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1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0534 is composed of eight 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 document. Any discrepancies are noted on the TNU Sample Receipt Checklists. The results were transmitted to BHI via facsimile on November 2, 1999 with the exception of Thorium and Nickel-63 which were faxed to BHI on November 4, 1999, Isotopic Plutonium and Americium-241 which were faxed to BHI on November 5, 1999, and Neptunium which was transmitted to BHI via fax on November 8, 1999.

2.0 ANALYSIS NOTES

2.1 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.2 Total and Isotopic Uranium Analyses

Isotopic analyses were to be based on the results from the total uranium analyses. Isotopic uranium was not requested for any samples in this SDG. No problems were encountered during the course of the analyses. The RPD in the duplicate result and the original result was 42%, greater than the 3 sigma total allowable RPD of 32%.

2.3 Gamma Spec Analyses

No problems were encountered during the course of the analyses though a recount was taken on sample BOWBR4.

2.4 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

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 though recounts were performed for samples B0WBR6, B0WBR7, B0WBR8, the QC blank and the duplicate.

2.9 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses. A recount was performed on the QC blank due to thorium-230 detected greater than the sample MDA but less than the RDL.

2.10 Neptunium-237 Analyses

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

SAMPLE SUMMARY

SDG 7212
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0534

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0WBR0	200 Bpond (B8758)<15'	SOLID		N909117-01	B99-078	B99-078-119	09/14/99 12:16
B0WBR1	200 Bpond (B8758)<15'	SOLID		N909117-02	B99-078	B99-078-119	09/14/99 13:00
B0WBR2	200 Bpond (B8758)<15'	SOLID		N909117-03	B99-078	B99-078-119	09/14/99 13:40
B0WBR4	200 Bpond (B8758)<15'	SOLID		N909117-04	B99-078	B99-078-119	09/14/99 15:10
B0WBR5	200 Bpond (B8758)>15'	SOLID		N909117-05	B99-078	B99-078-120	09/15/99 07:39
B0WBR6	200 Bpond (B8758)>15'	SOLID		N909117-06	B99-078	B99-078-120	09/15/99 08:34
B0WBR7	200 Bpond (B8758)>15'	SOLID		N909117-07	B99-078	B99-078-120	09/15/99 08:34
B0WBR8	200 Bpond (B8758)>15'	SOLID		N909117-08	B99-078	B99-078-121	09/15/99 09:45
Method Blank		SOLID		N909117-10	B99-078		
Lab Control Sample		SOLID		N909117-09	B99-078		
Duplicate (N909117-05)	200 Bpond (B8758)>15'	SOLID		N909117-11	B99-078		09/15/99 07:39

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SAMPLE DELIVERY GROUP H0534

QC SUMMARY

SDG 7212
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0534

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
7212	B99-078-119	B0WBR0	SOLID	91.9			09/17/99	3	N909117-01	7212-001
		B0WBR1	SOLID	93.7			09/17/99	3	N909117-02	7212-002
		B0WBR2	SOLID	97.3			09/17/99	3	N909117-03	7212-003
		B0WBR4	SOLID	97.5			09/17/99	3	N909117-04	7212-004
	B99-078-120	B0WBR5	SOLID	97.2			09/17/99	2	N909117-05	7212-005
		B0WBR6	SOLID	93.4			09/17/99	2	N909117-06	7212-006
		B0WBR7	SOLID	97.3			09/17/99	2	N909117-07	7212-007
	B99-078-121	B0WBR8	SOLID	91.8			09/17/99	2	N909117-08	7212-008
		Method Blank	SOLID						N909117-10	7212-010
		Lab Control Sample	SOLID						N909117-09	7212-009
		Duplicate (N909117-05)	SOLID	97.2			09/17/99	2	N909117-11	7212-011

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SAMPLE DELIVERY GROUP H0534

SDG 7212
Contact Kevin C. Johnson

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0534

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	6904-010	5.0	8			1	1	1/1		
NP	SOLID	Neptunium in Soil	6904-010	5.0	8			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6904-010	5.0	8			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6904-010	5.0	8			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6904-010	10.0	8			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6893-183	10.0	4			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6904-010	15.0	8			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6904-010	9.0	8			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6904-010	10.0	4			1	1	1/1		
NI_L	SOLID	Nickel 63 in Soil	6893-183	10.0	4			1	1	1/1		

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

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SAMPLE DELIVERY GROUP H0534

WORK SUMMARY

SDG 7212
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0534

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0WBR0			N909117-01	7212-001	AM		11/04/99	11/05/99	NJV	Americium 241 in Soil
200 Bpond (B8758)<15'		SOLID	09/14/99	7212-001	GAM		10/22/99	11/02/99	NJV	Gamma Scan
B99-078-119	B99-078		09/17/99	7212-001	NP		11/04/99	11/05/99	NJV	Neptunium in Soil
				7212-001	PU		11/04/99	11/05/99	NJV	Plutonium, Isotopic in Solids
				7212-001	SR		10/29/99	11/02/99	NJV	Total Strontium in Soil
				7212-001	TH		10/28/99	11/04/99	NJV	Thorium, Isotopic in Soil
				7212-001	U_T		10/18/99	11/02/99	NJV	Uranium, Total in Soil
B0WBR1			N909117-02	7212-002	AM		11/04/99	11/05/99	NJV	Americium 241 in Soil
200 Bpond (B8758)<15'		SOLID	09/14/99	7212-002	GAM		10/22/99	11/02/99	NJV	Gamma Scan
B99-078-119	B99-078		09/17/99	7212-002	NP		11/04/99	11/05/99	NJV	Neptunium in Soil
				7212-002	PU		11/04/99	11/05/99	NJV	Plutonium, Isotopic in Solids
				7212-002	SR		10/29/99	11/02/99	NJV	Total Strontium in Soil
				7212-002	TH		10/28/99	11/04/99	NJV	Thorium, Isotopic in Soil
				7212-002	U_T		10/18/99	11/02/99	NJV	Uranium, Total in Soil
B0WBR2			N909117-03	7212-003	AM		11/04/99	11/05/99	NJV	Americium 241 in Soil
200 Bpond (B8758)<15'		SOLID	09/14/99	7212-003	GAM		10/22/99	11/02/99	NJV	Gamma Scan
B99-078-119	B99-078		09/17/99	7212-003	NP		11/04/99	11/05/99	NJV	Neptunium in Soil
				7212-003	PU		11/04/99	11/05/99	NJV	Plutonium, Isotopic in Solids
				7212-003	SR		10/30/99	11/02/99	NJV	Total Strontium in Soil
				7212-003	TH		10/28/99	11/04/99	NJV	Thorium, Isotopic in Soil
				7212-003	U_T		10/18/99	11/02/99	NJV	Uranium, Total in Soil
B0WBR4			N909117-04	7212-004	AM		11/04/99	11/05/99	NJV	Americium 241 in Soil
200 Bpond (B8758)<15'		SOLID	09/14/99	7212-004	GAM		10/25/99	11/02/99	NJV	Gamma Scan
B99-078-119	B99-078		09/17/99	7212-004	NP		11/04/99	11/05/99	NJV	Neptunium in Soil
				7212-004	PU		11/04/99	11/05/99	NJV	Plutonium, Isotopic in Solids
				7212-004	SR		10/30/99	11/02/99	NJV	Total Strontium in Soil
				7212-004	TH		10/28/99	11/04/99	NJV	Thorium, Isotopic in Soil
				7212-004	U_T		10/18/99	11/02/99	NJV	Uranium, Total in Soil

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SAMPLE DELIVERY GROUP H0534

SDG 7212
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0534

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0WBR5			N909117-05	7212-005	AM		11/04/99	11/05/99	NJV	Americium 241 in Soil
200 Bpond (B8758)>15'		SOLID	09/15/99	7212-005	GAM		10/25/99	11/02/99	NJV	Gamma Scan
B99-078-120	B99-078		09/17/99	7212-005	H		10/26/99	11/02/99	NJV	Tritium in Soil
				7212-005	NI_L		10/30/99	11/04/99	NJV	Nickel 63 in Soil
				7212-005	NP		11/04/99	11/05/99	NJV	Neptunium in Soil
				7212-005	PU		11/04/99	11/05/99	NJV	Plutonium, Isotopic in Solids
				7212-005	SR		10/30/99	11/02/99	NJV	Total Strontium in Soil
				7212-005	TC		10/25/99	11/02/99	NJV	Technetium 99 in Soil
				7212-005	TH		10/28/99	11/04/99	NJV	Thorium, Isotopic in Soil
				7212-005	U_T		10/18/99	11/02/99	NJV	Uranium, Total in Soil
B0WBR6			N909117-06	7212-006	AM		11/04/99	11/05/99	NJV	Americium 241 in Soil
200 Bpond (B8758)>15'		SOLID	09/15/99	7212-006	GAM		10/25/99	11/02/99	NJV	Gamma Scan
B99-078-120	B99-078		09/17/99	7212-006	H		10/27/99	11/02/99	NJV	Tritium in Soil
				7212-006	NI_L		10/30/99	11/04/99	NJV	Nickel 63 in Soil
				7212-006	NP		11/04/99	11/05/99	NJV	Neptunium in Soil
				7212-006	PU		11/04/99	11/05/99	NJV	Plutonium, Isotopic in Solids
				7212-006	SR		10/30/99	11/02/99	NJV	Total Strontium in Soil
				7212-006	TC		10/28/99	11/02/99	NJV	Technetium 99 in Soil
				7212-006	TH		10/28/99	11/04/99	NJV	Thorium, Isotopic in Soil
				7212-006	U_T		10/18/99	11/02/99	NJV	Uranium, Total in Soil
B0WBR7			N909117-07	7212-007	AM		11/04/99	11/05/99	NJV	Americium 241 in Soil
200 Bpond (B8758)>15'		SOLID	09/15/99	7212-007	GAM		10/25/99	11/02/99	NJV	Gamma Scan
B99-078-120	B99-078		09/17/99	7212-007	H		10/27/99	11/02/99	NJV	Tritium in Soil
				7212-007	NI_L		10/30/99	11/04/99	NJV	Nickel 63 in Soil
				7212-007	NP		11/04/99	11/05/99	NJV	Neptunium in Soil
				7212-007	PU		11/04/99	11/05/99	NJV	Plutonium, Isotopic in Solids
				7212-007	SR		10/30/99	11/02/99	NJV	Total Strontium in Soil
				7212-007	TC		10/27/99	11/02/99	NJV	Technetium 99 in Soil
				7212-007	TH		10/28/99	11/04/99	NJV	Thorium, Isotopic in Soil
				7212-007	U_T		10/18/99	11/02/99	NJV	Uranium, Total in Soil

Lab id TMANC
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SAMPLE DELIVERY GROUP H0534

SDG 7212
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0534

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0WBR8			N909117-08	7212-008	AM		11/04/99	11/05/99	NJV	Americium 241 in Soil
200 Bpond (B8758)>15'		SOLID	09/15/99	7212-008	GAM		10/26/99	11/02/99	NJV	Gamma Scan
B99-078-121	B99-078		09/17/99	7212-008	H		10/27/99	11/02/99	NJV	Tritium in Soil
				7212-008	NI_L		10/30/99	11/04/99	NJV	Nickel 63 in Soil
				7212-008	NP		11/04/99	11/05/99	NJV	Neptunium in Soil
				7212-008	PU		11/04/99	11/05/99	NJV	Plutonium, Isotopic in Solids
				7212-008	SR		10/30/99	11/02/99	NJV	Total Strontium in Soil
				7212-008	TC		10/27/99	11/02/99	NJV	Technetium 99 in Soil
				7212-008	TH		10/28/99	11/04/99	NJV	Thorium, Isotopic in Soil
				7212-008	U_T		10/18/99	11/02/99	NJV	Uranium, Total in Soil
Method Blank			N909117-10	7212-010	AM		11/04/99	11/05/99	NJV	Americium 241 in Soil
		SOLID		7212-010	GAM		10/26/99	11/02/99	NJV	Gamma Scan
	B99-078			7212-010	H		10/26/99	11/02/99	NJV	Tritium in Soil
				7212-010	NI_L		10/30/99	11/04/99	NJV	Nickel 63 in Soil
				7212-010	NP		11/08/99	11/08/99	NJV	Neptunium in Soil
				7212-010	PU		11/04/99	11/05/99	NJV	Plutonium, Isotopic in Solids
				7212-010	SR		10/30/99	11/02/99	NJV	Total Strontium in Soil
				7212-010	TC		10/23/99	11/02/99	NJV	Technetium 99 in Soil
				7212-010	TH		11/02/99	11/04/99	NJV	Thorium, Isotopic in Soil
				7212-010	U_T		10/18/99	11/02/99	NJV	Uranium, Total in Soil
Lab Control Sample			N909117-09	7212-009	AM		11/04/99	11/05/99	NJV	Americium 241 in Soil
		SOLID		7212-009	GAM		10/26/99	11/02/99	NJV	Gamma Scan
	B99-078			7212-009	H		10/27/99	11/02/99	NJV	Tritium in Soil
				7212-009	NI_L		10/30/99	11/04/99	NJV	Nickel 63 in Soil
				7212-009	NP		11/06/99	11/08/99	NJV	Neptunium in Soil
				7212-009	PU		11/04/99	11/05/99	NJV	Plutonium, Isotopic in Solids
				7212-009	SR		10/30/99	11/02/99	NJV	Total Strontium in Soil
				7212-009	TC		10/22/99	11/02/99	NJV	Technetium 99 in Soil
				7212-009	TH		10/28/99	11/04/99	NJV	Thorium, Isotopic in Soil
				7212-009	U_T		10/18/99	11/02/99	NJV	Uranium, Total in Soil

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SAMPLE DELIVERY GROUP H0534

SDG 7212
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0534

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (N909117-05)			N909117-11	7212-011	AM		11/04/99	11/05/99	NJV	Americium 241 in Soil
200 Bpond (B8758)>15'		SOLID	09/15/99	7212-011	GAM		10/26/99	11/02/99	NJV	Gamma Scan
	B99-078		09/17/99	7212-011	H		10/27/99	11/02/99	NJV	Tritium in Soil
				7212-011	NI_L		10/30/99	11/04/99	NJV	Nickel 63 in Soil
				7212-011	NP		11/06/99	11/08/99	NJV	Neptunium in Soil
				7212-011	PU		11/04/99	11/05/99	NJV	Plutonium, Isotopic in Solids
				7212-011	SR		10/30/99	11/02/99	NJV	Total Strontium in Soil
				7212-011	TC		10/23/99	11/02/99	NJV	Technetium 99 in Soil
				7212-011	TH		10/28/99	11/04/99	NJV	Thorium, Isotopic in Soil
				7212-011	U_T		10/18/99	11/02/99	NJV	Uranium, Total 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	8			1	1	1	11
GAM	B99-078	Gamma Scan	GAMMAHI	8			1	1	1	11
H	B99-078	Tritium in Soil	EPA906.0	4			1	1	1	7
NI_L	B99-078	Nickel 63 in Soil	NI63LSC	4			1	1	1	7
NP	B99-078	Neptunium in Soil	NP237PLATE	8			1	1	1	11
PU	B99-078	Plutonium, Isotopic in Solids	PUPLATE	8			1	1	1	11
SR	B99-078	Total Strontium in Soil	SRTOTAL	8			1	1	1	11
TC	B99-078	Technetium 99 in Soil	TC99TRLSC	4			1	1	1	7
TH	B99-078	Thorium, Isotopic in Soil	THPLATE	8			1	1	1	11
U_T	B99-078	Uranium, Total in Soil	UKPA	8			1	1	1	11
TOTALS				68			10	10	10	98

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SAMPLE DELIVERY GROUP H0534

N909117-10

Method Blank

METHOD BLANK

SDG	7212	Client/Case no	Hanford	SDG H0534	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909117-10	Client sample id	Method Blank		
Dept sample id	7212-010	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	-0.009	0.049	0.084	400	U	H
Technetium 99	14133-76-7	0.125	0.25	0.54	15	U	TC
Neptunium 237	13994-20-2	0	0.036	0.074		U	NP
Total Uranium (ug/g)	7440-61-1	0	0.002	0.005	1.0	U	U_T
Plutonium 238	13981-16-3	0.011	0.032	0.058	1.0	U	PU
Plutonium 239/240	PU-239/240	0.011	0.032	0.058	1.0	U	PU
Nickel 63	13981-37-8	-0.384	1.2	2.1	30	U	NI_L
Americium 241	14596-10-2	0.007	0.015	0.028	1.0	U	AM
Total Strontium	SR-RAD	-0.044	0.14	0.20	1.0	U	SR
Thorium 228	14274-82-9	-0.014	0.067	0.15	1.0	U	TH
Thorium 230	14269-63-7	0.262	0.12	0.16	1.0	J	TH
Thorium 232	TH-232	0.040	0.040	0.051	1.0	U	TH
Potassium 40	13966-00-2	U		0.61		U	GAM
Cobalt 60	10198-40-0	U		0.033	0.050	U	GAM
Cesium 137	10045-97-3	U		0.037	0.10	U	GAM
Europium 152	14683-23-9	U		0.093	0.10	U	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Europium 155	14391-16-3	U		0.084	0.10	U	GAM
Radium 226	13982-63-3	U		0.067	0.10	U	GAM
Radium 228	15262-20-1	U		0.16	0.20	U	GAM
Thorium 228	14274-82-9	U		0.052		U	GAM
Thorium 232	TH-232	U		0.16		U	GAM
Americium 241	14596-10-2	U		0.091		U	GAM
Uranium 238	U-238	U		4.3		U	GAM
Uranium 235	15117-96-1	U		0.13		U	GAM

200 Area Source chrctztn-200-CW-1 OU

QC-BLANK 32081

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

N909117-09

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7212

Contact Kevin C. Johnson

Client/Case no Hanford SDG H0534

Case no TRB-SBB-207925

Lab sample id N909117-09

Dept sample id 7212-009

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	5.21	0.28	0.18	400	J	H	5.32	0.21	98	82-118	80-120
Technetium 99	53.7	1.5	0.60	15		TC	55.0	2.2	98	84-116	80-120
Neptunium 237	10.4	0.71	0.048			NP	10.6	0.42	98	86-114	
Total Uranium (ug/g)	32.0	3.8	0.050	1.0		U_T	33.0	1.3	97	78-122	80-120
Plutonium 238	11.9	1.7	0.16	1.0		PU	12.5	0.50	95	78-122	80-120
Plutonium 239/240	12.8	1.8	0.10	1.0		PU	13.2	0.53	97	77-123	80-120
Nickel 63	150	3.6	2.2	30		NI_L	147	5.9	102	83-117	
Americium 241	9.44	0.66	0.041	1.0		AM	9.58	0.38	99	86-114	80-120
Total Strontium	12.3	0.67	0.28	1.0		SR	11.3	0.45	109	80-120	
Thorium 230	22.4	1.2	0.17	1.0	B	TH	22.4	0.90	100	87-113	
Cobalt 60	1.45	0.071	0.032	0.050		GAM	1.60	0.064	91	78-122	80-120
Cesium 137	1.68	0.061	0.035	0.10		GAM	1.74	0.070	97	77-123	80-120

200 Area Source chrctztn-200-CW-1 OU

QC-LCS 32080

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

N909117-11

B0WBR5

DUPLICATE

SDG	7212			Client/Case no	Hanford SDG H0534
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL			
Lab sample id	N909117-11	Lab sample id	N909117-05	Client sample id	B0WBR5
Dept sample id	7212-011	Dept sample id	7212-005	Location/Matrix	200 Bpond (B8758)>15' SOLID
		Received	09/17/99	Collected	09/15/99 07:39
% solids	97.2	% solids	97.2	Custody/SAF No	B99-078-120 B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Tritium	-0.003	0.050	0.085	400	U	H	-0.033	0.047	0.082	U	-	
Technetium 99	0.038	0.33	0.42	15	U	TC	-0.026	0.16	0.47	U	-	
Neptunium 237	-0.005	0.019	0.052		U	NP	0.005	0.019	0.046	U	-	
Total Uranium (ug/g)	0.479	0.055	0.005	1.0	J	U_T	0.314	0.036	0.005	J	42	32
Plutonium 238	0.009	0.018	0.033	1.0	U	PU	0.010	0.019	0.046	U	-	
Plutonium 239/240	0.006	0.012	0.029	1.0	U	PU	0	0.019	0.053	U	-	
Nickel 63	0.415	1.5	2.5	30	U	NI_L	0.292	1.6	2.6	U	-	
Americium 241	-0.013	0.025	0.052	1.0	U	AM	0.012	0.023	0.043	U	-	
Total Strontium	25.3	1.4	0.85	1.0		SR	24.8	0.51	0.15		2	23
Thorium 228	0.482	0.13	0.14	1.0	J	TH	0.392	0.13	0.12	J	21	64
Thorium 230	0.622	0.16	0.16	1.0	JB	TH	0.729	0.17	0.14	JB	16	53
Thorium 232	0.392	0.10	0.057	1.0	J	TH	0.337	0.11	0.075	J	15	62
Potassium 40	9.58	0.50	0.25			GAM	9.23	0.67	0.36		4	35
Cobalt 60	U		0.025	0.050	U	GAM	U		0.044	U	-	
Cesium 137	U		0.021	0.10	U	GAM	U		0.033	U	-	
Europium 152	U		0.060	0.10	U	GAM	U		0.080	U	-	
Europium 154	U		0.083	0.10	U	GAM	U		0.13	U	-	
Europium 155	U		0.067	0.10	U	GAM	U		0.067	U	-	
Radium 226	0.272	0.050	0.047	0.10		GAM	0.314	0.068	0.067		14	54
Radium 228	0.532	0.12	0.11	0.20		GAM	0.469	0.15	0.15		13	66
Thorium 228	0.395	0.030	0.030			GAM	0.520	0.053	0.052		27	38
Thorium 232	0.532	0.12	0.11			GAM	0.469	0.15	0.15		13	66
Americium 241	U		0.069		U	GAM	U		0.049	U	-	
Uranium 238	U		3.1		U	GAM	U		4.8	U	-	
Uranium 235	U		0.10		U	GAM	U		0.11	U	-	

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

N909117-11

B0WBR5

DUPLICATE, cont.

