		✓			✓		✓	✓	✓		
3	649					0946	✓	✓	✓		✓			✓		✓	✓	✓		
4	650					1003	✓	✓	✓		✓			✓		✓	✓	✓		
5	651					1015	✓	✓	✓		✓			✓		✓	✓	✓		
6	652					1030	✓	✓	✓		✓			✓		✓	✓	✓		
007	658					1046	✓	✓	✓		✓			✓		✓	✓	✓		

COMPOSITE WASTE

Pest logged 8/21/99

sample broken upon receipt. Take aliquots from other jars.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

Soq # B99-078

Run Matrix QC

DATE/REVISIONS:

1. Met ① = As, Ba, Be, Cd, Cr, Co, Pb,
2. Ni, Se, Ag, V, Zn, Hg
3. INORG ① = IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ISFD, INH3N, ICNTD, ICSO4
5. K 42357952 8576 @ 4.1°C
6. K 42357952 8565 @ 4.3°C

RECRA LabNet Use Only

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

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

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

Relinquished by	Received by	Date	Time
FedEx	CM Miller	8/20/99	

Relinquished by	Received by	Date	Time
ORIGINAL			
REWRITTEN			