SDG	7212			Client/Case no	Hanford SDG H0534
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N909117-11	Lab sample id	N909117-05	Client sample id	B0WBR5
Dept sample id	7212-011	Dept sample id	7212-005	Location/Matrix	200 Ppond (B8758)>15' SOLID
		Received	09/17/99	Collected	09/15/99 07:39
% solids	97.2	% solids	97.2	Custody/SAF No	B99-078-120 B99-078

QC-DUP#5 32082

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

N909117-01 B0WBR0

DATA SHEET

SDG	7212	Client/Case no	Hanford SDG H0534
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909117-01	Client sample id	B0WBR0
Dept sample id	7212-001	Location/Matrix	200 Bpond (B8758)<15' SOLID
Received	09/17/99	Collected	09/14/99 12:16
% solids	91.9	Custody/SAF No	B99-078-119 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Neptunium 237	13994-20-2	0.003	0.012	0.030		U	NP
Total Uranium (ug/g)	7440-61-1	0.532	0.061	0.005	1.0	J	U_T
Plutonium 238	13981-16-3	0	0.017	0.048	1.0	U	PU
Plutonium 239/240	PU-239/240	0.969	0.15	0.054	1.0	J	PU
Americium 241	14596-10-2	0.073	0.073	0.10	1.0	U	AM
Total Strontium	SR-RAD	0.827	0.16	0.18	1.0	J	SR
Thorium 228	14274-82-9	0.808	0.18	0.12	1.0	J	TH
Thorium 230	14269-63-7	0.840	0.20	0.14	1.0	JB	TH
Thorium 232	TH-232	0.791	0.17	0.062	1.0	J	TH
Potassium 40	13966-00-2	11.5	1.0	0.65			GAM
Cobalt 60	10198-40-0	U		0.055	0.050	U	GAM
Cesium 137	10045-97-3	7.47	0.15	0.064	0.10		GAM
Europium 152	14683-23-9	U		0.17	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Europium 155	14391-16-3	U		0.097	0.10	U	GAM
Radium 226	13982-63-3	0.568	0.11	0.11	0.10		GAM
Radium 228	15262-20-1	1.02	0.25	0.21	0.20		GAM
Thorium 228	14274-82-9	0.678	0.067	0.079			GAM
Thorium 232	TH-232	1.02	0.25	0.21			GAM
Americium 241	14596-10-2	U		0.067		U	GAM
Uranium 238	U-238	U		6.6		U	GAM
Uranium 235	15117-96-1	U		0.18		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

N909117-02

B0WBR1

DATA SHEET

SDG	7212	Client/Case no	Hanford	SDG H0534	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909117-02	Client sample id	B0WBR1		
Dept sample id	7212-002	Location/Matrix	200 Bpond (B8758)<15'	SOLID	
Received	09/17/99	Collected	09/14/99 13:00		
% solids	93.7	Custody/SAF No	B99-078-119	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Neptunium 237	13994-20-2	0.003	0.023	0.042		U	NP
Total Uranium (ug/g)	7440-61-1	0.464	0.053	0.005	1.0	J	U_T
Plutonium 238	13981-16-3	0	0.017	0.047	1.0	U	PU
Plutonium 239/240	PU-239/240	0.224	0.069	0.047	1.0	J	PU
Americium 241	14596-10-2	0	0.038	0.091	1.0	U	AM
Total Strontium	SR-RAD	3.88	0.27	0.18	1.0		SR
Thorium 228	14274-82-9	0.699	0.16	0.12	1.0	J	TH
Thorium 230	14269-63-7	1.13	0.21	0.15	1.0	B	TH
Thorium 232	TH-232	0.562	0.15	0.061	1.0	J	TH
Potassium 40	13966-00-2	9.88	0.86	0.52			GAM
Cobalt 60	10198-40-0	U		0.044	0.050	U	GAM
Cesium 137	10045-97-3	2.20	0.086	0.059	0.10		GAM
Europium 152	14683-23-9	U		0.12	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Radium 226	13982-63-3	0.463	0.094	0.10	0.10		GAM
Radium 228	15262-20-1	0.619	0.17	0.17	0.20		GAM
Thorium 228	14274-82-9	0.526	0.056	0.055			GAM
Thorium 232	TH-232	0.619	0.17	0.17			GAM
Americium 241	14596-10-2	U		0.11		U	GAM
Uranium 238	U-238	U		4.7		U	GAM
Uranium 235	15117-96-1	U		0.16		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

N909117-03 B0WBR2

DATA SHEET

SDG	7212	Client/Case no	Hanford SDG H0534
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909117-03	Client sample id	B0WBR2
Dept sample id	7212-003	Location/Matrix	200 Bpond (B8758)<15' SOLID
Received	09/17/99	Collected	09/14/99 13:40
% solids	97.3	Custody/SAF No	B99-078-119 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Neptunium 237	13994-20-2	0	0.020	0.077		U	NP
Total Uranium (ug/g)	7440-61-1	0.419	0.048	0.005	1.0	J	U_T
Plutonium 238	13981-16-3	-0.009	0.017	0.052	1.0	U	PU
Plutonium 239/240	PU-239/240	0.030	0.034	0.052	1.0	U	PU
Americium 241	14596-10-2	0.005	0.029	0.053	1.0	U	AM
Total Strontium	SR-RAD	18.1	0.45	0.16	1.0		SR
Thorium 228	14274-82-9	0.421	0.13	0.13	1.0	J	TH
Thorium 230	14269-63-7	0.491	0.16	0.14	1.0	JB	TH
Thorium 232	TH-232	0.358	0.11	0.096	1.0	J	TH
Potassium 40	13966-00-2	8.66	0.41	0.20			GAM
Cobalt 60	10198-40-0	U		0.020	0.050	U	GAM
Cesium 137	10045-97-3	U		0.023	0.10	U	GAM
Europium 152	14683-23-9	U		0.051	0.10	U	GAM
Europium 154	15585-10-1	U		0.066	0.10	U	GAM
Europium 155	14391-16-3	U		0.052	0.10	U	GAM
Radium 226	13982-63-3	0.276	0.044	0.042	0.10		GAM
Radium 228	15262-20-1	0.466	0.10	0.093	0.20		GAM
Thorium 228	14274-82-9	0.406	0.026	0.025			GAM
Thorium 232	TH-232	0.466	0.10	0.093			GAM
Americium 241	14596-10-2	U		0.054		U	GAM
Uranium 238	U-238	U		2.6		U	GAM
Uranium 235	15117-96-1	U		0.088		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

N909117-04 B0WBR4

DATA SHEET

SDG	7212	Client/Case no	Hanford SDG H0534
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909117-04	Client sample id	B0WBR4
Dept sample id	7212-004	Location/Matrix	200 Bpond (B8758)<15' SOLID
Received	09/17/99	Collected	09/14/99 15:10
% solids	97.5	Custody/SAF No	B99-078-119 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Neptunium 237	13994-20-2	0.004	0.023	0.047		U	NP
Total Uranium (ug/g)	7440-61-1	0.181	0.021	0.005	1.0	J	U_T
Plutonium 238	13981-16-3	0	0.008	0.031	1.0	U	PU
Plutonium 239/240	PU-239/240	0.033	0.025	0.031	1.0	J	PU
Americium 241	14596-10-2	-0.018	0.027	0.060	1.0	U	AM
Total Strontium	SR-RAD	21.8	0.48	0.15	1.0		SR
Thorium 228	14274-82-9	0.468	0.15	0.17	1.0	J	TH
Thorium 230	14269-63-7	0.574	0.17	0.18	1.0	JB	TH
Thorium 232	TH-232	0.429	0.12	0.059	1.0	J	TH
Potassium 40	13966-00-2	8.11	0.47	0.26			GAM
Cobalt 60	10198-40-0	U		0.024	0.050	U	GAM
Cesium 137	10045-97-3	U		0.023	0.10	U	GAM
Europium 152	14683-23-9	U		0.058	0.10	U	GAM
Europium 154	15585-10-1	U		0.080	0.10	U	GAM
Europium 155	14391-16-3	U		0.064	0.10	U	GAM
Radium 226	13982-63-3	0.302	0.048	0.046	0.10		GAM
Radium 228	15262-20-1	0.468	0.11	0.098	0.20		GAM
Thorium 228	14274-82-9	0.372	0.029	0.029			GAM
Thorium 232	TH-232	0.468	0.11	0.098			GAM
Americium 241	14596-10-2	U		0.066		U	GAM
Uranium 238	U-238	U		2.9		U	GAM
Uranium 235	15117-96-1	U		0.095		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

N909117-05 B0WBR5

DATA SHEET

SDG	7212	Client/Case no	Hanford SDG H0534
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909117-05	Client sample id	B0WBR5
Dept sample id	7212-005	Location/Matrix	200 Bpond (B8758)>15' SOLID
Received	09/17/99	Collected	09/15/99 07:39
% solids	97.2	Custody/SAF No	B99-078-120 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.033	0.047	0.082	400	U	H
Technetium 99	14133-76-7	-0.026	0.16	0.47	15	U	TC
Neptunium 237	13994-20-2	0.005	0.019	0.046		U	NP
Total Uranium (ug/g)	7440-61-1	0.314	0.036	0.005	1.0	J	U_T
Plutonium 238	13981-16-3	0.010	0.019	0.046	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.019	0.053	1.0	U	PU
Nickel 63	13981-37-8	0.292	1.6	2.6	30	U	NI_L
Americium 241	14596-10-2	0.012	0.023	0.043	1.0	U	AM
Total Strontium	SR-RAD	24.8	0.51	0.15	1.0		SR
Thorium 228	14274-82-9	0.392	0.13	0.12	1.0	J	TH
Thorium 230	14269-63-7	0.729	0.17	0.14	1.0	JB	TH
Thorium 232	TH-232	0.337	0.11	0.075	1.0	J	TH
Potassium 40	13966-00-2	9.23	0.67	0.36			GAM
Cobalt 60	10198-40-0	U		0.044	0.050	U	GAM
Cesium 137	10045-97-3	U		0.033	0.10	U	GAM
Europium 152	14683-23-9	U		0.080	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.067	0.10	U	GAM
Radium 226	13982-63-3	0.314	0.068	0.067	0.10		GAM
Radium 228	15262-20-1	0.469	0.15	0.15	0.20		GAM
Thorium 228	14274-82-9	0.520	0.053	0.052			GAM
Thorium 232	TH-232	0.469	0.15	0.15			GAM
Americium 241	14596-10-2	U		0.049		U	GAM
Uranium 238	U-238	U		4.8		U	GAM
Uranium 235	15117-96-1	U		0.11		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

N909117-06 B0WBR6

DATA SHEET

SDG	7212	Client/Case no	Hanford	SDG H0534	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909117-06	Client sample id	B0WBR6		
Dept sample id	7212-006	Location/Matrix	200 Bpond (B8758)>15'	SOLID	
Received	09/17/99	Collected	09/15/99 08:34		
% solids	93.4	Custody/SAF No	B99-078-120	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.005	0.050	0.084	400	U	H
Technetium 99	14133-76-7	-0.107	0.11	0.42	15	U	TC
Neptunium 237	13994-20-2	-0.007	0.015	0.046		U	NP
Total Uranium (ug/g)	7440-61-1	0.480	0.055	0.005	1.0	J	U_T
Plutonium 238	13981-16-3	0.005	0.019	0.037	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.010	0.036	1.0	U	PU
Nickel 63	13981-37-8	-0.909	1.7	2.8	30	U	NI_L
Americium 241	14596-10-2	-0.008	0.016	0.037	1.0	U	AM
Total Strontium	SR-RAD	19.7	0.47	0.16	1.0		SR
Thorium 228	14274-82-9	0.306	0.12	0.13	1.0	J	TH
Thorium 230	14269-63-7	0.596	0.17	0.17	1.0	JB	TH
Thorium 232	TH-232	0.336	0.11	0.058	1.0	J	TH
Potassium 40	13966-00-2	8.82	0.75	0.45			GAM
Cobalt 60	10198-40-0	U		0.038	0.050	U	GAM
Cesium 137	10045-97-3	U		0.035	0.10	U	GAM
Europium 152	14683-23-9	U		0.092	0.10	U	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Europium 155	14391-16-3	U		0.095	0.10	U	GAM
Radium 226	13982-63-3	0.356	0.073	0.073	0.10		GAM
Radium 228	15262-20-1	0.447	0.15	0.16	0.20		GAM
Thorium 228	14274-82-9	0.387	0.047	0.043			GAM
Thorium 232	TH-232	0.447	0.15	0.16			GAM
Americium 241	14596-10-2	U		0.10		U	GAM
Uranium 238	U-238	U		4.5		U	GAM
Uranium 235	15117-96-1	U		0.13		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

N909117-07 B0WBR7

DATA SHEET

SDG	7212	Client/Case no	Hanford SDG H0534
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909117-07	Client sample id	B0WBR7
Dept sample id	7212-007	Location/Matrix	200 Bpond (B8758)>15' SOLID
Received	09/17/99	Collected	09/15/99 08:34
% solids	97.3	Custody/SAF No	B99-078-120 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	0.050	0.084	400	U	H
Technetium 99	14133-76-7	-0.017	0.14	0.49	15	U	TC
Neptunium 237	13994-20-2	0	0.015	0.036		U	NP
Total Uranium (ug/g)	7440-61-1	0.439	0.051	0.005	1.0	J	U_T
Plutonium 238	13981-16-3	0	0.073	0.17	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.036	0.073	0.22	1.0	U	PU
Nickel 63	13981-37-8	-1.14	2.0	3.4	30	U	NI_L
Americium 241	14596-10-2	0.013	0.026	0.033	1.0	U	AM
Total Strontium	SR-RAD	17.2	0.77	0.38	1.0		SR
Thorium 228	14274-82-9	0.423	0.16	0.18	1.0	J	TH
Thorium 230	14269-63-7	0.773	0.20	0.19	1.0	JB	TH
Thorium 232	TH-232	0.234	0.11	0.099	1.0	J	TH
Potassium 40	13966-00-2	8.56	0.35	0.16			GAM
Cobalt 60	10198-40-0	U		0.017	0.050	U	GAM
Cesium 137	10045-97-3	U		0.014	0.10	U	GAM
Europium 152	14683-23-9	U		0.040	0.10	U	GAM
Europium 154	15585-10-1	U		0.055	0.10	U	GAM
Europium 155	14391-16-3	U		0.043	0.10	U	GAM
Radium 226	13982-63-3	0.263	0.034	0.030	0.10		GAM
Radium 228	15262-20-1	0.478	0.075	0.066	0.20		GAM
Thorium 228	14274-82-9	0.390	0.022	0.020			GAM
Thorium 232	TH-232	0.478	0.075	0.066			GAM
Americium 241	14596-10-2	U		0.045		U	GAM
Uranium 238	U-238	U		2.0		U	GAM
Uranium 235	15117-96-1	U		0.068		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

N909117-08

B0WBR8

DATA SHEET

SDG	7212	Client/Case no	Hanford SDG H0534
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909117-08	Client sample id	B0WBR8
Dept sample id	7212-008	Location/Matrix	200 Bpond (B8758)>15' SOLID
Received	09/17/99	Collected	09/15/99 09:45
% solids	91.8	Custody/SAF No	B99-078-121 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.004	0.051	0.086	400	U	H
Technetium 99	14133-76-7	-0.024	0.16	0.49	15	U	TC
Neptunium 237	13994-20-2	0	0.025	0.051		U	NP
Total Uranium (ug/g)	7440-61-1	0.663	0.076	0.005	1.0	J	U_T
Plutonium 238	13981-16-3	0	0.020	0.055	1.0	U	PU
Plutonium 239/240	PU-239/240	0.005	0.020	0.047	1.0	U	PU
Nickel 63	13981-37-8	-0.865	1.4	2.4	30	U	NI_L
Americium 241	14596-10-2	0	0.023	0.042	1.0	U	AM
Total Strontium	SR-RAD	46.9	1.9	0.77	1.0		SR
Thorium 228	14274-82-9	0.502	0.14	0.12	1.0	J	TH
Thorium 230	14269-63-7	0.658	0.17	0.14	1.0	JB	TH
Thorium 232	TH-232	0.407	0.11	0.060	1.0	J	TH
Potassium 40	13966-00-2	9.02	0.55	0.30			GAM
Cobalt 60	10198-40-0	U		0.029	0.050	U	GAM
Cesium 137	10045-97-3	U		0.025	0.10	U	GAM
Europium 152	14683-23-9	U		0.073	0.10	U	GAM
Europium 154	15585-10-1	U		0.095	0.10	U	GAM
Europium 155	14391-16-3	U		0.083	0.10	U	GAM
Radium 226	13982-63-3	0.328	0.049	0.047	0.10		GAM
Radium 228	15262-20-1	0.580	0.14	0.13	0.20		GAM
Thorium 228	14274-82-9	0.487	0.036	0.036			GAM
Thorium 232	TH-232	0.580	0.14	0.13			GAM
Americium 241	14596-10-2	U		0.086		U	GAM
Uranium 238	U-238	U		3.3		U	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

Test	AM
Matrix	SOLID
SDG	7212
Contact	Kevin C. Johnson

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0534

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6904-010						
B0WBR0	N909117-01			7212-001	U	
B0WBR1	N909117-02			7212-002	U	
B0WBR2	N909117-03			7212-003	U	
B0WBR4	N909117-04			7212-004	U	
B0WBR5	N909117-05			7212-005	U	
B0WBR6	N909117-06			7212-006	U	
B0WBR7	N909117-07			7212-007	U	
B0WBR8	N909117-08			7212-008	U	
BLK (QC ID=32081)	N909117-10			7212-010	U	
LCS (QC ID=32080)	N909117-09			7212-009	ok	
Duplicate (N909117-05)	N909117-11			7212-011	-	U

Nominal values and limits from method RDLs (pCi/g) 1.0

200 Area Source chrctztn-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 6904-010	2σ prep error 5.0 %				Reference Lab Notebook 6904 pg. 010											
B0WBR0	N909117-01			0.10	0.500			40		685			51	11/04/99	11/04	SS-015
B0WBR1	N909117-02			0.091	0.500			37		685			51	11/04/99	11/04	SS-016
B0WBR2	N909117-03			0.053	0.500			71		674			51	11/04/99	11/04	SS-055
B0WBR4	N909117-04			0.060	0.500			78		674			51	11/04/99	11/04	SS-056
B0WBR5	N909117-05			0.043	0.500			91		674			50	11/04/99	11/04	SS-057
B0WBR6	N909117-06			0.037	0.500			92		674			50	11/04/99	11/04	SS-058
B0WBR7	N909117-07			0.033	0.500			83		669			50	11/04/99	11/04	SS-059
B0WBR8	N909117-08			0.042	0.500			88		669			50	11/04/99	11/04	SS-060
BLK (QC ID=32081)	N909117-10			0.028	0.500			94		665				11/04/99	11/04	SS-063
LCS (QC ID=32080)	N909117-09			0.041	0.500			92		669				11/04/99	11/04	SS-062
Duplicate (N909117-05) (QC ID=32082)	N909117-11			0.052	0.500			82		665			50	11/04/99	11/04	SS-064
Nominal values and limits from method				1.0	0.500			20-105		700	100		180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Test AM Matrix SOLID
SDG 7212
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0534

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	0.053	±	0.046
FOR 11 SAMPLES	YIELD	77	±	41

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

Test NP Matrix SOLID
SDG 7212
Contact Kevin C. Johnson

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0534

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237
Preparation batch 6904-010					
B0WBR0	N909117-01			7212-001	U
B0WBR1	N909117-02			7212-002	U
B0WBR2	N909117-03			7212-003	U
B0WBR4	N909117-04			7212-004	U
B0WBR5	N909117-05			7212-005	U
B0WBR6	N909117-06			7212-006	U
B0WBR7	N909117-07			7212-007	U
B0WBR8	N909117-08			7212-008	U
BLK (QC ID=32081)	N909117-10			7212-010	U
LCS (QC ID=32080)	N909117-09			7212-009	ok
Duplicate (N909117-05)	N909117-11			7212-011	- U

Nominal values and limits from method RDLs (pCi/g)
200 Area Source chrctztn-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 6904-010	2σ prep error 5.0 %				Reference Lab Notebook 6904 pg. 010											
B0WBR0	N909117-01			0.030	0.500			82		200			51	10/29/99	11/04	BETA
B0WBR1	N909117-02			0.042	0.500			84		200			51	10/29/99	11/04	BETA
B0WBR2	N909117-03			0.077	0.500			35		200			51	10/29/99	11/04	BETA
B0WBR4	N909117-04			0.047	0.500			54		200			51	10/29/99	11/04	BETA
B0WBR5	N909117-05			0.046	0.500			42		200			50	10/29/99	11/04	BETA
B0WBR6	N909117-06			0.046	0.500			56		200			50	10/29/99	11/04	BETA
B0WBR7	N909117-07			0.036	0.500			69		200			50	10/29/99	11/04	BETA
B0WBR8	N909117-08			0.051	0.500			59		200			50	10/29/99	11/04	BETA
BLK (QC ID=32081)	N909117-10			0.074	0.500			43		200				11/02/99	11/08	BETA
LCS (QC ID=32080)	N909117-09			0.048	0.500			54		200				11/02/99	11/06	BETA
Duplicate (N909117-05) (QC ID=32082)	N909117-11			0.052	0.500			58		200			52	11/02/99	11/06	BETA
Nominal values and limits from method					0.500			20-105		100						

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

Test	NP
Matrix	SOLID
SDG	7212
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

NEPTUNIUM IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0534

PROCEDURES	REFERENCE	NP237PLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-930	Neptunium Purification, rev 0

AVERAGES ± 2 SD	MDA	0.050	±	0.028
FOR 11 SAMPLES	YIELD	58	±	31

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/18/99

Test PU Matrix SOLID
SDG 7212
Contact Kevin C. Johnson

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0534

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 6904-010						
B0WBR0	N909117-01			7212-001	U	0.969 J
B0WBR1	N909117-02			7212-002	U	0.224 J
B0WBR2	N909117-03			7212-003	U	U
B0WBR4	N909117-04			7212-004	U	0.033 J
B0WBR5	N909117-05			7212-005	U	U
B0WBR6	N909117-06			7212-006	U	U
B0WBR7	N909117-07			7212-007	U	U
B0WBR8	N909117-08			7212-008	U	U
BLK (QC ID=32081)	N909117-10			7212-010	U	U
LCS (QC ID=32080)	N909117-09			7212-009	ok	ok
Duplicate (N909117-05)	N909117-11			7212-011	- U	- U
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0
200 Area Source chrctztn-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 6904-010	2σ prep error 5.0 %			Reference Lab Notebook 6904 pg. 010												
B0WBR0	N909117-01			0.054	0.500			80		692			51	11/04/99	11/04	SS-002
B0WBR1	N909117-02			0.047	0.500			89		644			51	11/04/99	11/04	SS-002
B0WBR2	N909117-03			0.052	0.500			85		644			51	11/04/99	11/04	SS-003
B0WBR4	N909117-04			0.031	0.500			87		644			51	11/04/99	11/04	SS-006
B0WBR5	N909117-05			0.053	0.500			76		644			50	11/04/99	11/04	SS-008
B0WBR6	N909117-06			0.037	0.500			89		568			50	11/04/99	11/04	SS-009
B0WBR7	N909117-07			0.22	0.500			22		568			50	11/04/99	11/04	SS-010
B0WBR8	N909117-08			0.055	0.500			86		568			50	11/04/99	11/04	SS-012
BLK (QC ID=32081)	N909117-10			0.058	0.500			89		506				11/04/99	11/04	SS-014
LCS (QC ID=32080)	N909117-09			0.16	0.500			36		506				11/04/99	11/04	SS-013
Duplicate (N909117-05) (QC ID=32082)	N909117-11			0.033	0.500			85		950			50	11/04/99	11/04	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 11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

Test	PU
Matrix	SOLID
SDG	7212
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SPB-207925
Case no	SDG H0534

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	0.073	±	0.12
FOR 11 SAMPLES	YIELD	75	±	47

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/18/99

Test TH Matrix SOLID
SDG 7212
Contact Kevin C. Johnson

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0534

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6904-010							
B0WBR0	N909117-01			7212-001	0.808 J	0.840 J	0.791 J
B0WBR1	N909117-02			7212-002	0.699 J	1.13	0.562 J
B0WBR2	N909117-03			7212-003	0.421 J	0.491 J	0.358 J
B0WBR4	N909117-04			7212-004	0.468 J	0.574 J	0.429 J
B0WBR5	N909117-05			7212-005	0.392 J	0.729 J	0.337 J
B0WBR6	N909117-06			7212-006	0.306 J	0.596 J	0.336 J
B0WBR7	N909117-07			7212-007	0.423 J	0.773 J	0.234 J
B0WBR8	N909117-08			7212-008	0.502 J	0.658 J	0.407 J
BLK (QC ID=32081)	N909117-10			7212-010	U	0.262 J	U
LCS (QC ID=32080)	N909117-09			7212-009		ok	
Duplicate (N909117-05)	N909117-11			7212-011	ok J	ok J	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0

200 Area Source chrctztn-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 6904-010	2σ prep error 5.0 %							Reference Lab Notebook 6904 pg. 010								
B0WBR0	N909117-01			0.14	0.250			88		661			44	10/28/99	10/28	SS-029
B0WBR1	N909117-02			0.15	0.250			87		660			44	10/28/99	10/28	SS-031
B0WBR2	N909117-03			0.14	0.250			89		660			44	10/28/99	10/28	SS-032
B0WBR4	N909117-04			0.18	0.250			94		660			44	10/28/99	10/28	SS-033
B0WBR5	N909117-05			0.14	0.250			92		660			43	10/28/99	10/28	SS-034
B0WBR6	N909117-06			0.17	0.250			96		659			43	10/28/99	10/28	SS-035
B0WBR7	N909117-07			0.19	0.250			82		659			43	10/28/99	10/28	SS-036
B0WBR8	N909117-08			0.14	0.250			96		659			43	10/28/99	10/28	SS-038
BLK (QC ID=32081)	N909117-10			0.16	0.250			88		772				10/28/99	11/02	SS-048
LCS (QC ID=32080)	N909117-09			0.17	0.250			91		658				10/28/99	10/28	SS-040
Duplicate (N909117-05) (QC ID=32082)	N909117-11			0.16	0.250			96		655			43	10/28/99	10/28	SS-044
Nominal values and limits from method				1.0	0.250			20-105		200			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

Test	TH
Matrix	SOLID
SDG	7212
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0534

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	0.16	±	0.036
FOR 11 SAMPLES	YIELD	91	±	9

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

Test	SR
Matrix	SOLID
SDG	7212
Contact	Kevin C. Johnson

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0534

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 6904-010					
B0WBR0	N909117-01			7212-001	0.827 J
B0WBR1	N909117-02			7212-002	3.88
B0WBR2	N909117-03			7212-003	18.1
B0WBR4	N909117-04			7212-004	21.8
B0WBR5	N909117-05			7212-005	24.8
B0WBR6	N909117-06			7212-006	19.7
B0WBR7	N909117-07			7212-007	17.2
B0WBR8	N909117-08			7212-008	46.9
BLK (QC ID=32081)	N909117-10			7212-010	U
LCS (QC ID=32080)	N909117-09			7212-009	ok
Duplicate (N909117-05)	N909117-11			7212-011	ok
Nominal values and limits from method				RDLs (pCi/g)	1.0
200 Area Source chrctztn-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 6904-010	2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 010															
B0WBR0	N909117-01			0.18	1.00			95		400			45	10/26/99	10/29	GRB-218
B0WBR1	N909117-02			0.18	1.00			94		400			45	10/26/99	10/29	GRB-219
B0WBR2	N909117-03			0.16	1.00			87		400			46	10/26/99	10/30	GRB-220
B0WBR4	N909117-04			0.15	1.00			93		400			46	10/26/99	10/30	GRB-221
B0WBR5	N909117-05			0.15	1.00			92		400			45	10/26/99	10/30	GRB-222
B0WBR6	N909117-06			0.16	1.00			88		400			45	10/26/99	10/30	GRB-223
B0WBR7	N909117-07			0.38	1.00			94		400			45	10/26/99	10/30	GRB-224
B0WBR8	N909117-08			0.77	1.00			97		400			45	10/26/99	10/30	GRB-201
BLK (QC ID=32081)	N909117-10			0.20	1.00			69		400				10/26/99	10/30	GRB-203
LCS (QC ID=32080)	N909117-09			0.28	1.00			70		400				10/26/99	10/30	GRB-202
Duplicate (N909117-05) (QC ID=32082)	N909117-11			0.85	1.00			91		400			45	10/26/99	10/30	GRB-204
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	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

Test SR	Matrix SOLID
SDG 7212	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0534	

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	0.31	±	0.51
FOR 11 SAMPLES	YIELD	88	±	19

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

Test TC	Matrix SOLID
SDG 7212	
Contact Kevin C. Johnson	

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0534	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6893-183						
B0WBR5	N909117-05			7212-005	U	
B0WBR6	N909117-06			7212-006	U	
B0WBR7	N909117-07			7212-007	U	
B0WBR8	N909117-08			7212-008	U	
BLK (QC ID=32081)	N909117-10			7212-010	U	
LCS (QC ID=32080)	N909117-09			7212-009	ok	
Duplicate (N909117-05)	N909117-11			7212-011	-	U

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

200 Area Source chrctztn-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 6893-183	2σ prep error 10.0 % Reference Lab Notebook 6893 pg.183															
B0WBR5	N909117-05			0.47	1.05			72		101			40	10/19/99	10/25	GRB-202
B0WBR6	N909117-06			0.42	1.00			80		108			43	10/19/99	10/28	GRB-220
B0WBR7	N909117-07			0.49	1.00			70		101			42	10/19/99	10/27	GRB-203
B0WBR8	N909117-08			0.49	1.05			74		101			42	10/19/99	10/27	GRB-204
BLK (QC ID=32081)	N909117-10			0.54	1.03			63		101				10/19/99	10/23	GRB-221
LCS (QC ID=32080)	N909117-09			0.60	1.03			56		101				10/19/99	10/22	GRB-220
Duplicate (N909117-05) (QC ID=32082)	N909117-11			0.42	1.05			77		101			38	10/19/99	10/23	GRB-222
Nominal values and limits from method				15	1.02			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	MDA	0.49	±	0.13
FOR 7 SAMPLES	YIELD	70	±	17

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

Test GAM Matrix SOLID
SDG 7212
Contact Kevin C. Johnson

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0534

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6904-010								
B0WBR0	N909117-01			7212-001	U		7.47	
B0WBR1	N909117-02			7212-002	U		2.20	
B0WBR2	N909117-03			7212-003	U		U	
B0WBR4	N909117-04			7212-004	U		U	
B0WBR5	N909117-05			7212-005	U		U	
B0WBR6	N909117-06			7212-006	U		U	
B0WBR7	N909117-07			7212-007	U		U	
B0WBR8	N909117-08			7212-008	U		U	
BLK (QC ID=32081)	N909117-10			7212-010	U		U	
LCS (QC ID=32080)	N909117-09			7212-009	ok		ok	
Duplicate (N909117-05)	N909117-11			7212-011	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.10	
200 Area Source chrctztn-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 6904-010	2σ prep error 15.0 % Reference Lab Notebook 6904 pg. 010															
B0WBR0	N909117-01			0.15	163					700			38	10/07/99	10/22	JR,01,00
B0WBR1	N909117-02			0.11	164					700			38	10/07/99	10/22	JR,03,00
B0WBR2	N909117-03			0.054	197					699			38	10/07/99	10/22	JR,04,00
B0WBR4	N909117-04			0.063	203					458			41	10/07/99	10/25	JR,04,00
B0WBR5	N909117-05			0.10	195					876			40	10/07/99	10/25	JR,01,00
B0WBR6	N909117-06			0.086	166					876			40	10/07/99	10/25	JR,03,00
B0WBR7	N909117-07			0.043	214					876			40	10/07/99	10/25	JR,04,00
B0WBR8	N909117-08			0.074	169					496			41	10/07/99	10/26	JR,04,00
BLK (QC ID=32081)	N909117-10			0.085	163					490				10/07/99	10/26	JR,03,00
LCS (QC ID=32080)	N909117-09			0.032	163					404				10/07/99	10/26	JR,04,00
Duplicate (N909117-05) (QC ID=32082)	N909117-11			0.066	195					489			41	10/07/99	10/26	JR,04,00
Nominal values and limits from method				0.050	163					100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

Test GAM	Matrix SOLID
SDG 7212	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0534	

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

AVERAGES ± 2 SD	MDA	0.078	±	0.067
FOR 11 SAMPLES	YIELD		±	

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

Test	U T
Matrix	SOLID
SDG	7212
Contact	Kevin C. Johnson

METHOD SUMMARY

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0534

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 6904-010					
B0WBR0	N909117-01			7212-001	0.532 J
B0WBR1	N909117-02			7212-002	0.464 J
B0WBR2	N909117-03			7212-003	0.419 J
B0WBR4	N909117-04			7212-004	0.181 J
B0WBR5	N909117-05			7212-005	0.314 J
B0WBR6	N909117-06			7212-006	0.480 J
B0WBR7	N909117-07			7212-007	0.439 J
B0WBR8	N909117-08			7212-008	0.663 J
BLK (QC ID=32081)	N909117-10			7212-010	U
LCS (QC ID=32080)	N909117-09			7212-009	ok
Duplicate (N909117-05)	N909117-11			7212-011	OUT J
Nominal values and limits from method				RDLs (ug/g)	1.0
200 Area Source chrctztn-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 6904-010	2σ prep error 9.0 %				Reference Lab Notebook 6904 pg. 010											
B0WBR0	N909117-01			0.005	0.0500								34	10/18/99	10/18	KPA-001
B0WBR1	N909117-02			0.005	0.0500								34	10/18/99	10/18	KPA-001
B0WBR2	N909117-03			0.005	0.0500								34	10/18/99	10/18	KPA-001
B0WBR4	N909117-04			0.005	0.0500								34	10/18/99	10/18	KPA-001
B0WBR5	N909117-05			0.005	0.0500								33	10/18/99	10/18	KPA-001
B0WBR6	N909117-06			0.005	0.0500								33	10/18/99	10/18	KPA-001
B0WBR7	N909117-07			0.005	0.0500								33	10/18/99	10/18	KPA-001
B0WBR8	N909117-08			0.005	0.0500								33	10/18/99	10/18	KPA-001
BLK (QC ID=32081)	N909117-10			0.005	0.0500									10/18/99	10/18	KPA-001
LCS (QC ID=32080)	N909117-09			0.050	0.0500									10/18/99	10/18	KPA-001
Duplicate (N909117-05) (QC ID=32082)	N909117-11			0.005	0.0500								33	10/18/99	10/18	KPA-001
Nominal values and limits from method				1.0	0.0500								180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

Test U T	Matrix SOLID
SDG 7212	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0534	

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	0.009	±	0.027
FOR 11 SAMPLES	YIELD		±	

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

Test H	Matrix SOLID
SDG 7212	
Contact Kevin C. Johnson	

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0534	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6904-010						
B0WBR5	N909117-05			7212-005	U	
B0WBR6	N909117-06			7212-006	U	
B0WBR7	N909117-07			7212-007	U	
B0WBR8	N909117-08			7212-008	U	
BLK (QC ID=32081)	N909117-10			7212-010	U	
LCS (QC ID=32080)	N909117-09			7212-009	ok	J
Duplicate (N909117-05)	N909117-11			7212-011	-	U

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

200 Area Source chrctztn-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 6904-010	2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 010															
B0WBR5	N909117-05			0.082	20.8			100		120			41	10/21/99	10/26	LSC-004
B0WBR6	N909117-06			0.084	20.2			100		120			42	10/21/99	10/27	LSC-004
B0WBR7	N909117-07			0.084	20.2			100		120			42	10/21/99	10/27	LSC-004
B0WBR8	N909117-08			0.086	20.0			100		120			42	10/21/99	10/27	LSC-004
BLK (QC ID=32081)	N909117-10			0.084	20.3			100		120				10/21/99	10/26	LSC-004
LCS (QC ID=32080)	N909117-09			0.18	20.3			100		29				10/21/99	10/27	LSC-004
Duplicate (N909117-05) (QC ID=32082)	N909117-11			0.085	20.2			100		120			42	10/21/99	10/27	LSC-004
Nominal values and limits from method				400	20.0					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	MDA	0.098	±	0.072
FOR 7 SAMPLES	YIELD	100	±	0

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0534

Test NI L Matrix SOLID
SDG 7212
Contact Kevin C. Johnson

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0534

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6893-183						
B0WBR5	N909117-05			7212-005	U	
B0WBR6	N909117-06			7212-006	U	
B0WBR7	N909117-07			7212-007	U	
B0WBR8	N909117-08			7212-008	U	
BLK (QC ID=32081)	N909117-10			7212-010	U	
LCS (QC ID=32080)	N909117-09			7212-009	ok	
Duplicate (N909117-05)	N909117-11			7212-011	-	U

Nominal values and limits from method RDLs (pCi/g) 30
200 Area Source chrctztn-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 6893-183	2σ prep error 10.0 % Reference Lab Notebook 6893 pg.183															
B0WBR5	N909117-05			2.6	0.500			80		100			45	10/28/99	10/30	LSC-004
B0WBR6	N909117-06			2.8	0.500			72		100			45	10/28/99	10/30	LSC-004
B0WBR7	N909117-07			3.4	0.500			61		100			45	10/28/99	10/30	LSC-004
B0WBR8	N909117-08			2.4	0.500			86		100			45	10/28/99	10/30	LSC-004
BLK (QC ID=32081)	N909117-10			2.1	0.500			96		100				10/28/99	10/30	LSC-004
LCS (QC ID=32080)	N909117-09			2.2	0.500			93		100				10/28/99	10/30	LSC-004
Duplicate (N909117-05) (QC ID=32082)	N909117-11			2.5	0.500			81		100			45	10/28/99	10/30	LSC-004
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 7 SAMPLES
MDA 2.6 ± 0.87
YIELD 81 ± 24

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/18/99

SDG 7212
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0534

SAMPLE SUMMARY

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

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

The following notes apply to these reports:

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

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

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

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

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

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/18/99

SDG 7212
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0534

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

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

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

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

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

  These qualifiers should be reviewed as follows:

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

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

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

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/18/99

SDG 7212
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0534

WORK SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/18/99

SDG 7212
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0534

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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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.

Client Hanford
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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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Contract TRB-SBB-207925
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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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Contract TRB-SBB-207925
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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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REPORT GUIDE

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Contract TRB-SBB-207925
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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.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0534

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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REPORT GUIDE

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Contract TRB-SBB-207925
Case no SDG_H0534

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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METHOD SUMMARY

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

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

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

  MDAs are underlined if greater than the printed RDL.

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

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

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

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

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

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

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* 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.

Lab id TMANC
Protocol Hanford
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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-119	Page 1 of 1

Collector Bowers/Trice	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location 200 Bpond (B8758) <15'		SAF No. B99-078
Ice Chest No. EML-185	Field Logbook No. EL-1511		Method of Shipment Fed Ex
Shipped To TMA/RECRA DJB 9-14-99	Offsite Property No. A990255		Bill of Lading/Air Bill No. ~~[illegible]~~ 9/16/99 4235795295 72
			COA B20CW1 671C

Price Code 8N

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

Sample No.	Matrix *	Sample Date	Sample Time										
B0WBR0	Soil	9.14.99	1216			X			BOWCRO				
B0WBR1	Soil	9.14.99	1300			X			BOWCRO				
B0WBR2	Soil	9.14.99	1340			X			BOWCRO				
~~B0WBR3 9.14.99~~	Soil												
BOWBR4	Soil	9.14.99	1510			X			BOWCRO				

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By Doug Bowers Date/Time Doug Bowers 9-14-99/1700	Received By Rcf 1B Date/Time 9-14-99/1700	
Relinquished By Date/Time Refer 1B 9/16/99 11:30	Received By Brent Porter Date/Time 9/16/99 11:30	
Relinquished By Brent Porter Date/Time 9/16/99 11:30	Received By Fed Express Date/Time 9/16/99 11:30	
Relinquished By Fed Ex Date/Time 9-17-99 11:00	Received By TNV M. Goldenberg Date/Time 9-17-99 11:00	

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

COLLECTOR unavailable to sign COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-120	Page 1 of 12 CT 9/15/99

Collector Bowers/Trice	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location 200 Bpond (B8758) ~~SS~~ NONE COLLECTED FROM GREATER THAN 15' DEPTH		SAF No. B99-078
Ice Chest No. ERC 96 087	Field Logbook No. EL-1511		Method of Shipment Fed Ex
Shipped To TMA/RECRA	Offsite Property No. A 99-0258		Bill of Lading/Air Bill No. 4235 7952 9539
			COA B20 CW1 67\C

Price Code 8N

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	None	Cool 4C								
Type of Container	aG	aG	aG	aG								
No. of Container(s)	1	1	1	1								
Volume	60mL	250mL	250mL	500mL								
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.								
Sample No.	Matrix *	Sample Date	Sample Time									
~~B0WBR4~~	Soil											
✓ B0WBR5	Soil	9/15/99	0739			X *					BOW	CR1
✓ B0WBR6	Soil	9/15/99	0834			X *					BOW	CR1
B0WBR7	Soil	9/15/99	0834			X *					BOW	CR1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By [signature]	Date/Time 9/15/99 1530	Received By Ref 1B	Date/Time 9/15/99 1530
Relinquished By Ref 1-B	Date/Time 9-16-99 1300	Received By R. Fobelberg / R. Fohlberg	Date/Time 1300 9-16-99
Relinquished By R. Fobelberg / R. Fohlberg	Date/Time 1430 9-16-99	Received By Fed Ex	Date/Time 9-16-99
Relinquished By FedEx	Date/Time 9-17-99 11:00	Received By TNV M. Goldenberg	Date/Time 11:00 9-17-99

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH. collector not available to sign C.O.C.

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

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

NOTE: OUT OF GAMMA SPEC BOTTLE ALSO ANALYZE FOR NICKEL-63, TECH-99, TRITIUM.

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	B99-078-121	Page 2 of 12 9/15/99 CT

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond (B8758) ~~>15'~~ 9/15/99 COLLECTED FROM GREATER THAN 15' DEPTH	SAF No.: B99-078	
Ice Chest No.: ERC 96 087	Field Logbook No.: EL-1511	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A 99.0258	Bill of Lading/Air Bill No.: 4235795 2 9539	
		COA: B 20 CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	Cool 4C	None	Cool 4C							
	Type of Container	aG	aG	aG	aG							
	No. of Container(s)	1	1	1	1							
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL							
SAMPLE ANALYSIS		VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.							
Sample No.	Matrix *	Sample Date	Sample Time									
V B0WBR8	Soil	9/15/99	0945			X					BOW	CR1
~~B0WBR9~~	~~Soil~~	CT 9/15/99										
~~B0WBT0~~	~~Soil~~	CT 9/15/99										
B0WBT1	Soil	CT 9/15/99										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Chris 1530	Date/Time: 9/15/99	Received By: Red B 9/15/99	Date/Time: 1530 CT
Relinquished By: Raf 1-B	Date/Time: 9-16-99 1300	Received By: R. Fahlberg / R. Fahlberg 9-16-99	Date/Time: 9/15/99 1700
Relinquished By: R. Fahlberg / R. Fahlberg 9-16-99	Date/Time: 1430	Received By: Fed Ex	Date/Time: 9-16-99
Relinquished By: FedEx	Date/Time: 9-17-99 11:00	Received By: TNV M. Goldenberg	Date/Time: 9/17/00 9-17-99

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, Ni-63, Tech-99, Tritium, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

collector not available to sign COC

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

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

NOTE: OUT OF GAMMA SPEC. BOTTLE ALSO ANALYZE FOR NICKEL-63, TECH-99 AND TRITIUM.

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 9-17-99 11:00

CoC No. B99-078-119, 120, 121

Container I.D. No. EML-185 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: 8
7. Number of containers per sample: 1 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [✓] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by M. Goldenberg Date: 9-17-99 Time: 11:00

LOGIN

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

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L127
SDG/SAF #: H0534/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 09-17-99

GC/MS VOLATILE

Four (4) soil samples were collected on 09-15-99.

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 09-28,29-99.

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

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding time for analysis was met.
3. A non-target compound was detected in sample B0WBR6.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blanks contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than 2x the CRQL and the target compound 2-Butanone at levels less than the CRQL.

DEC 1999
RECEIVED
Data
Log In

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-01-99
Date

som\group\data\voa\tnu09127.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 16 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.

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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: 10/22/99 16:31

RFW Batch Number: **9909L127** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0WBR8		B0WBR5		B0WBR6		B0WBR7		B0WBR7		B0WBR7	
Sample Information	RFW#:	001		002		003		004		004 MS		004 MSD	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.02		0.980		1.00		0.980		0.980		0.980	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	109	%	108	%	109	%	108	%	106	%	106	%
	Bromofluorobenzene	96	%	99	%	95	%	97	%	95	%	95	%
	1,2-Dichloroethane-d4	118	%	118	%	115	%	118	%	120	%	117	%
			fl		fl		fl		fl		fl		fl
Chloromethane		11	U	10	U	11	U	10	U	10	U	10	U
Bromomethane		11	U	10	U	11	U	10	U	10	U	10	U
Vinyl Chloride		11	U	10	U	11	U	10	U	10	U	10	U
Chloroethane		11	U	10	U	11	U	10	U	10	U	10	U
Methylene Chloride		12	B	12	B	15	B	15	B	14	B	10	B
Acetone		4	JB	4	JB	3	BJ	4	JB	4	JB	4	BJ
Carbon Disulfide		6	U	5	U	6	U	5	U	5	U	5	U
1,1-Dichloroethene		6	U	5	U	6	U	5	U	93	%	96	%
1,1-Dichloroethane		6	U	5	U	6	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	5	U	6	U	5	U	5	U	5	U
Chloroform		6	U	5	U	6	U	5	U	5	U	5	U
1,2-Dichloroethane		6	U	5	U	6	U	5	U	5	U	5	U
2-Butanone		2	JB	3	JB	11	U	2	JB	10	U	10	U
1,1,1-Trichloroethane		6	U	5	U	6	U	5	U	5	U	5	U
Carbon Tetrachloride		6	U	5	U	6	U	5	U	5	U	5	U
Bromodichloromethane		6	U	5	U	6	U	5	U	5	U	5	U
1,2-Dichloropropane		6	U	5	U	6	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	5	U	6	U	5	U	5	U	5	U
Trichloroethene		6	U	5	U	6	U	5	U	106	%	108	%
Dibromochloromethane		6	U	5	U	6	U	5	U	5	U	5	U
1,1,2-Trichloroethane		6	U	5	U	6	U	5	U	5	U	5	U
Benzene		6	U	5	U	6	U	5	U	114	%	115	%
Trans-1,3-Dichloropropene		6	U	5	U	6	U	5	U	5	U	5	U
Bromoform		6	U	5	U	6	U	5	U	5	U	5	U
4-Methyl-2-pentanone		11	U	10	U	11	U	10	U	10	U	10	U
2-Hexanone		11	U	10	U	11	U	10	U	10	U	10	U
Tetrachloroethene		6	U	5	U	6	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	5	U	6	U	5	U	5	U	5	U
Toluene		6	U	5	U	6	U	5	U	117	%	117	%

*= Outside of EPA CLP QC limits.

gw 10-22-99

RFW Batch Number: **9909L127** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1b

Cust ID:	B0WBR8	B0WBR5	B0WBR6	B0WBR7	B0WBR7	B0WBR7
RFW#:	001	002	003	004	004 MS	004 MSD
Chlorobenzene	6 U	5 U	6 U	5 U	106 %	107 %
Ethylbenzene	6 U	5 U	6 U	5 U	5 U	5 U
Styrene	6 U	5 U	6 U	5 U	5 U	5 U
Xylene (total)	6 U	5 U	6 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WBR8

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L127-001

Sample wt/vol: 4.90 (g/mL) G Lab File ID: n092917

Level: (low/med) LOW Date Received: 09/17/99

% Moisture: not dec. 9 Date Analyzed: 09/29/99

Column: (pack/cap) CAP Dilution Factor: 1.02

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.

B0WBR5

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L127-002

Sample wt/vol: 5.10 (g/mL) G Lab File ID: n092831

Level: (low/med) LOW Date Received: 09/17/99

% Moisture: not dec. 2 Date Analyzed: 09/28/99

Column: (pack/cap) CAP Dilution Factor: 0.980

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.

B0WBR6

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L127-003

Sample wt/vol: 5.00 (g/mL) G Lab File ID: n092832

Level: (low/med) LOW Date Received: 09/17/99

% Moisture: not dec. 5 Date Analyzed: 09/28/99

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	23.336	6	J

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WBR7

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L127-004

Sample wt/vol: 5.10 (g/mL) G Lab File ID: n092833

Level: (low/med) LOW Date Received: 09/17/99

% Moisture: not dec. 4 Date Analyzed: 09/28/99

Column: (pack/cap) CAP Dilution Factor: 0.980

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.

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L127

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBR8	001	S	99LVN318	09/15/99	N/A	09/29/99
B0WBR5	002	S	99LVN316	09/15/99	N/A	09/28/99
B0WBR6	003	S	99LVN316	09/15/99	N/A	09/28/99
B0WBR7	004	S	99LVN316	09/15/99	N/A	09/28/99
B0WBR7	004 MS	S	99LVN316	09/15/99	N/A	09/28/99
B0WBR7	004 MSD	S	99LVN316	09/15/99	N/A	09/28/99

LAB QC:

VBLKTP	MB1	S	99LVN318	N/A	N/A	09/29/99
VBLKTP	MB1 BS	S	99LVN318	N/A	N/A	09/29/99
VBLKTO	MB1	S	99LVN316	N/A	N/A	09/28/99

DW
10-22-99

RECRA LabNet Use Only
9909L127

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) PCB wetchem perrone

Client: TRU Hanford B99-078

Est. Final Proj. Sampling Date:

Project #: 109985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: CJ

QC: spee Del: Std TAT: 30 day

Date Rec'd: 9-17-99 Date Due: 10/17/99

Account #:

Refrigerator #		1	6	6				6	6					
#/Type Container	Liquid													
	Solid	1AG	1AG						1AG					
Volume	Liquid													
	Solid	60mL	250						500					
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	8024H 8015C	8025H 8015	8082				1CR6	Met(1)	1CN TC	1N3N2 1SFD	1N1H3N 1PH	1CL 1CNO2 1CNO3	1CPO4 1CSO4 1CFL		
001	BOWBR8			S	9-15-99	0945	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓		
002	BOWBR5			↓	↓	0739	✓	✓	↓				✓	✓	↓	↓	↓	↓	↓		
003	BOWBR10			↓	↓	0834	✓	✓	↓				✓	✓	↓	↓	↓	↓	↓		
004	BOWBR7			↓	↓	↓	✓	✓	↓				✓	✓	↓	↓	↓	↓	↓		

Special Instructions:

saf # B99-078
sdg with 9909L129

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
2. Met(1) = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
3. Cu, Ni, V, Zn, Hg
4. 9/23/99 tests added per client coc
5. OGCSC = 1-propanol + Ethanol
6.

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 4.1 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
*4235795295 e1

Relinquished by	Received by	Date	Time
Fed Ex	TMurray	9-17-99	1020

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-121	Page 1 of 12 CT 9/15/

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond (B8758) >15'		SAF No.: B99-078
Ice Chest No.: ERC 96 024	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A990259		Bill of Lading/Air Bill No.: 4235795295 61
GTB 9-15-99			COA: B20CW167K

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	Cool 4C	None	Cool 4C							
	Type of Container	aG	aG	aG	aG							
	No. of Container(s)	1	1	1	1							
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL							
SAMPLE ANALYSIS		VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions							
Sample No.	Matrix *	Sample Date	Sample Time									
B0WBR8	Soil	9 15 99	0945	X	X		X			B0WCA1		
~~B0WBR9~~	~~Soil~~		9/15/9									
~~B0WBT0~~	~~Soil~~		9/15/99									
~~B0WBT1~~	~~Soil~~		CT 9/15/99									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: [signature]	Date/Time: 9/15/99 1530	Received By: Ref 1B	Date/Time: 9/15/99 1530
Relinquished By: Ref 1B	Date/Time: 91699 1300	Received By: SIGALE [signature]	Date/Time: 91699 1300
Relinquished By: SIGALE [signature]	Date/Time: 91699 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9-17-99 1020	Received By: T Murray	Date/Time: 9-17-99 1020

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, Ni-63, Tech-99, Tritium, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-120	Page 1 of 2

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 Bpond (B8758) <15'		SAF No.: B99-078
Ice Chest No.: ERC96 024	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA DJB 9-15-99	Offsite Property No.: A990259		Bill of Lading/Air Bill No.: 4235795 29561
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	None	Cool 4C	None						
Type of Container	aG	aG	aG	aG	p						
No. of Container(s)	1	1	1	1	1						
Volume	60mL	250mL	250mL	500mL	plastic bag						
SAMPLE ANALYSIS	VOA - 8260A (TCL), VOA - 8260A (Add-On) {1-Propanol, Ethanol}	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions	portable size						

	Sample No.	Matrix *	Sample Date	Sample Time										
1	~~B0WBR4~~ DJB 9-15-99	Soil												
2	B0WBR5	Soil	9.15.99 CK ~~9-15-99~~	0739	X	X		X				BOWCR1		
3	B0WBR6	Soil	9-15-99	0834	X	X		X	~~X~~ 9/16/99			BOWCR1		
4	B0WBR7	Soil	9.15.99	0834	X	X		X				BOWCR1		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: C Mc	Date/Time: 9/15/99 1530	Received By: Ref IB	Date/Time: 9/15/99 1530
Relinquished By: REF IB	Date/Time: 91699 1300	Received By: SJ GALES	Date/Time: 91699 1300
Relinquished By: SJ GALES	Date/Time: 91699 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9-17-99 1020	Received By: TT Murray	Date/Time: 9-17-99 1020

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L129
SDG/SAF #: H0534/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 09-17-99

GC/MS VOLATILE

Four (4) soil samples were collected on 09-14-99.

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 09-23-99.

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

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding time for analysis was met.
3. Non-target compounds were detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. Matrix spike analyses are associated with RFW lot 9909L127.
6. The method blank contained the common laboratory contaminant Methylene Chloride and the target compound 2-Butanone at levels less than the CRQL.

DEC 1999

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-01-99
Date

som\group\data\voa\tnu09129.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 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.

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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

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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: 10/22/99 04:55

RFW Batch Number: **9909L129** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0WBR0		B0WBR1		B0WBR2		B0WBR4		VBLKSQ	
Sample Information	RFW#:	001		002		003		004		99LVH366-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		0.962		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	98	%	109	%	98	%	98	%	98	%
	Bromofluorobenzene	89	%	101	%	91	%	88	%	92	%
	1,2-Dichloroethane-d4	104	%	115	%	100	%	99	%	103	%
Chloromethane		11	U	11	U	10	U	10	U	10	U
Bromomethane		11	U	11	U	10	U	10	U	10	U
Vinyl Chloride		11	U	11	U	10	U	10	U	10	U
Chloroethane		11	U	11	U	10	U	10	U	10	U
Methylene Chloride		12	B	10	B	7	B	9	B	3	J
Acetone		11	U	11	U	10	U	10	U	10	U
Carbon Disulfide		6	U	6	U	5	U	5	U	5	U
1,1-Dichloroethene		6	U	6	U	5	U	5	U	5	U
1,1-Dichloroethane		6	U	6	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	5	U	5	U	5	U
Chloroform		6	U	6	U	5	U	5	U	5	U
1,2-Dichloroethane		6	U	6	U	5	U	5	U	5	U
2-Butanone		6	J	6	J	4	J	5	J	10	U
1,1,1-Trichloroethane		6	U	6	U	5	U	5	U	5	U
Carbon Tetrachloride		6	U	6	U	5	U	5	U	5	U
Bromodichloromethane		6	U	6	U	5	U	5	U	5	U
1,2-Dichloropropane		6	U	6	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	5	U	5	U	5	U
Trichloroethene		6	U	6	U	5	U	5	U	5	U
Dibromochloromethane		6	U	6	U	5	U	5	U	5	U
1,1,2-Trichloroethane		6	U	6	U	5	U	5	U	5	U
Benzene		2	J	6	U	5	U	5	U	5	U
Trans-1,3-Dichloropropene		6	U	6	U	5	U	5	U	5	U
Bromoform		6	U	6	U	5	U	5	U	5	U
4-Methyl-2-pentanone		11	U	11	U	10	U	10	U	10	U
2-Hexanone		11	U	11	U	10	U	10	U	3	J
Tetrachloroethene		6	U	6	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	5	U	5	U	5	U
Toluene		1	J	6	U	5	U	5	U	5	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **9909L129** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1b

Cust ID:	B0WBR0	B0WBR1	B0WBR2	B0WBR4	VBLKSQ
RFW#:	001	002	003	004	99LVH366-MB1
Chlorobenzene	6 U	6 U	5 U	5 U	5 U
Ethylbenzene	6 U	6 U	5 U	5 U	5 U
Styrene	6 U	6 U	5 U	5 U	5 U
Xylene (total)	6 U	6 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WBR0

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L129-001

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h092308

Level: (low/med) LOW Date Received: 09/17/99

% Moisture: not dec. 9 Date Analyzed: 09/23/99

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 76131	ETHANE, 1,1,2-TRICHLORO-1,2,	9.081	10	NJ

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WBR1

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L129-002

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h092309

Level: (low/med) LOW Date Received: 09/17/99

% Moisture: not dec. 7 Date Analyzed: 09/23/99

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 76131	ETHANE, 1,1,2-TRICHLORO-1,2,	9.080	10	NJ

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WBR2

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L129-003

Sample wt/vol: 5.20 (g/mL) G Lab File ID: h092310

Level: (low/med) LOW Date Received: 09/17/99

% Moisture: not dec. 3 Date Analyzed: 09/23/99

Column: (pack/cap) CAP Dilution Factor: 0.962

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 76131	ETHANE, 1,1,2-TRICHLORO-1,2,	9.070	10	NJ

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WBR4

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L129-004

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h092311

Level: (low/med) LOW Date Received: 09/17/99

% Moisture: not dec. 2 Date Analyzed: 09/23/99

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 76131	ETHANE, 1,1,2-TRICHLORO-1,2,	9.070	20	NJ

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKSQ

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 99LVH366-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h092306

Level: (low/med) LOW Date Received: 09/23/99

% Moisture: not dec. 0 Date Analyzed: 09/23/99

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.

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L129

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBR0	001	S	99LVH366	09/14/99	N/A	09/23/99
B0WBR1	002	S	99LVH366	09/14/99	N/A	09/23/99
B0WBR2	003	S	99LVH366	09/14/99	N/A	09/23/99
B0WBR4	004	S	99LVH366	09/14/99	N/A	09/23/99

LAB QC:

VBLKSQ	MB1	S	99LVH366	N/A	N/A	09/23/99

MW 10-22-99

RECRA LabNet Use Only

99093L 129

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) PCB perform wet lab

Client TNU HANFORD B099-078

Est. Final Proj. Sampling Date 9/18/99

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager DJ

QC Spec Del std TAT 30 days

Date Rec'd 9/17/99 Date Due 10/17/99

Account #

Refrigerator #		1	6						6	—	—	—	—	1			
#/Type Container	Liquid																
	Solid	1AG	1AG	—	—	1			1AG	—	—	—	—	1			
Volume	Liquid																
	Solid	60	25	—	—	1			500	—	—	—	—	1			
Preservatives		—	—	—	—	1			—								
ANALYSES REQUESTED		ORGANIC							INORG								
		VOA	BNA	~~Pest/~~ PCB ~~TPH~~ ~~Herb~~		WTPH-D			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 OGGSC	OG25H ODRO					Met(1)	IO NITO IN3 N2	ISFD IUH3 N	IPH OPCB	ICCL ICFL ICSIA	ICAN2 ICAN3 ICPCN		
001	BOWBRO			S	9-14-99	1216	1	1	✓	✓	✓		✓	X	X	X	X	X		
002	1					1300	1	1	✓	✓	✓		✓							
003	2					1340	1	1	✓	✓	✓		✓							
004	4					1510	1	1	✓	✓	✓		✓							

9/18/99

Special Instructions:

paf# B99-078

COMPOSITE WASTE

9/23/99 - no matrix QC required

DATE/REVISIONS:

Met(1) = As, Ba, Cd, Cr, Pb, Se, Ag, Be,

2. Cu, Ni, V, Zn, Hg, ICR6

9/23/99 3. tests ~~cor~~ added per client coc 9/23/99

4. OGGSC 2-propanol + ethanol

5. 9/23/99

6. ~~Run matrix QC~~

RECRA LabNet Use Only

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

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

COC Record Present Upon Sample Rec't Y or N

Cooler Temp 4.1 C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 42357952 9550

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	9-17-99	2:45

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 #: 9909L127
SDG/SAF#: H0534/B99-078

W.O. #: #: 10985-001-001-9999-00
Date Received: 09-17-99

GC SCAN

The set of samples consisted of four (4) soil samples collected on 09-15-99.

The samples and their associated QC samples were prepared on 09-23-99 and analyzed by methodology based on EPA Method 8015B for Ethanol and Butanol on 09-24-99.

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

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

2. The required holding time for analysis was met.

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

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

5. Surrogates were not used for this analysis.

6. 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%.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-15-99
Date

r:\share\lc\gcscan\09-127.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 7 pages.

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

GLOSSARY OF OGCSC DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Recra LabNet - Lionville Laboratory

GC SCAN

Report Date: 10/04/99 12:45

RFW Batch Number: **9909L127** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

003

	Cust ID:	B0WBR8	B0WBR8	B0WBR8	B0WBR5	B0WBR6	B0WBR7
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		5.0 U	115 %	110 %	4.9 U	5.0 U	4.6 U
Ethanol		5.0 U	5.5 U	5.0 U	4.9 U	5.0 U	4.6 U

	Cust ID:	BLK	BLK BS
Sample Information	RFW#:	99LLC143-MB1	99LLC143-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	mg/kg	mg/kg
n-Propyl Alcohol		5.0 U	89 %
Ethanol		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.

10/13/99

10/4/99

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L127

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBR8	001	S	99LLC143	09/15/99	09/23/99	09/24/99
B0WBR8	001 MS	S	99LLC143	09/15/99	09/23/99	09/24/99
B0WBR8	001 MSD	S	99LLC143	09/15/99	09/23/99	09/24/99
B0WBR5	002	S	99LLC143	09/15/99	09/23/99	09/24/99
B0WBR6	003	S	99LLC143	09/15/99	09/23/99	09/24/99
B0WBR7	004	S	99LLC143	09/15/99	09/23/99	09/24/99

LAB QC:

BLK	MB1	S	99LLC143	N/A	09/23/99	09/24/99
BLK	MB1 BS	S	99LLC143	N/A	09/23/99	09/24/99

10/13/99

RECRA LabNet Use Only
9909L127

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) PCB wetchem perrone

Client: TRU Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 109185-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: CJ
QC: spec Del: std TAT: 30 day
Date Rec'd: 9-17-99 Date Due: 10/17/99
Account #:

Refrigerator #		1	6	6				6	6								
#/Type Container	Liquid																
	Solid	1AG	1AG						1AG								
Volume	Liquid																
	Solid	60mL	250						500								
Preservatives																	
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN							
RECRA LabNet Use Only		8024H 8015C	8025H 8015D	8082				1CR6	Met(1)	1CNTC	1N3N2 1SFD	1N1H3N 1PH	1C8F 1CNO2 1CNO3	1CP04 1CS04	1CFL		
MATRIX CODES: S - Soil, SE - Sediment, SQ - 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	8024H 8015C	8025H 8015D	8082				1CR6	Met(1)	1CNTC	1N3N2 1SFD	1N1H3N 1PH	1C8F 1CNO2 1CNO3	1CP04 1CS04	1CFL		
001	BOWBR8			S	9-15-99	0945	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓			
002	BOWBR5					0739	✓	✓					✓	✓								
003	BOWBR6					0834	✓	✓					✓	✓								
004	BOWBR7						✓	✓					✓	✓								

Special Instructions:

saf # B99-078
sdg with 9909L129

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
2. Met(1) = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
3. Cu, Ni, V, Zn, Hg
4. 9/23/99 tests added per client coc
5. OGCSC = 1-Uproponol + Ethanol
6.

RECRA LabNet Use Only
Samples were: 1) Shipped ✓ or Hand Delivered ___
Airbill # *
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N
COC Tape was: 1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 4.1 °C

Relinquished by	Received by	Date	Time
Fed Ex	TT Murray	9-17-99	1020

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

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

*4235795295 01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-121	Page 1 of 12

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond (B8758) >15'		SAF No.: B99-078
Ice Chest No.: ERC 96 024	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A990259		Bill of Lading/Air Bill No.: 4235795295 61
9-15-99			COA: B20CW167K

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

Sample No.	Matrix *	Sample Date	Sample Time										
B0WBR8	Soil	9.15.99	0945	X	X		X			B0WCA1			
~~B0WBR9~~	~~Soil~~		9/15/9										
~~B0WBT0~~	~~Soil~~		9/15/99										
~~B0WBT1~~	~~Soil~~		CT 9/15/99										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: [signature]	Date/Time: 9/15/99 1530	Received By: Ref 1B	Date/Time: 9/15/99 1530
Relinquished By: Ref 1B	Date/Time: 9/6/99 1300	Received By: SJGale [signature]	Date/Time: 9/6/99 1300
Relinquished By: SJGale [signature]	Date/Time: 9/6/99 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9-17-99 1020	Received By: T Murray	Date/Time: 9-17-99 1020

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, Ni-63, Tech-99, Tritium, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-120	Page 1 of 2

Collector: Bowers/Trice	Company Contact: Chris Cearlock — Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 Bpond (B8758) <15'	SAF No.: B99-078	
Ice Chest No.: ERC 96 024	Field Logbook No.: EL-1511	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA D 2B 9-15-99	Offsite Property No.: A990259	Bill of Lading/Air Bill No.: 4235795 29561	
		COA: B20CW1 671C	

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

	Sample No.	Matrix *	Sample Date	Sample Time										
1	~~B0WBR4~~ DJB 9-15-99	Soil												
2	B0WBR5	Soil	9.15.99 CK 9-15-99	0739	X	X		X				BOWCR1		
3	B0WBR6	Soil	9-15-99	0834	X	X		X	X 9/16/99			BOWCR1		
4	B0WBR7	Soil	9.15.99	0834	X	X		X				BOWCR1		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: C Mc	Date/Time: 9/15/99 1530	Received By: RJ IB	Date/Time: 9/15/99 1530
Relinquished By: RJ IB	Date/Time: 91699 1300	Received By: SJ Gates	Date/Time: 91699 1300
Relinquished By: SJ Gates	Date/Time: 91699 1300	Received By: FED EX	Date/Time:
Relinquished By: FED EX	Date/Time: 9-17-99 1020	Received By: TM Murray	Date/Time: 9-17-99 1020

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

COLLECTOR UNAVAILABLE TO SIGN COC

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

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B99-078
RFW #: 9909L129
SDG/SAF#: H0534/B99-078

W.O. #: #: 10985-001-001-9999-00
Date Received: 09-17-99

GC SCAN

The set of samples consisted of four (4) soil samples collected on 09-14-99.

The samples and their associated QC samples were prepared on 09-23-99 and analyzed by methodology based on EPA Method 8015B for Ethanol and Butanol on 09-24-99.

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

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

2. The required holding time for analysis was met.

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

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

5. Surrogates were not used for this analysis.

6. The blank spike recovery was within advisory control limits of 50%-150%.

7. One (1) of two (2) matrix spike recoveries was outside the advisory control limits of 50%-150%.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-15-99
Date

r:\share\lc\gcscan\09-129.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 6 pages.

GLOSSARY OF OGCSC DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Recra LabNet - Lionville Laboratory

GC SCAN

Report Date: 10/04/99 12:49

RFW Batch Number: **9909L129** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

003

	Cust ID:	B0WBR0	B0WBR0	B0WBR0	B0WBR1	B0WBR2	B0WBR4
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		5.5 U	47 * %	53 %	5.0 U	4.4 U	4.4 U
Ethanol		5.5 U	5.5 U	5.0 U	5.0 U	4.4 U	4.4 U

	Cust ID:	BLK	BLK BS
Sample Information	RFW#:	99LLC143-MB1	99LLC143-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	mg/kg	mg/kg
n-Propyl Alcohol		5.0 U	89 %
Ethanol		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.

10/4/99 [illegible]

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L129

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBR0	001	S	99LLC143	09/14/99	09/23/99	09/24/99
B0WBR0	001 MS	S	99LLC143	09/14/99	09/23/99	09/24/99
B0WBR0	001 MSD	S	99LLC143	09/14/99	09/23/99	09/24/99
B0WBR1	002	S	99LLC143	09/14/99	09/23/99	09/24/99
B0WBR2	003	S	99LLC143	09/14/99	09/23/99	09/24/99
B0WBR4	004	S	99LLC143	09/14/99	09/23/99	09/24/99

LAB QC:

BLK	MB1	S	99LLC143	N/A	09/23/99	09/24/99
BLK	MB1 BS	S	99LLC143	N/A	09/23/99	09/24/99

10/14/99

RECRA LabNet Use Only

99091L 129

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8). PCB perrone wet lab

Client TNU HANFORD B099-078

Est. Final Proj. Sampling Date 9/18/99

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC spec Del std TAT 30 day

Date Rec'd 9/17/99 Date Due 10/17/99

Account #

Refrigerator #		1	6						6									
#/Type Container	Liquid																	
	Solid	1AG	1AG						1AG									
Volume	Liquid																	
	Solid	60	250						500									
Preservatives		—							—									
ANALYSES REQUESTED		ORGANIC							INORG									
		VOA	BNA	~~Pest/~~ PCB	~~TPH~~	~~Metals~~	WTPHD		Metal	CN								
		RECRA LabNet Use Only																
		0624	0625SC	0625H					Met(1)	1Q NO2 1N3N2	1SFD 1NH3N	1PH	0PCB	1CCL 1CFL 1CO4	1CN02 1CN03 1CP04			

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	0624	0625SC	0625H					Met(1)	1Q NO2 1N3N2	1SFD 1NH3N	1PH	0PCB	1CCL 1CFL 1CO4	1CN02 1CN03 1CP04		
001	BOWBRO			S	9-14-99	1216	1	1	✓	✓	✓			✓	X	X	X	X	X	X		
002	1					1300	1	1	✓	✓	✓			✓								
003	2					1340	1	1	✓	✓	✓			✓								
004	4					1510	1	1	✓	✓	✓			✓								

9/18/99

Special Instructions:

paf# B99-078

COMPOSITE WASTE

9/23/99 - no matrix QC required

DATE/REVISIONS:

Met(1.) = As, Ba, Cd, Cr, Pb, Se, Ag, Be,

2. Cu, Ni, V, Zn, Hg, ICR6

9/23/99 3. tests ~~on~~ added per client coc 9/23/99

4. 06GSC 2-propanol & ethanol

5. 9/23/99

6. ~~Run matrix QC~~

RECRA LabNet Use Only

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

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

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 4.1 °C

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	9-17-99	2:45

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 423579529550

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-119	Page 1 of 1

Collector Bowers/Trice	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
Price Code 8N	Data Turnaround 45 Days		
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location 200 Bpond (B8758) <15'		SAF No. B99-078
Ice Chest No. ERC 96 065	Field Logbook No. EL-1511		Method of Shipment Fed Ex
Shipped To TMA/RECRA DOB 9-14-99	Offsite Property No. A990257		Bill of Lading/Air Bill No. 4235 7952 9550
			COA B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	Cool 4C	None	Cool 4C							
	Type of Container	aG	aG	aG	aG							
	No. of Container(s)	1	1	1	1							
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL							
SAMPLE ANALYSIS		VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.							
Sample No.	Matrix *	Sample Date	Sample Time									
B0WBR0	Soil	9.14.99	1216	X	X		X		BOWCRO			
B0WBR1	Soil	9.14.99	1300	X	X		X		BOWCRO			
B0WBR2	Soil	9.14.99	1340	X	X		X		BOWCRO			
~~B0WBR3 9.14.99~~	Soil											
BOWBR4	Soil	9.14.99	1510	X	X		X		BOWCRO			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By DOUG BOWERS	Date/Time 9-17-99/1700	Received By R.F. JB	Date/Time 9-17-99/1700
Relinquished By Refer JB	Date/Time 9/16/99 11:30	Received By Brent Porter	Date/Time 9/16/99 11:30
Relinquished By Brent Porter	Date/Time 9/16/99 11:30	Received By Fed Express	Date/Time 9/16/99 11:30
Relinquished By Fed Ex	Date/Time 9-17-99 0245	Received By Vicki Henry	Date/Time 9-17-99 0245

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

Collector unavailable to sign COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L129
SDG/SAF #: H0534/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 09-17-99

SEMIVOLATILE

Four (4) soil samples were collected on 09-14-99.

The samples and their associated QC samples were extracted on 09-20-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Methods 8270B for TCL Semivolatile target compounds on 09-28,29,30-99.

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

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding times for extraction and analysis were met.
3. Non-target compounds were detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. One (1) of eleven (11) blank spike recoveries was outside EPA QC limits.
7. These samples were spectrally searched for Butylated Hydroxytoluene; however, it was not identified in the samples.

DEC 1

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-10-99
Date

som\gorup\data\bna\tnu09129.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 15 pages.

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

GLOSSARY OF BNA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

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

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

A = Indicates that a TIC is a suspected aldol-condensation product.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

mmz\10-94\gloss.bna

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.bna

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 10/26/99 14:07

RFW Batch Number: **9909L129** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0WBR0		B0WBR0		B0WBR0		B0WBR1		B0WBR2		B0WBR4	
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	76	%	79	%	76	%	81	%	88	%	88	%
	2-Fluorobiphenyl	64	%	68	%	65	%	73	%	73	%	71	%
	Terphenyl-d14	68	%	70	%	73	%	75	%	76	%	79	%
	Phenol-d5	63	%	61	%	60	%	62	%	70	%	72	%
	2-Fluorophenol	57	%	61	%	59	%	60	%	64	%	63	%
	2,4,6-Tribromophenol	56	%	58	%	55	%	56	%	58	%	61	%
Phenol		370	U	57	%	57	%	360	U	340	U	340	U
bis(2-Chloroethyl)ether		370	U	370	U	370	U	360	U	340	U	340	U
2-Chlorophenol		370	U	57	%	57	%	360	U	340	U	340	U
1,3-Dichlorobenzene		370	U	370	U	370	U	360	U	340	U	340	U
1,4-Dichlorobenzene		370	U	66	%	67	%	360	U	340	U	340	U
1,2-Dichlorobenzene		370	U	370	U	370	U	360	U	340	U	340	U
2-Methylphenol		370	U	370	U	370	U	360	U	340	U	340	U
2,2'-oxybis(1-Chloropropane)		370	U	370	U	370	U	360	U	340	U	340	U
4-Methylphenol		370	U	370	U	370	U	360	U	340	U	340	U
N-Nitroso-di-n-propylamine		370	U	100	%	99	%	360	U	340	U	340	U
Hexachloroethane		370	U	370	U	370	U	360	U	340	U	340	U
Nitrobenzene		370	U	370	U	370	U	360	U	340	U	340	U
Isophorone		370	U	370	U	370	U	360	U	340	U	340	U
2-Nitrophenol		370	U	370	U	370	U	360	U	340	U	340	U
2,4-Dimethylphenol		370	U	370	U	370	U	360	U	340	U	340	U
bis(2-Chloroethoxy)methane		370	U	370	U	370	U	360	U	340	U	340	U
2,4-Dichlorophenol		370	U	370	U	370	U	360	U	340	U	340	U
1,2,4-Trichlorobenzene		370	U	72	%	73	%	360	U	340	U	340	U
Naphthalene		370	U	370	U	370	U	360	U	340	U	340	U
4-Chloroaniline		370	U	370	U	370	U	360	U	340	U	340	U
Hexachlorobutadiene		370	U	370	U	370	U	360	U	340	U	340	U
4-Chloro-3-methylphenol		370	U	61	%	62	%	360	U	340	U	340	U
2-Methylnaphthalene		370	U	370	U	370	U	360	U	340	U	340	U
Hexachlorocyclopentadiene		370	U	370	U	370	U	360	U	340	U	340	U
2,4,6-Trichlorophenol		370	U	370	U	370	U	360	U	340	U	340	U
2,4,5-Trichlorophenol		920	U	920	U	920	U	900	U	860	U	850	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0WBR0		B0WBR0		B0WBR0		B0WBR1		B0WBR2		B0WBR4	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	370	U	370	U	370	U	360	U	340	U	340	U
2-Nitroaniline	920	U	920	U	920	U	900	U	860	U	850	U
Dimethylphthalate	370	U	370	U	370	U	360	U	340	U	340	U
Acenaphthylene	370	U	370	U	370	U	360	U	340	U	340	U
2,6-Dinitrotoluene	370	U	370	U	370	U	360	U	340	U	340	U
3-Nitroaniline	920	U	920	U	920	U	900	U	860	U	850	U
Acenaphthene	370	U	69	%	69	%	360	U	340	U	340	U
2,4-Dinitrophenol	920	U	920	U	920	U	900	U	860	U	850	U
4-Nitrophenol	920	U	53	%	46	%	900	U	860	U	850	U
Dibenzofuran	370	U	370	U	370	U	360	U	340	U	340	U
2,4-Dinitrotoluene	370	U	78	%	74	%	360	U	340	U	340	U
Diethylphthalate	370	U	370	U	370	U	360	U	340	U	340	U
4-Chlorophenyl-phenylether	370	U	370	U	370	U	360	U	340	U	340	U
Fluorene	370	U	370	U	370	U	360	U	340	U	340	U
4-Nitroaniline	920	U	920	U	920	U	900	U	860	U	850	U
4,6-Dinitro-2-methylphenol	920	U	920	U	920	U	900	U	860	U	850	U
N-Nitrosodiphenylamine (1)	370	U	370	U	370	U	360	U	340	U	340	U
4-Bromophenyl-phenylether	370	U	370	U	370	U	360	U	340	U	340	U
Hexachlorobenzene	370	U	370	U	370	U	360	U	340	U	340	U
Pentachlorophenol	920	U	59	%	59	%	900	U	860	U	850	U
Phenanthrene	370	U	370	U	370	U	360	U	340	U	340	U
Anthracene	370	U	370	U	370	U	360	U	340	U	340	U
Carbazole	370	U	370	U	370	U	360	U	340	U	340	U
Di-n-butylphthalate	370	U	370	U	370	U	360	U	340	U	340	U
Fluoranthene	370	U	370	U	370	U	360	U	340	U	340	U
Pyrene	370	U	73	%	78	%	360	U	340	U	340	U
Butylbenzylphthalate	370	U	370	U	370	U	360	U	340	U	340	U
3,3'-Dichlorobenzidine	370	U	370	U	370	U	360	U	340	U	340	U
Benzo(a)anthracene	370	U	370	U	370	U	360	U	340	U	340	U
Chrysene	370	U	370	U	370	U	360	U	340	U	340	U
bis(2-Ethylhexyl)phthalate	370	U	370	U	370	U	360	U	340	U	340	U
Di-n-octyl phthalate	370	U	370	U	370	U	360	U	340	U	340	U
Benzo(b)fluoranthene	370	U	370	U	370	U	360	U	340	U	340	U
Benzo(k)fluoranthene	370	U	370	U	370	U	360	U	340	U	340	U
Benzo(a)pyrene	370	U	370	U	370	U	360	U	340	U	340	U
Indeno(1,2,3-cd)pyrene	370	U	370	U	370	U	360	U	340	U	340	U
Dibenz(a,h)anthracene	370	U	370	U	370	U	360	U	340	U	340	U
Benzo(g,h,i)perylene	370	U	370	U	370	U	360	U	340	U	340	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.

B0WBR0

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L129-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092911

Level: (low/med) LOW Date Received: 09/17/99

% Moisture: 9 decanted: (Y/N) __ Date Extracted: 09/20/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/29/99

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.	ETHYLHEXANOL	9.45	100	J
2.	ETHYLHEXANOIC ACID	10.81	100	J
3.	ALKANE	27.54	100	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WBR1

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L129-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092914

Level: (low/med) LOW Date Received: 09/17/99

% Moisture: 7 decanted: (Y/N) Date Extracted: 09/20/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/29/99

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.	ETHYLHEXANOL	9.45	400	J
2.	UNKNOWN	25.56	100	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WBR2

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L129-003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A093003

Level: (low/med) LOW Date Received: 09/17/99

% Moisture: 3 decanted: (Y/N) __ Date Extracted: 09/20/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/30/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	26.21	300	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WBR4

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L129-004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A093004

Level: (low/med) LOW Date Received: 09/17/99

% Moisture: 2 decanted: (Y/N) __ Date Extracted: 09/20/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/30/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

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

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

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L129

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBR0	001	S	99LE1143	09/14/99	09/20/99	09/29/99
B0WBR0	001 MS	S	99LE1143	09/14/99	09/20/99	09/29/99
B0WBR0	001 MSD	S	99LE1143	09/14/99	09/20/99	09/29/99
B0WBR1	002	S	99LE1143	09/14/99	09/20/99	09/29/99
B0WBR2	003	S	99LE1143	09/14/99	09/20/99	09/30/99
B0WBR4	004	S	99LE1143	09/14/99	09/20/99	09/30/99

LAB QC:

SBLKCZ	MB1	S	99LE1143	N/A	09/20/99	09/28/99
SBLKCZ	MB1 BS	S	99LE1143	N/A	09/20/99	09/28/99

RECRA LabNet Use Only

99091L 129

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford B099-078

Est. Final Proj. Sampling Date: 9/18/99

Project #: 109985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: Spec Del: std TAT: 30 day

Date Rec'd: 9/17/99 Date Due: 10/17/99

Account #:

Refrigerator #		1	6						6								
#/Type Container	Liquid																
	Solid	1AG	1AG						1AG								
Volume	Liquid																
	Solid	60	79						500								
Preservatives		—							—								
ANALYSES REQUESTED		ORGANIC							INORG								
		VOA	BNA	~~Pest/~~ PCB	TPH ~~Herb~~	WTPH-D			Metal	CN							
		RECRA LabNet Use Only															
		OG24H	OGCSC	OG25H	ODRO				Metal								

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	OG24H	OGCSC	OG25H	ODRO				Metal							
001	BOWBRO			S	9-14-99	1216	1	1	✓	✓	✓			✓							
002	1					1300	1	1	✓	✓	✓			✓							
003	2					1340	1	1	✓	✓	✓			✓							
004	4					1510	1	1	✓	✓	✓			✓							

9/18/99

Special Instructions:

paf# B99-078

COMPOSITE WASTE

DATE/REVISIONS:

1. Met = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
2. Cu, Ni, V, Zn, Hg, ICR6
3.
4. OGCSC = 1-propanol + ethanol
5.
6. Run matrix QC

RECRA LabNet Use Only

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

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

COC Record Present Upon Sample Rec't Y or N

Cooler Temp 4.1 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 42357952 8550

Relinquished by	Received by	Date	Time
[signature]	[signature]	9-17-99	2:45

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-119	Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 Bpond (B8758) <15'		SAF No.: B99-078
Ice Chest No.: ERC 96 065	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA DB 9-14-99	Offsite Property No.: A990257		Bill of Lading/Air Bill No.: 1235 7952 9550
			COA: 320CW1 67/C

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

Sample No.	Matrix *	Sample Date	Sample Time										
B0WBR0	Soil	9.14.99	1216	X	X		X		BOWCRO				
B0WBR1	Soil	9.14.99	1300	X	X		X		BOWCRO				
B0WBR2	Soil	9.14.99	1340	X	X		X		BOWCRO				
~~B0WBR3 9.14.99~~ a	Soil												
BOWBR4	Soil	9.14.99	1510	X	X		X		BOWCRO				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-17-99/1700	Received By: R.F. JB	Date/Time: 9-17-99/1700
Relinquished By: Refer JB	Date/Time: 9/16/99 11:30	Received By: Brent Porter	Date/Time: 9/16/99 11:30
Relinquished By: Brent Porter	Date/Time: 9/16/99 11:30	Received By: Fed Express	Date/Time: 9/16/99 11:30
Relinquished By: Fed Ex	Date/Time: 9-17-99 0245	Received By: Vicki Henry	Date/Time: 9-17-99 0245

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

Collector unavailable to sign COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L127
SDG/SAF #: H0534/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 09-17-99

SEMIVOLATILE

Four (4) soil samples were collected on 09-15-99.

The samples and their associated QC samples were extracted on 09-20-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Methods 8270B for TCL Semivolatile target compounds on 09-28-99.

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

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The required holding times for extraction and analysis were met.
3. A non-target compound was detected in sample B0WBR8.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. One (1) of eleven (11) blank spike recoveries was outside EPA QC limits.
7. These samples were spectrally searched for Butylated Hydroxytoluene; however, it was not identified in the samples.

DEC 1

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-01-99
Date

som\gorup\data\bna\tnu09127.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 16 pages.

GLOSSARY OF BNA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

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

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

A = Indicates that a TIC is a suspected aldol-condensation product.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

mmz\10-94\gloss.bna

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.bna

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 10/26/99 12:36

RFW Batch Number: **9909L127** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0WBR8		B0WBR8		B0WBR8		B0WBR5		B0WBR6		B0WBR7	
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	65	%	71	%	71	%	84	%	74	%	83	%
	2-Fluorobiphenyl	64	%	63	%	60	%	72	%	70	%	75	%
	Terphenyl-d14	72	%	71	%	63	%	80	%	74	%	79	%
	Phenol-d5	59	%	58	%	54	%	66	%	59	%	70	%
	2-Fluorophenol	53	%	55	%	54	%	63	%	53	%	65	%
	2,4,6-Tribromophenol	56	%	59	%	57	%	61	%	53	%	67	%
			fl		fl		fl		fl		fl		fl
Phenol		370	U	58	%	51	%	340	U	350	U	350	U
bis(2-Chloroethyl)ether		370	U	370	U	370	U	340	U	350	U	350	U
2-Chlorophenol		370	U	53	%	53	%	340	U	350	U	350	U
1,3-Dichlorobenzene		370	U	370	U	370	U	340	U	350	U	350	U
1,4-Dichlorobenzene		370	U	63	%	60	%	340	U	350	U	350	U
1,2-Dichlorobenzene		370	U	370	U	370	U	340	U	350	U	350	U
2-Methylphenol		370	U	370	U	370	U	340	U	350	U	350	U
2,2'-oxybis(1-Chloropropane)		370	U	370	U	370	U	340	U	350	U	350	U
4-Methylphenol		370	U	370	U	370	U	340	U	350	U	350	U
N-Nitroso-di-n-propylamine		370	U	88	%	95	%	340	U	350	U	350	U
Hexachloroethane		370	U	370	U	370	U	340	U	350	U	350	U
Nitrobenzene		370	U	370	U	370	U	340	U	350	U	350	U
Isophorone		370	U	370	U	370	U	340	U	350	U	350	U
2-Nitrophenol		370	U	370	U	370	U	340	U	350	U	350	U
2,4-Dimethylphenol		370	U	370	U	370	U	340	U	350	U	350	U
bis(2-Chloroethoxy)methane		370	U	370	U	370	U	340	U	350	U	350	U
2,4-Dichlorophenol		370	U	370	U	370	U	340	U	350	U	350	U
1,2,4-Trichlorobenzene		370	U	65	%	63	%	340	U	350	U	350	U
Naphthalene		370	U	370	U	370	U	340	U	350	U	350	U
4-Chloroaniline		370	U	370	U	370	U	340	U	350	U	350	U
Hexachlorobutadiene		370	U	370	U	370	U	340	U	350	U	350	U
4-Chloro-3-methylphenol		370	U	61	%	60	%	340	U	350	U	350	U
2-Methylnaphthalene		370	U	370	U	370	U	340	U	350	U	350	U
Hexachlorocyclopentadiene		370	U	370	U	370	U	340	U	350	U	350	U
2,4,6-Trichlorophenol		370	U	370	U	370	U	340	U	350	U	350	U
2,4,5-Trichlorophenol		920	U	920	U	920	U	850	U	880	U	870	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0WBR8		B0WBR8		B0WBR8		B0WBR5		B0WBR6		B0WBR7	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	370	U	370	U	370	U	340	U	350	U	350	U
2-Nitroaniline	920	U	920	U	920	U	850	U	880	U	870	U
Dimethylphthalate	370	U	370	U	370	U	340	U	350	U	350	U
Acenaphthylene	370	U	370	U	370	U	340	U	350	U	350	U
2,6-Dinitrotoluene	370	U	370	U	370	U	340	U	350	U	350	U
3-Nitroaniline	920	U	920	U	920	U	850	U	880	U	870	U
Acenaphthene	370	U	65	%	64	%	340	U	350	U	350	U
2,4-Dinitrophenol	920	U	920	U	920	U	850	U	880	U	870	U
4-Nitrophenol	920	U	48	%	57	%	850	U	880	U	870	U
Dibenzofuran	370	U	370	U	370	U	340	U	350	U	350	U
2,4-Dinitrotoluene	370	U	71	%	76	%	340	U	350	U	350	U
Diethylphthalate	370	U	370	U	370	U	340	U	350	U	350	U
4-Chlorophenyl-phenylether	370	U	370	U	370	U	340	U	350	U	350	U
Fluorene	370	U	370	U	370	U	340	U	350	U	350	U
4-Nitroaniline	920	U	920	U	920	U	850	U	880	U	870	U
4,6-Dinitro-2-methylphenol	920	U	920	U	920	U	850	U	880	U	870	U
N-Nitrosodiphenylamine (1)	370	U	370	U	370	U	340	U	350	U	350	U
4-Bromophenyl-phenylether	370	U	370	U	370	U	340	U	350	U	350	U
Hexachlorobenzene	370	U	370	U	370	U	340	U	350	U	350	U
Pentachlorophenol	920	U	56	%	55	%	850	U	880	U	870	U
Phenanthrene	370	U	370	U	370	U	340	U	350	U	350	U
Anthracene	370	U	370	U	370	U	340	U	350	U	350	U
Carbazole	370	U	370	U	370	U	340	U	350	U	350	U
Di-n-butylphthalate	370	U	370	U	370	U	18	J	350	U	350	U
Fluoranthene	370	U	370	U	370	U	340	U	350	U	350	U
Pyrene	370	U	76	%	66	%	340	U	350	U	350	U
Butylbenzylphthalate	370	U	370	U	370	U	340	U	350	U	350	U
3,3'-Dichlorobenzidine	370	U	370	U	370	U	340	U	350	U	350	U
Benzo(a)anthracene	370	U	370	U	370	U	340	U	350	U	350	U
Chrysene	370	U	370	U	370	U	340	U	350	U	350	U
bis(2-Ethylhexyl)phthalate	370	U	370	U	370	U	340	U	350	U	350	U
Di-n-octyl phthalate	370	U	370	U	370	U	340	U	350	U	350	U
Benzo(b)fluoranthene	370	U	370	U	370	U	340	U	350	U	350	U
Benzo(k)fluoranthene	370	U	370	U	370	U	340	U	350	U	350	U
Benzo(a)pyrene	370	U	370	U	370	U	340	U	350	U	350	U
Indeno(1,2,3-cd)pyrene	370	U	370	U	370	U	340	U	350	U	350	U
Dibenz(a,h)anthracene	370	U	370	U	370	U	340	U	350	U	350	U
Benzo(g,h,i)perylene	370	U	370	U	370	U	340	U	350	U	350	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.

B0WBR8

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L127-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092810

Level: (low/med) LOW Date Received: 09/17/99

% Moisture: 9 decanted: (Y/N) Date Extracted: 09/20/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/28/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	26.38	70	J

FORM 1 SV-TIC RFW (v3.3)

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WBR5

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L127-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092813

Level: (low/med) LOW Date Received: 09/17/99

% Moisture: 2 decanted: (Y/N) __ Date Extracted: 09/20/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/28/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0

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

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WBR6

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L127-003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092814

Level: (low/med) LOW Date Received: 09/17/99

% Moisture: 5 decanted: (Y/N) __ Date Extracted: 09/20/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/28/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0

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

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

FORM 1 SV-TIC RFW (v3.3)

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WBR7

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L127-004

Sample wt/vol: 30.1 (g/mL) G Lab File ID: A092815

Level: (low/med) LOW Date Received: 09/17/99

% Moisture: 4 decanted: (Y/N) Date Extracted: 09/20/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/28/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 0

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

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKCZ

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 99LE1143-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092803

Level: (low/med) LOW Date Received: 09/20/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 09/20/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/28/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0

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

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

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L127

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBR8	001	S	99LE1143	09/15/99	09/20/99	09/28/99
B0WBR8	001 MS	S	99LE1143	09/15/99	09/20/99	09/28/99
B0WBR8	001 MSD	S	99LE1143	09/15/99	09/20/99	09/28/99
B0WBR5	002	S	99LE1143	09/15/99	09/20/99	09/28/99
B0WBR6	003	S	99LE1143	09/15/99	09/20/99	09/28/99
B0WBR7	004	S	99LE1143	09/15/99	09/20/99	09/28/99
LAB QC:						
SBLKCZ	MB1	S	99LE1143	N/A	09/20/99	09/28/99
SBLKCZ	MB1 BS	S	99LE1143	N/A	09/20/99	09/28/99

RECRA LabNet Use Only

9909L127

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) PCB wetchem perrone

Client: TRU Hanford B99-078

Est. Final Proj. Sampling Date:

Project #: 109985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: CJ

QC: spec Del: std TAT: 30 day

Date Rec'd: 9-17-99 Date Due: 10/17/99

Account #:

Refrigerator #		1	6	6				6	6							
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG							
Volume	Liquid															
	Solid	60ml	250						500							
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
		RECRA LabNet Use Only														
		8260 24H OGCSC	8270 25H ODRO	8082				1CRG	9Met(1)	1CNTC	1N3N3 1SFD	1N1H3N 1IOH	1CBr 1CNO2 1CNO3	1CPO4 1CSO4 1CEL		
MATRIX CODES: S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish																

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8260 24H OGCSC	8270 25H ODRO	8082	1CRG	9Met(1)	1CNTC	1N3N3 1SFD	1N1H3N 1IOH	1CBr 1CNO2 1CNO3	1CPO4 1CSO4 1CEL
001	BOWBR8			S	9-15-99	0945	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
002	BOWBR5			↓	↓	0739	✓	✓	↓	✓	✓	↓	↓	↓	↓	↓
003	BOWBR10					0834	✓	✓		✓	✓					
004	BOWBR7					↓	✓	✓		✓	✓					

Special Instructions:

saf # B99-078
sdg with 9909L129

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
2. Met(1) = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
3. Cu, Ni, V, Zn, Hg
4. 9/23/99 tests added per client coc
5. OGCSC = 1-Uproponol + Ethanol
6.

RECRA LabNet Use Only

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

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

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 4.1 °C

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

*4235795295 e1

Relinquished by	Received by	Date	Time
Fed Ex	TMurray	9-17-99	1020

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-120	Page 1 of 2

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 Bpond (B8758) <15'		SAF No.: B99-078
Ice Chest No.: ERC96 024	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA D28 9-15-99	Offsite Property No.: A990259		Bill of Lading/Air Bill No.: 4235795 29561
			COA: B20CW1 671C

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

	Sample No.	Matrix *	Sample Date	Sample Time										
1	~~B0WBR4~~ D28 9-15-99	Soil												
2	B0WBR5	Soil	9-15-99 ck 9-15-99	0739	X	X		X				BOWCR1		
3	B0WBR6	Soil	9-15-99	0834	X	X		X	X 9/16/99			BOWCR1		
4	B0WBR7	Soil	9.15.99	0834	X	X		X				BOWCR1		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: C Mc	Date/Time: 9/15/99 1530	Received By: RF IB	Date/Time: 9/15/99 1530
Relinquished By: RF IB	Date/Time: 9/16/99 1300	Received By: SJ Gale	Date/Time: 9/16/99 1300
Relinquished By: SJ Gale	Date/Time: 9/16/99 1300	Received By: FED EX	Date/Time:
Relinquished By: FED EX	Date/Time: 9-17-99 1020	Received By: TM Murcy	Date/Time: 9-17-99 1020

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

DEC 1999

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-078
RFW#: 9909L127 H0534 cy 10/22/99
SDG/SAF#: H0539/B99-078

W.O.#: 10985-001-001-9999-00
Date Received: 09-17-99

PCB

The set of samples consisted of four (4) soil samples collected on 09-15-99.

The samples and their associated QC samples were extracted on 09-27-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 10-08,09-99. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

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

1. The cooler temperature has been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis have been met.
3. The samples and their associated QC samples received a sulfuric acid and sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recovery was within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-20-99
Date

pef\r:\group\data\pest\09L-127.pcb

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

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

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

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

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

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

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 10/12/99 09:51

RFW Batch Number: **9909L127** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1

004

	Cust ID:	B0WBR8	B0WBR8	B0WBR8	B0WBR5	B0WBR6	B0WBR7
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	102 %	102 %	110 %	110 %	98 %	102 %
	Decachlorobiphenyl	98 %	99 %	105 %	107 %	98 %	98 %
Aroclor-1016		37 U	37 U	37 U	33 U	34 U	35 U
Aroclor-1221		73 U	73 U	73 U	67 U	69 U	69 U
Aroclor-1232		37 U	37 U	37 U	33 U	34 U	35 U
Aroclor-1242		37 U	37 U	37 U	33 U	34 U	35 U
Aroclor-1248		37 U	37 U	37 U	33 U	34 U	35 U
Aroclor-1254		37 U	86 %	85 %	33 U	34 U	35 U
Aroclor-1260		37 U	37 U	37 U	33 U	34 U	35 U

	Cust ID:	PBLKVF	PBLKVF BS
Sample Information	RFW#:	99LE1168-MB1	99LE1168-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	105 %	100 %
	Decachlorobiphenyl	100 %	95 %
Aroclor-1016		33 U	33 U
Aroclor-1221		67 U	67 U
Aroclor-1232		33 U	33 U
Aroclor-1242		33 U	33 U
Aroclor-1248		33 U	33 U
Aroclor-1254		33 U	78 %
Aroclor-1260		33 U	33 U

AW 10-18-99

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

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L127

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBR8	001	S	99LE1168	09/15/99	09/27/99	10/08/99
B0WBR8	001 MS	S	99LE1168	09/15/99	09/27/99	10/08/99
B0WBR8	001 MSD	S	99LE1168	09/15/99	09/27/99	10/08/99
B0WBR5	002	S	99LE1168	09/15/99	09/27/99	10/08/99
B0WBR6	003	S	99LE1168	09/15/99	09/27/99	10/08/99
B0WBR7	004	S	99LE1168	09/15/99	09/27/99	10/09/99
LAB QC:						
PBLKVF	MB1	S	99LE1168	N/A	09/27/99	10/09/99
PBLKVF	MB1 BS	S	99LE1168	N/A	09/27/99	10/09/99

AW 10-18-99

RECRA LabNet Use Only
9909L127

Custody Transfer Record/Lab Work Request

Page 1 of 1

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) PCB wetchem perrone

RECRA LabNet

Client: TRU Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: CJ
QC: spec Del: std TAT: 30 day
Date Rec'd: 9-17-99 Date Due: 10/17/99
Account #:

Refrigerator #		1	6	6				6	6						
#/Type Container	Liquid														
	Solid	1AG	1AG						1AG						
Volume	Liquid														
	Solid	60mL	250						500						
Preservatives															
ANALYSES REQUESTED →		ORGANIC							INORG						
		VOA	BNA	Pest/PCB	Herb				Metal	CN					
RECRA LabNet Use Only		8240 OGCSC	8025 ODRO	8082 PCB				ICP6	Met(1)	1CNTC	1N3N2 1SFD	1N1H3N 1PH	1Cl Nbc 1CN03	1Cl04 1CSEA 1CEL	

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8240 OGCSC	8025 ODRO	8082 PCB				ICP6	Met(1)	1CNTC	1N3N2 1SFD	1N1H3N 1PH	1Cl Nbc 1CN03	1Cl04 1CSEA 1CEL	
S - Soil	001	BOWBR8			S	9-15-99	0945	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	
SE - Sediment	002	BOWBR5					0739	✓	✓					✓	✓						
SO - Solid	003	BOWBR10					0834	✓	✓					✓	✓						
SL - Sludge	004	BOWBR7						✓	✓					✓	✓						
W - Water																					
O - Oil																					
A - Air																					
DS - Drum Solids																					
DL - Drum Liquids																					
L - EP/TCLP Leachate																					
WI - Wipe																					
X - Other																					
F - Fish																					

Special Instructions:

saf # B99-078
sdg with 9909L129

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
Met(1) = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
3. Cu, Ni, V, Zn, Hg
9/23/99 4. ~~tests~~ added per client coc
5. OGCSC = 1-Propanol + Ethanol
6.

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 4.1 °C

Relinquished by	Received by	Date	Time
Fed Ex	T Murray	9-17-99	1020

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

*N235195295e1

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-121	Page 1 of 12

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond (B8758) >15'		SAF No.: B99-078
Ice Chest No.: ERC 96 024	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A990259		Bill of Lading/Air Bill No.: 4235795295 61
9-15-99			COA: B20CW167K

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	Cool 4C	None	Cool 4C							
	Type of Container	aG	aG	aG	aG							
	No. of Container(s)	1	1	1	1							
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL							
SAMPLE ANALYSIS		VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions							
Sample No.	Matrix *	Sample Date	Sample Time									
B0WBR8	Soil	9.15.99	0945	X	X		X			BOWCA1		
~~B0WBR9~~	~~Soil~~		9/15/9									
~~B0WBT0~~	~~Soil~~		9/15/99									
~~B0WBT1~~	~~Soil~~		CT 9/15/99									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: C Hue	Date/Time: 9/15/99 1530	Received By: Ref 1B	Date/Time: 9/15/99 1530
Relinquished By: Ref 1B	Date/Time: 9/6/99 1300	Received By: SJGALE	Date/Time: 9/6/99 1300
Relinquished By: SJGALE	Date/Time: 9/6/99 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9-17-99 1020	Received By: T Murray	Date/Time: 9-17-99 1020

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, Ni-63, Tech-99, Tritium, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-120	Page 1 of 2

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 Bpond (B8758) <15'		SAF No.: B99-078
Ice Chest No.: ERC 96 024	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA D 28 9-15-99	Offsite Property No.: A990259		Bill of Lading/Air Bill No.: 4235795 29561
			COA: B20CW1 671C

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

	Sample No.	Matrix *	Sample Date	Sample Time										
1	~~B0WBR4~~ D28 9-15-99	Soil												
2	B0WBR5	Soil	9.15.99 ~~9-15.99~~	0739	X	X		X				BOWCR1		
3	B0WBR6	Soil	9-15.99	0834	X	X		X	X 9/16/99			BOWCR1		
4	B0WBR7	Soil	9.15.99	0834	X	X		X				BOWCR1		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: C Mc	Date/Time: 9/15/99 1530	Received By: RF IB	Date/Time: 9/15/99 1530
Relinquished By: RF IB	Date/Time: 91699 1300	Received By: SJ GALE	Date/Time: 91699 1300
Relinquished By: SJ GALE	Date/Time: 91699 1300	Received By: FED EX	Date/Time:
Relinquished By: FED EX	Date/Time: 9-17-99 1020	Received By: TM Murcy	Date/Time: 9-17-99 1020

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-078
RFW#: 9909L129
SDG/SAF#: H0534/B99-078

W.O.#: 10985-001-001-9999-00
Date Received: 09-17-99

PCB

The set of samples consisted of four (4) soil samples collected on 09-14-99.

The samples and their associated QC samples were extracted on 09-27-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 10-09-99. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

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

1. The cooler temperature has been recorded on the chain-of-custody.
2. All required holding times for extraction and analysis have been met.
3. The samples and their associated QC samples received a sulfuric acid and sulfur cleanup.
4. The method blank was below the reporting limits for all target compounds.
5. All surrogate recoveries were within acceptance criteria.
6. The blank spike recovery was within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-20-99
Date

pef\r:\group\data\pest\09L-129.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 7 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: 10/12/99 09:48

RFW Batch Number: **9909L129** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1

	Cust ID:	B0WBR0		B0WBR0		B0WBR0		B0WBR1		B0WBR2		B0WBR4	
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	92	%	100	%	105	%	102	%	110	%	92	%
	Decachlorobiphenyl	89	%	93	%	97	%	98	%	106	%	91	%
Aroclor-1016		37	U	37	U	36	U	35	U	34	U	34	U
Aroclor-1221		73	U	73	U	73	U	71	U	68	U	68	U
Aroclor-1232		37	U	37	U	36	U	35	U	34	U	34	U
Aroclor-1242		37	U	37	U	36	U	35	U	34	U	34	U
Aroclor-1248		37	U	37	U	36	U	35	U	34	U	34	U
Aroclor-1254		37	U	82	%	96	%	35	U	34	U	34	U
Aroclor-1260		37	U	37	U	36	U	35	U	34	U	34	U

	Cust ID:	PBLKVF		PBLKVF BS	
Sample Information	RFW#:	99LE1168-MB1		99LE1168-MB1	
	Matrix:	SOIL		SOIL	
	D.F.:	1.00		1.00	
	Units:	UG/KG		UG/KG	
Surrogate:	Tetrachloro-m-xylene	105	%	100	%
	Decachlorobiphenyl	100	%	95	%
Aroclor-1016		33	U	33	U
Aroclor-1221		67	U	67	U
Aroclor-1232		33	U	33	U
Aroclor-1242		33	U	33	U
Aroclor-1248		33	U	33	U
Aroclor-1254		33	U	78	%
Aroclor-1260		33	U	33	U

gw 10-18-99

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

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L129

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBR0	001	S	99LE1168	09/14/99	09/27/99	10/09/99
B0WBR0	001 MS	S	99LE1168	09/14/99	09/27/99	10/09/99
B0WBR0	001 MSD	S	99LE1168	09/14/99	09/27/99	10/09/99
B0WBR1	002	S	99LE1168	09/14/99	09/27/99	10/09/99
B0WBR2	003	S	99LE1168	09/14/99	09/27/99	10/09/99
B0WBR4	004	S	99LE1168	09/14/99	09/27/99	10/09/99

LAB QC:

PBLKVF	MB1	S	99LE1168	N/A	09/27/99	10/09/99
PBLKVF	MB1 BS	S	99LE1168	N/A	09/27/99	10/09/99

AW 10-18-99

RECRA LabNet Use Only

99093L 129

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) PCB perrone wet lab

Client: TNU HANFORD B099-078

Est. Final Proj. Sampling Date: ~~8~~ 9/18/99

Project #: 109185-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: DJ

QC: Spec Del: std TAT: 30 days

Date Rec'd: 9/17/99 Date Due: 10/17/99

Account #:

Refrigerator #		1	6						6	—	—	—	—	—			
#/Type Container	Liquid																
	Solid	1AG	1AG	—	—	—			1AG	—	—	—	—	—			
Volume	Liquid																
	Solid	60	25	—	—	—			500	—	—	—	—	—			
Preservatives		—	—	—	—	—			—								
ANALYSES REQUESTED		ORGANIC							INORG								
		VOA	BNA	~~Pest/~~ PCB ~~TPH~~ ~~Herb~~		wTPHID			Metal	CN							
		RECRA LabNet Use Only															
		OGZSH OGCSC	OGZSH ODRO						Met(1)	IO NTO IN3.U2	ISFO IUH3U	IPH OPCB	ICCL ICFL ICSA	ICAN2 ICAN3 ICP14			

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	OGZSH OGCSC	OGZSH ODRO						Met(1)	IO NTO IN3.U2	ISFO IUH3U	IPH OPCB	ICCL ICFL ICSA	ICAN2 ICAN3 ICP14		
001	BOWBRO			S	9-14-99	1216	1	1	✓	✓	✓			✓	X	X	X	X	X		
002	1					1300	1	1	✓	✓	✓			✓							
003	2					1340	1	1	✓	✓	✓			✓							
004	4					1510	1	1	✓	✓	✓			✓							

~~9/18/99~~

Special Instructions:

Saf# B99-078

COMPOSITE WASTE

9/23/99 - no matrix QC required

DATE/REVISIONS:

Met(1) = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
2. Cu, Ni, V, Zn, Hg, ICRG
9/23/99 3. tests ~~cor~~ added per client COC ~~8~~ 9/23/99
4. OGCSC 2-propanol + ethanol
5. ~~8~~ 9/23/99
6. ~~Run matrix QC~~

RECRA LabNet Use Only

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

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

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 4.1 °C

Relinquished by	Received by	Date	Time
Fed Ex	V. Pleasy	9-17-99	2:45

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

NOTES: 42357952 9550

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-119	Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 Bpond (B8758) <15'		SAF No.: B99-078
Ice Chest No.: ERC 96 065	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA 9-14-99	Offsite Property No.: A990257		Bill of Lading/Air Bill No.: 4235 7952 9550
			COA 920CW1 67/C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	None	Cool 4C								
Type of Container	aG	aG	aG	aG								
No. of Container(s)	1	1	1	1								
Volume	60mL	250mL	250mL	500mL								
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions	See item (2) in Special Instructions								
Sample No.	Matrix *	Sample Date	Sample Time									
B0WBR0	Soil	9.14.99	1216	X	X		X		BOWCRO			
B0WBR1	Soil	9.14.99	1300	X	X		X		BOWCRO			
B0WBR2	Soil	9.14.99	1340	X	X		X		BOWCRO			
~~B0WBR3 9.14.99~~	Soil											
BOWBR4	Soil	9.14.99	1510	X	X		X		BOWCRO			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-17-99/1700	Received By: R F JB	Date/Time: 9-17-99/1700
Relinquished By: Refer JB	Date/Time: 9/16/99 11:30	Received By: Brent Porter	Date/Time: 9/16/99 11:30
Relinquished By: Brent Porter	Date/Time: 9/16/99 11:30	Received By: Fed Express	Date/Time: 9/16/99 11:30
Relinquished By: Fed Ex	Date/Time: 9-17-99 0245	Received By: Vech Hemi	Date/Time: 9-17-99 0245

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

Collector unavailable to sign COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L127
SDG/SAF#: H0534/B99-078

W.O #: 10985-001-001-9999-00
Date Received: 09-17-99

DIESEL RANGE ORGANICS

The set of samples consisted of four (4) soil samples collected on 09-15-99.

The samples and their associated QC samples were prepared on 09-22-99 and analyzed by methodology based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 10-07-99. 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.

Pat G

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-19-99
Date

R:\SHARE\LC\GCSCAN\09-127d.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 7 pages.

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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: 10/14/99 09:35

RFW Batch Number: **9909L127** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

003

	Cust ID:	B0WBR8	B0WBR8	B0WBR8	B0WBR5	B0WBR6	B0WBR7
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	119 %	109 %	97 %	101 %	78 %	83 %
Diesel Range Organics		4.4 U	108 %	91 %	4.0 U	4.2 U	4.2 U

	Cust ID:	BLK	BLK BS
Sample Information	RFW#:	99LE1153-MB1	99LE1153-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	mg/kg	mg/kg
Surrogate:	p-Terphenyl	97 %	94 %
Diesel Range Organics		4.0 U	93 %

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.

10/14/99

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L127

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBR8	001	S	99LE1153	09/15/99	09/22/99	10/07/99
B0WBR8	001 MS	S	99LE1153	09/15/99	09/22/99	10/07/99
B0WBR8	001 MSD	S	99LE1153	09/15/99	09/22/99	10/07/99
B0WBR5	002	S	99LE1153	09/15/99	09/22/99	10/07/99
B0WBR6	003	S	99LE1153	09/15/99	09/22/99	10/07/99
B0WBR7	004	S	99LE1153	09/15/99	09/22/99	10/07/99

LAB QC:

BLK	MB1	S	99LE1153	N/A	09/22/99	10/07/99
BLK	MB1 BS	S	99LE1153	N/A	09/22/99	10/07/99

10/14/99

RECRA LabNet Use Only

9909L127

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) PCB wetchem perrone

Client: TRU Hanford B99-078

Est. Final Proj. Sampling Date:

Project #: 109185-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: CJ

QC: spec Del: std TAT: 30 day

Date Rec'd: 9-17-99 Date Due: 10/17/99

Account #:

Refrigerator #		1	6	6				6	6								003
#/Type Container	Liquid																
	Solid	1AG	1AG						1AG								
Volume	Liquid																
	Solid	60mL	250						500								
Preservatives																	
ANALYSES REQUESTED →	ORGANIC: VOA								INORG: Metal								
	ORGANIC: BNA								CN								
	ORGANIC: Pest/PCB																
	ORGANIC: 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

RECRA LabNet Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8024H OGCSC	8025H ODRO	PCB				ICP6	Met(1)	ICP/TC	1N3N3 ISFD	1N1H3N ICPH	ICP02 ICN02	ICP03 ICN03	ICP04 ICSEL ICFL		
001	BOWBR8			S	9-15-99	0945	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓		
002	BOWBR5					0739	✓	✓					✓	✓								
003	BOWBR10					0834	✓	✓					✓	✓								
004	BOWBR7						✓	✓					✓	✓								

Special Instructions:

saf # B99-078
sdg with 9909L129

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
Met(1) = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
3. Cu, Ni, V, Zn, Hg
9/23/99 4. tests added per Client coc
5. OGCSC = 1-propanol + Ethanol
6.

RECRA LabNet Use Only

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

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

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 4.1 °C

Relinquished by	Received by	Date	Time
FedEx	TTMurray	9-17-99	1020

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

*4235795295 e1

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-121	Page 1 of 12

Collector: Bowers/Trice	Company Contact: Chris Cearlock — Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond (B8758) >15'	SAF No.: B99-078	
Ice Chest No.: ERC 96 024	Field Logbook No.: EL-1511	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A990259	Bill of Lading/Air Bill No.: 4235795295 61	
9-15-99		COA: B20CW167/C	

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

Sample No.	Matrix *	Sample Date	Sample Time										
B0WBR8	Soil	9.15.99	0945	X	X		X			BOWCA1			
~~B0WBR9~~	~~Soil~~		9/15/9										
~~B0WBT0~~	~~Soil~~		9/15/99										
~~B0WBT1~~	~~Soil~~		CT 9/15/99										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: [signature]	Date/Time: 9/15/99 1530	Received By: RETIB	Date/Time: 9/15/99 1530
Relinquished By: RETIB	Date/Time: 9/6/99 1300	Received By: SJGALE	Date/Time: 9/6/99 1300
Relinquished By: SJGALE	Date/Time: 9/6/99 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9-17-99 1020	Received By: TMurray	Date/Time: 9-17-99 1020
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. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, Ni-63, Tech-99, Tritium, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-120	Page 1 of 12

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 Bpond (B8758) <15'		SAF No.: B99-078
Ice Chest No.: ERC96 024	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA D2B 9-15-99	Offsite Property No.: A990259		Bill of Lading/Air Bill No.: 4235795 29561
			COA: B20CW1 671C

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

	Sample No.	Matrix *	Sample Date	Sample Time										
1	~~B0WBR4~~ DJB 9-15-99	Soil												
2	B0WBR5	Soil	9-15-99 CK 9-15-99	0739	X	X		X				BOWCR1		
3	B0WBR6	Soil	9-15-99	0834	X	X		X	X 9/16/99			BOWCR1		
4	B0WBR7	Soil	9-15-99	0834	X	X		X				BOWCR1		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: C Trice	Date/Time: 9/15/99 1530	Received By: Ref IB	Date/Time: 9/15/99 1530
Relinquished By: REF IB	Date/Time: 91699 1300	Received By: SJ Gale	Date/Time: 91699 1300
Relinquished By: SJ Gale	Date/Time: 91699 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9-17-99 1020	Received By: TT Murray	Date/Time: 9-17-99 1020

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

COLLECTOR UNAVAILABLE TO SIGN COC

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

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L129
SDG/SAF#: H0534/B99-078

W.O #: 10985-001-001-9999-00
Date Received: 09-17-99

DIESEL RANGE ORGANICS

The set of samples consisted of four (4) soil samples collected on 09-14-99.

The samples and their associated QC samples were prepared on 09-22-99 and analyzed by methodology based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 10-07,08-99. 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. The blank spike recovery was within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-19-99
Date

R:\SHARE\LC\GCSCAN\09-129d.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 6 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: 10/12/99 13:16

RFW Batch Number: 9909L129 Client: TNU-HANFORD B99-078 Work Order: 10985-001-001-9999-00

003

	Cust ID:	B0WBR0	B0WBR0	B0WBR0	B0WBR1	B0WBR2	B0WBR4
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	104 %	115 %	99 %	95 %	104 %	100 %
Diesel Range Organics		4.3 U	79 %	75 %	4.2 U	4.1 U	4.1 U

	Cust ID:	BLK	BLK BS
Sample Information	RFW#:	99LE1153-MB1	99LE1153-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	mg/kg	mg/kg
Surrogate:	p-Terphenyl	97 %	94 %
Diesel Range Organics		4.0 U	93 %

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.

10/12/99

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L129

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBR0	001	S	99LE1153	09/14/99	09/22/99	10/07/99
B0WBR0	001 MS	S	99LE1153	09/14/99	09/22/99	10/07/99
B0WBR0	001 MSD	S	99LE1153	09/14/99	09/22/99	10/08/99
B0WBR1	002	S	99LE1153	09/14/99	09/22/99	10/07/99
B0WBR2	003	S	99LE1153	09/14/99	09/22/99	10/07/99
B0WBR4	004	S	99LE1153	09/14/99	09/22/99	10/07/99

LAB QC:

BLK	MB1	S	99LE1153	N/A	09/22/99	10/07/99
BLK	MB1 BS	S	99LE1153	N/A	09/22/99	10/07/99

10/14/99

RECRA LabNet Use Only

9909L 129

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) PCB perrone wet lab

Client TNU HANFORD B099-078

Est. Final Proj. Sampling Date ~~8~~ 9/18/99

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC Spec Del std TAT 30 day

Date Rec'd 9/17/99 Date Due 10/17/99

Account #

Refrigerator #		1	6						6					1			
#/Type Container	Liquid																
	Solid	1AG	1AG			1			1AG					1			
Volume	Liquid																
	Solid	60	25			1			500					1			
Preservatives		—	—						—								
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	~~Pest~~ PCB	~~Herb~~ TPH	iTPHD			Metal	CN							

RECRA LabNet Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OG ZAH	OGCSC	OG25H	ODRO				Met(1)	1Q NTO	1N3N2	1SFO	1UH3U	1PH	OGCB	1CCL	1CFL	1CN02	1CN03	1CR04		
S - Soil	001	BOWBRO			S	9-14-99	1216	1	1	✓	✓	✓			✓	X	X	X	X	X								
SE - Sediment	002	1					1300	1	1	✓	✓	✓			✓													
SO - Solid	003	2					1340	1	1	✓	✓	✓			✓													
SL - Sludge	004	4					1510	1	1	✓	✓	✓			✓													
W - Water																												
O - Oil																												
A - Air																												
DS - Drum Solids																												
DL - Drum Liquids																												
L - EP/TCLP Leachate																												
WI - Wipe																												
X - Other																												
F - Fish																												

9/18/99

Special Instructions:

Ref# B99-078

COMPOSITE WASTE

9/23/99 - no matrix QC required

DATE/REVISIONS:

Met (1) = As, Ba, Cd, Cr, Pb, Se, Ag, Be,

2. Cu, Ni, V, Zn, Hg, 1CR6

9/23/99 3. tests ~~are~~ added per client coc ~~8~~ 9/23/99

4. OGCSC = 1-propanol + ethanol

5. ~~8~~ 9/23/99

6. ~~Run matrix QC~~

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___

Airbill # See Below

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Labels Indicate Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

COC Tape was: 1) Present on Outer Package (Y) or N

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 4.1 °C

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	9-17-99	2:45

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

NOTES:

4235 7952 9550

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-119	Page 1 of 1

Collector Bowers/Trice	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location 200 Bpond (B8758) <15'		SAF No. B99-078
Ice Chest No. ERC 96 065	Field Logbook No. EL-1511		Method of Shipment Fed Ex
Shipped To TMA/RECRA 978 9-14-99	Offsite Property No. A990257		Bill of Lading/Air Bill No. 4235 7952 9550
			COA 920CW1 671C

Price Code 8N

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

Sample No.	Matrix *	Sample Date	Sample Time										
B0WBR0	Soil	9.14.99	1216	X	X		X		BOWCRO				
B0WBR1	Soil	9.14.99	1300	X	X		X		BOWCRO				
B0WBR2	Soil	9.14.99	1340	X	X		X		BOWCRO				
~~B0WBR3 9.14.99~~ a	Soil												
BOWBR4	Soil	9.14.99	1510	X	X		X		BOWCRO				

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By Doug Bowers Doug Bowers 9-17-99/1700	Received By R.F. JB 9-17-99/1700	Date/Time
Relinquished By Refer JB 9/16/99 11:30	Received By Brent Porter 9/16/99 11:30	Date/Time
Relinquished By Brent Porter 9/16/99 11:30	Received By Fed Express 9/16/99 11:30	Date/Time
Relinquished By Fed Ex 9-17-99 0245	Received By Vicki Henry 9-17-99 0245	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

Collector unavailable to sign COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L127 and 9909L129
SDG# : H0534
SAF# : B99-078

W.O. # : 10985-001-001-9999-00
Date Received: 09-17-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 8 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 with the exception of Sulfide samples and matrix quality control analyses for Total Cyanide sample B0WBR0.

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

5. The method blanks were within method criteria.

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

7. The matrix spike recoveries were within the 75-125% control limits; matrix spike recovery for Nitrate Nitrite was based on the replicate analysis result. 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 solid samples are reported on a dry weight basis.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

12-1-99
Date

njp\i09-127,129

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 30 pages.

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

Recra LabNet Philadelphia

WET CHEMISTRY
METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

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

Other: Nitrate Nitrite **Method:** EPA 353.2

Other: Ammonia **Method** EPA 350.3

Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate } EPA 300.0

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 12/01/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L127

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WBR8	% Solids	90.9		%	0.01	1.0
		Chloride by IC	2.2		MG/KG	1.4	1.0
		Fluoride by IC	1.4	u	MG/KG	1.4	1.0
		Nitrite by IC	1.4	u	MG/KG	1.4	1.0
		Nitrate by IC	8.5		MG/KG	1.4	1.0
		Cyanide, Total	0.55	u	MG/KG	0.55	1.0
		Phosphate by IC	1.4	u	MG/KG	1.4	1.0
		Chromium VI	0.44	u	MG/KG	0.44	1.0
		Sulfate by IC	40.9		MG/KG	1.4	1.0
		Nitrate Nitrite	2.8		MG/KG	0.22	1.0
		Ammonia, as N	1.4	u	MG/KG	1.4	1.0
		pH	8.6		SOIL PH	0.01	1.0
		Sulfide	1.1	u	MG/KG	1.1	1.0
-002	B0WBR5	% Solids	98.1		%	0.01	1.0
		Chloride by IC	2.0		MG/KG	1.3	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	4.7		MG/KG	1.3	1.0
		Cyanide, Total	0.51	u	MG/KG	0.51	1.0
		Phosphate by IC	2.8		MG/KG	1.3	1.0
		Chromium VI	0.41	u	MG/KG	0.41	1.0
		Sulfate by IC	29.0		MG/KG	1.3	1.0
		Nitrate Nitrite	1.2		MG/KG	0.20	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.8		SOIL PH	0.01	1.0
		Sulfide	1.0	u	MG/KG	1.0	1.0
-003	B0WBR6	% Solids	94.6		%	0.01	1.0
		Chloride by IC	3.2		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	9.9		MG/KG	1.3	1.0
		Cyanide, Total	0.53	u	MG/KG	0.53	1.0
		Phosphate by IC	3.8		MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	37.5		MG/KG	1.3	1.0
		Nitrate Nitrite	2.4		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.7		SOIL PH	0.01	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/01/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L127

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0WBR6	Sulfide	4.0		MG/KG	1.1	1.0
-004	B0WBR7	% Solids	95.7		%	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	5.4		MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	3.2		MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	34.1		MG/KG	1.3	1.0
		Nitrate Nitrite	1.5		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	9.2		SOIL PH	0.01	1.0
		Sulfide	4.0		MG/KG	1.0	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/01/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L127

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LICA81-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	1.2	u	MG/KG	1.2	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
BLANK10	99LC109A-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	99LVI066-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	99LICA83-MB1	Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	99LN3D47-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	99LAM038-MB1	Ammonia, as N	1.2	u	MG/KG	1.2	1.0
BLANK10	99LSDA49-MB1	Sulfide	1.0	u	MG/KG	1.0	1.0
BLANK10	99LIC083-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

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INORGANICS ACCURACY REPORT 12/01/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L127

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WBR8	Chloride by IC	28.8	2.2	27.5	97.1	1.0
		Chloride by IC MSD	28.9	2.2	27.5	97.3	1.0
		Fluoride by IC	60.7	0.57	55.0	109.4	1.0
		Fluoride by IC MSD	60.8	0.57	55.0	109.5	1.0
		Nitrite by IC	28	1.4 u	28	103.4	1.0
		Nitrite by IC MSD	29	1.4 u	28	105.2	1.0
		Nitrate by IC	37	8.5	28	104.3	1.0
		Nitrate by IC MSD	37	8.5	28	103.9	1.0
		Phosphate by IC	29.0	1.4 u	27.5	105.6	1.0
		Phosphate by IC MSD	29.1	1.4 u	27.5	105.9	1.0
		Sulfate by IC	152	40.9	110	100.6	4.0
		Sulfate by IC MSD	151	40.9	110	100.5	4.0
		Ammonia, as N	52.7	1.4 u	54.8	96.2	1.0
-004	B0WBR7	Soluble Chromium VI	4.2	0.42u	4.2	100.8	1.0
		Insoluble Chromium VI	1160	0.42u	1180	98.3	100
		Nitrate Nitrite	6.6	1.5	5.2	98.6	1.0
		Nitrate Nitrite MSD	7.2	1.5	5.2	111.1	1.0
		Sulfide	345	4.0	345	99.0	1.0
		Sulfide MSD	333	4.0	339	97.0	1.0
BLANK10	99LICA81-MB1	Chloride by IC	23.9	1.2 u	25.0	95.4	1.0
		Fluoride by IC	53.4	1.2 u	50.0	106.7	1.0
		Nitrite by IC	25	1.2 u	25	98.8	1.0
		Nitrate by IC	24	1.2 u	25	97.9	1.0
		Phosphate by IC	25.5	1.2 u	25.0	101.9	1.0
BLANK10	99LVI066-MB1	Soluble Chromium VI	4.0	0.40u	4.0	100.0	1.0
		Insoluble Chromium VI	1190	0.40u	1160	101.9	100
BLANK10	99LICA83-MB1	Sulfate by IC	23.5	1.2 u	25.0	93.9	1.0
BLANK10	99LN3D47-MB1	Nitrate Nitrite	5.0	0.20u	5.0	101.0	1.0
		Nitrate Nitrite MSD	5.1	0.20u	5.0	102.6	1.0
BLANK10	99LAM038-MB1	Ammonia, as N	48.6	1.2 u	50.0	97.2	1.0
		Ammonia, as N MSD	51.0	1.2 u	50.0	102.0	1.0
BLANK10	99LSDA49-MB1	Sulfide	9.4	1.0 u	10.0	94.0	1.0
		Sulfide MSD	9.5	1.0 u	10.0	95.0	1.0
BLANK10	99LIC083-MB1	Chloride by IC	23.6	1.2 u	25.0	94.5	1.0
		Fluoride by IC	52.4	2.5 u	50.0	104.8	1.0
		Nitrite by IC	24	1.2 u	25	97.8	1.0
		Nitrate by IC	24	1.2 u	25	95.8	1.0
		Phosphate by IC	25.1	1.2 u	25.0	100.5	1.0

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INORGANICS DUPLICATE SPIKE REPORT 12/01/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L127

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	B0WBR8	Chloride by IC	97.1	97.3	0.25
		Fluoride by IC	109.4	109.5	0.11
		Nitrite by IC	103.4	105.2	1.8
		Nitrate by IC	104.3	103.9	0.37
		Phosphate by IC	105.6	105.9	0.25
		Sulfate by IC	100.6	100.5	0.11
-004	B0WBR7	Sulfide	99.0	97.0	2.0
		Nitrate Nitrite	98.6	111.1	11.9
BLANK10	99LN3D47-MB1	Nitrate Nitrite	101.0	102.6	1.6
BLANK10	99LAM038-MB1	Ammonia, as N	97.2	102.0	4.8
BLANK10	99LSDA49-MB1	Sulfide	94.0	95.0	1.1

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INORGANICS PRECISION REPORT 12/01/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L127

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WBR8	Chloride by IC	2.2	2.2	1.0	1.0
		Fluoride by IC	1.4 u	1.4 u	NC	1.0
		Nitrite by IC	1.4 u	1.4 u	NC	1.0
		Nitrate by IC	8.5	8.5	0.46	1.0
		Phosphate by IC	1.4 u	1.4 u	NC	1.0
		Sulfate by IC	40.9	41.3	0.80	1.0
		Ammonia, as N	1.4 u	1.3 u	NC	1.0
-004REP	B0WBR7	% Solids	95.7	96.8	1.2	1.0
		Chromium VI	0.42u	0.42u	NC	1.0
		Nitrate Nitrite	1.5	1.6	7.4	1.0
		pH	9.2	9.2	0.0	1.0
		Sulfide	4.0	1.0 u	NC	1.0
BLANREP	99LICA81-MB1	Sulfate by IC	1.2 u	24.0	NC	1.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/01/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L127

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS10	99LC109A-LC1	Cyanide, Total LCS	2.2	2.0	MG/KG	108.9
LCS20	99LC109A-LC2	Cyanide, Total LCS	9.8	10	MG/KG	97.5

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INORGANICS DATA SUMMARY REPORT 12/01/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L129

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WBR0	% Solids	90.6		%	0.01	1.0
		Chloride by IC	3.4		MG/KG	1.4	1.0
		Fluoride by IC	2.8	u	MG/KG	2.8	1.0
		Nitrite by IC	1.4	u	MG/KG	1.4	1.0
		Nitrate by IC	24		MG/KG	1.4	1.0
		Cyanide, Total	0.55	u	MG/KG	0.55	1.0
		Phosphate by IC	1.4	u	MG/KG	1.4	1.0
		Chromium VI	0.44	u	MG/KG	0.44	1.0
		Sulfate by IC	198		MG/KG	13.8	10.0
		Nitrate Nitrite	6.5		MG/KG	0.22	1.0
		Ammonia, as N	1.4	u	MG/KG	1.4	1.0
		pH	8.2		SOIL PH	0.01	1.0
		Sulfide	3.8		MG/KG	1.1	1.0
-002	B0WBR1	% Solids	92.9		%	0.01	1.0
		Chloride by IC	6.0		MG/KG	1.3	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	4.0		MG/KG	1.3	1.0
		Cyanide, Total	0.54	u	MG/KG	0.54	1.0
		Phosphate by IC	1.6		MG/KG	1.3	1.0
		Chromium VI	0.43	u	MG/KG	0.43	1.0
		Sulfate by IC	139		MG/KG	13.5	10.0
		Nitrate Nitrite	1.2		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.2		SOIL PH	0.01	1.0
		Sulfide	1.1	u	MG/KG	1.1	1.0
-003	B0WBR2	% Solids	97.0		%	0.01	1.0
		Chloride by IC	1.5		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	1.3	u	MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.6		MG/KG	1.3	1.0
		Chromium VI	0.41	u	MG/KG	0.41	1.0
		Sulfate by IC	4.4		MG/KG	1.3	1.0
		Nitrate Nitrite	0.91		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.8		SOIL PH	0.01	1.0

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INORGANICS DATA SUMMARY REPORT 12/01/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L129

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0WBR2	Sulfide	1.0	u	MG/KG	1.0	1.0
-004	B0WBR4	% Solids	97.9		%	0.01	1.0
		Chloride by IC	1.5		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	1.3	u	MG/KG	1.3	1.0
		Cyanide, Total	0.51	u	MG/KG	0.51	1.0
		Phosphate by IC	1.4		MG/KG	1.3	1.0
		Chromium VI	0.41	u	MG/KG	0.41	1.0
		Sulfate by IC	6.2		MG/KG	1.3	1.0
		Nitrate Nitrite	1.3		MG/KG	0.20	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.9		SOIL PH	0.01	1.0
		Sulfide	3.5		MG/KG	1.0	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/01/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L129

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LIC083-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
BLANK10	99LC109A-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK1	99LC115-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	99LVI067-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	99LICA83-MB1	Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	99LN3D47-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	99LANA55-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	99LAM038-MB1	Ammonia, as N	1.2	u	MG/KG	1.2	1.0
BLANK10	99LSDA49-MB1	Sulfide	1.0	u	MG/KG	1.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/01/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L129

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WBR0	Cyanide, Total	5.2	0.55u	5.5	94.5	1.0
		Cyanide, Total MSD	4.9	0.55u	5.5	89.2	1.0
		Nitrate Nitrite	9.8	5.4	4.7	93.6	5.0
-003	B0WBR2	Chloride by IC	25.6	1.5	25.8	93.5	1.0
		Chloride by IC MSD	25.4	1.5	25.8	93.0	1.0
		Fluoride by IC	54.7	0.0	51.5	106.2	1.0
		Fluoride by IC MSD	54.7	0.0	51.5	106.2	1.0
		Nitrite by IC	26	1.3 u	26	101.2	1.0
		Nitrite by IC MSD	26	1.3 u	26	101.8	1.0
		Nitrate by IC	26	1.3 u	26	101.1	1.0
		Nitrate by IC MSD	26	1.3 u	26	100.6	1.0
		Phosphate by IC	27.0	1.6	25.8	98.6	1.0
		Phosphate by IC MSD	26.8	1.6	25.8	98.1	1.0
		Sulfate by IC	29.9	4.4	25.8	98.9	1.0
		Sulfate by IC MSD	29.6	4.4	25.8	98.0	1.0
-004	B0WBR4	Soluble Chromium VI	4.2	0.41u	4.1	107.3	1.0
		Insoluble Chromium VI	1100	0.41u	1180	93.3	100
		Sulfide	369	3.5	369	99.2	1.0
		Sulfide MSD	379	3.5	380	98.8	1.0
BLANK10	99LIC083-MB1	Chloride by IC	23.6	1.2 u	25.0	94.5	1.0
		Fluoride by IC	52.4	2.5 u	50.0	104.8	1.0
		Nitrite by IC	24	1.2 u	25	97.8	1.0
		Nitrate by IC	24	1.2 u	25	95.8	1.0
		Phosphate by IC	25.1	1.2 u	25.0	100.5	1.0
BLANK10	99LVI067-MB1	Soluble Chromium VI	4.0	0.40u	4.0	99.8	1.0
		Insoluble Chromium VI	1150	0.40u	1160	98.8	100
BLANK10	99LICA83-MB1	Sulfate by IC	23.5	1.2 u	25.0	93.9	1.0
BLANK10	99LN3D47-MB1	Nitrate Nitrite	5.0	0.20u	5.0	101.0	1.0
		Nitrate Nitrite MSD	5.1	0.20u	5.0	102.6	1.0
BLANK10	99LANA55-MB1	Nitrate Nitrite	4.9	0.20u	5.0	98.4	1.0
		Nitrate Nitrite MSD	5.0	0.20u	5.0	100.8	1.0
BLANK10	99LAM038-MB1	Ammonia, as N	48.6	1.2 u	50.0	97.2	1.0
		Ammonia, as N MSD	51.0	1.2 u	50.0	102.0	1.0
BLANK10	99LSDA49-MB1	Sulfide	9.4	1.0 u	10.0	94.0	1.0
		Sulfide MSD	9.5	1.0 u	10.0	95.0	1.0

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INORGANICS DUPLICATE SPIKE REPORT 12/01/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L129

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	B0WBR0	Cyanide, Total	94.5	89.2	5.8
-003	B0WBR2	Chloride by IC	93.5	93.0	0.60
		Fluoride by IC	106.2	106.2	0.00
		Nitrite by IC	101.2	101.8	0.63
		Nitrate by IC	101.1	100.6	0.57
		Phosphate by IC	98.6	98.1	0.57
		Sulfate by IC	98.9	98.0	0.96
-004	B0WBR4	Sulfide	99.2	98.8	0.38
BLANK10	99LN3D47-MB1	Nitrate Nitrite	101.0	102.6	1.6
BLANK10	99LANA55-MB1	Nitrate Nitrite	98.4	100.8	2.4
BLANK10	99LAM038-MB1	Ammonia, as N	97.2	102.0	4.8
BLANK10	99LSDA49-MB1	Sulfide	94.0	95.0	1.1

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INORGANICS PRECISION REPORT 12/01/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L129

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WBR0	Cyanide, Total	0.55u	0.55u	NC	1.0
		Nitrate Nitrite	6.5	5.4	18.1	1.0
-003REP	B0WBR2	Chloride by IC	1.5	1.3 u	NC	1.0
		Fluoride by IC	2.6 u	2.6 u	NC	1.0
		Nitrite by IC	1.3 u	1.3 u	NC	1.0
		Nitrate by IC	1.3 u	1.3 u	NC	1.0
		Phosphate by IC	1.6	1.5	2.0	1.0
		Sulfate by IC	4.4	4.4	0.00	1.0
-004REP	B0WBR4	% Solids	97.9	97.4	0.48	1.0
		Chromium VI	0.41u	0.41u	NC	1.0
		pH	8.9	8.9	0.2	1.0
		Sulfide	3.5	4.1	16.7	1.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/01/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L129

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS10	99LC109A-LC1	Cyanide, Total LCS	2.2	2.0	MG/KG	108.9
LCS20	99LC109A-LC2	Cyanide, Total LCS	9.8	10	MG/KG	97.5
LCS1	99LC115-LC1	Cyanide, Total LCS	1.8	2.0	MG/KG	90.2
LCS2	99LC115-LC2	Cyanide, Total LCS	9.1	10	MG/KG	91.4

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L127

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBR8						
% SOLIDS	001	S	99L%S124	09/15/99	09/17/99	09/20/99
CHLORIDE BY IC	001	S	99LICA81	09/15/99	09/27/99	09/27/99
CHLORIDE BY IC	001 REP	S	99LICA81	09/15/99	09/27/99	09/27/99
CHLORIDE BY IC	001 MS	S	99LICA81	09/15/99	09/27/99	09/27/99
CHLORIDE BY IC	001 MSD	S	99LICA81	09/15/99	09/27/99	09/27/99
FLUORIDE BY IC	001	S	99LICA81	09/15/99	09/27/99	09/27/99
FLUORIDE BY IC	001 REP	S	99LICA81	09/15/99	09/27/99	09/27/99
FLUORIDE BY IC	001 MS	S	99LICA81	09/15/99	09/27/99	09/27/99
FLUORIDE BY IC	001 MSD	S	99LICA81	09/15/99	09/27/99	09/27/99
NITRITE BY IC	001	S	99LICA81	09/15/99	09/27/99	09/27/99
NITRITE BY IC	001 REP	S	99LICA81	09/15/99	09/27/99	09/27/99
NITRITE BY IC	001 MS	S	99LICA81	09/15/99	09/27/99	09/27/99
NITRITE BY IC	001 MSD	S	99LICA81	09/15/99	09/27/99	09/27/99
NITRATE BY IC	001	S	99LICA81	09/15/99	09/27/99	09/27/99
NITRATE BY IC	001 REP	S	99LICA81	09/15/99	09/27/99	09/27/99
NITRATE BY IC	001 MS	S	99LICA81	09/15/99	09/27/99	09/27/99
NITRATE BY IC	001 MSD	S	99LICA81	09/15/99	09/27/99	09/27/99
TOTAL CYANIDE	001	S	99LC109A	09/15/99	09/28/99	09/29/99
PHOSPHATE BY IC	001	S	99LICA81	09/15/99	09/27/99	09/27/99
PHOSPHATE BY IC	001 REP	S	99LICA81	09/15/99	09/27/99	09/27/99
PHOSPHATE BY IC	001 MS	S	99LICA81	09/15/99	09/27/99	09/27/99
PHOSPHATE BY IC	001 MSD	S	99LICA81	09/15/99	09/27/99	09/27/99
CHROMIUM VI	001	S	99LVI066	09/15/99	09/22/99	09/22/99
SULFATE BY IC	001	S	99LICA83	09/15/99	10/04/99	10/04/99
SULFATE BY IC	001 REP	S	99LICA83	09/15/99	10/04/99	10/04/99
SULFATE BY IC	001 MS	S	99LICA83	09/15/99	10/04/99	10/04/99
SULFATE BY IC	001 MSD	S	99LICA83	09/15/99	10/04/99	10/04/99
NITRATE NITRITE	001	S	99LN3D47	09/15/99	09/30/99	10/01/99
AMMONIA	001	S	99LAM038	09/15/99	10/12/99	10/12/99
AMMONIA	001 REP	S	99LAM038	09/15/99	10/12/99	10/12/99
AMMONIA	001 MS	S	99LAM038	09/15/99	10/12/99	10/12/99
PH	001	S	99LPH105	09/15/99	10/01/99	10/01/99
SULFIDE	001	S	99LSDA49	09/15/99	09/27/99	09/27/99
B0WBR5						
% SOLIDS	002	S	99L%S124	09/15/99	09/17/99	09/20/99

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/17/99 RFW LOT # :9909L127

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	002	S	99LIC083	09/15/99	10/04/99	10/04/99
FLUORIDE BY IC	002	S	99LIC083	09/15/99	10/04/99	10/04/99
NITRITE BY IC	002	S	99LIC083	09/15/99	10/04/99	10/04/99
NITRATE BY IC	002	S	99LIC083	09/15/99	10/04/99	10/04/99
TOTAL CYANIDE	002	S	99LC109A	09/15/99	09/28/99	09/29/99
PHOSPHATE BY IC	002	S	99LIC083	09/15/99	10/04/99	10/04/99
CHROMIUM VI	002	S	99LVI066	09/15/99	09/22/99	09/22/99
SULFATE BY IC	002	S	99LICA83	09/15/99	10/04/99	10/04/99
NITRATE NITRITE	002	S	99LN3D47	09/15/99	09/30/99	10/01/99
AMMONIA	002	S	99LAM038	09/15/99	10/12/99	10/12/99
PH	002	S	99LPH105	09/15/99	10/01/99	10/01/99
SULFIDE	002	S	99LSDA49	09/15/99	09/27/99	09/27/99
B0WBR6						
% SOLIDS	003	S	99L%S124	09/15/99	09/17/99	09/20/99
CHLORIDE BY IC	003	S	99LIC083	09/15/99	10/04/99	10/04/99
FLUORIDE BY IC	003	S	99LIC083	09/15/99	10/04/99	10/04/99
NITRITE BY IC	003	S	99LIC083	09/15/99	10/04/99	10/04/99
NITRATE BY IC	003	S	99LIC083	09/15/99	10/04/99	10/04/99
TOTAL CYANIDE	003	S	99LC109A	09/15/99	09/28/99	09/29/99
PHOSPHATE BY IC	003	S	99LIC083	09/15/99	10/04/99	10/04/99
CHROMIUM VI	003	S	99LVI066	09/15/99	09/22/99	09/22/99
SULFATE BY IC	003	S	99LICA83	09/15/99	10/04/99	10/04/99
NITRATE NITRITE	003	S	99LN3D47	09/15/99	09/30/99	10/01/99
AMMONIA	003	S	99LAM038	09/15/99	10/12/99	10/12/99
PH	003	S	99LPH105	09/15/99	10/01/99	10/01/99
SULFIDE	003	S	99LSDA49	09/15/99	09/27/99	09/27/99
B0WBR7						
% SOLIDS	004	S	99L%S124	09/15/99	09/17/99	09/20/99
% SOLIDS	004 REP	S	99L%S124	09/15/99	09/17/99	09/20/99
CHLORIDE BY IC	004	S	99LIC083	09/15/99	10/04/99	10/04/99
FLUORIDE BY IC	004	S	99LIC083	09/15/99	10/04/99	10/04/99
NITRITE BY IC	004	S	99LIC083	09/15/99	10/04/99	10/04/99
NITRATE BY IC	004	S	99LIC083	09/15/99	10/04/99	10/04/99
TOTAL CYANIDE	004	S	99LC109A	09/15/99	09/28/99	09/29/99

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/17/99 RFW LOT # :9909L127

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PHOSPHATE BY IC	004	S	99LIC083	09/15/99	10/04/99	10/04/99
CHROMIUM VI	004	S	99LVI066	09/15/99	09/22/99	09/22/99
CHROMIUM VI	004 REP	S	99LVI066	09/15/99	09/22/99	09/22/99
CHROMIUM VI	004 MS	S	99LVI066	09/15/99	09/22/99	09/22/99
CHROMIUM VI	004 MSD	S	99LVI066	09/15/99	09/22/99	09/22/99
SULFATE BY IC	004	S	99LICA83	09/15/99	10/04/99	10/04/99
NITRATE NITRITE	004	S	99LN3D47	09/15/99	09/30/99	10/01/99
NITRATE NITRITE	004 REP	S	99LN3D47	09/15/99	09/30/99	10/01/99
NITRATE NITRITE	004 MS	S	99LN3D47	09/15/99	09/30/99	10/01/99
NITRATE NITRITE	004 MSD	S	99LN3D47	09/15/99	09/30/99	10/01/99
AMMONIA	004	S	99LAM038	09/15/99	10/12/99	10/12/99
PH	004	S	99LPH105	09/15/99	10/01/99	10/01/99
PH	004 REP	S	99LPH105	09/15/99	10/01/99	10/01/99
SULFIDE	004	S	99LSDA49	09/15/99	09/27/99	09/27/99
SULFIDE	004 REP	S	99LSDA49	09/15/99	09/27/99	09/27/99
SULFIDE	004 MS	S	99LSDA49	09/15/99	09/27/99	09/27/99
SULFIDE	004 MSD	S	99LSDA49	09/15/99	09/27/99	09/27/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LICA81	N/A	09/27/99	09/27/99
CHLORIDE BY IC	MB1 BS	S	99LICA81	N/A	09/27/99	09/27/99
FLUORIDE BY IC	MB1	S	99LICA81	N/A	09/27/99	09/27/99
FLUORIDE BY IC	MB1 BS	S	99LICA81	N/A	09/27/99	09/27/99
NITRITE BY IC	MB1	S	99LICA81	N/A	09/27/99	09/27/99
NITRITE BY IC	MB1 BS	S	99LICA81	N/A	09/27/99	09/27/99
NITRATE BY IC	MB1	S	99LICA81	N/A	09/27/99	09/27/99
NITRATE BY IC	MB1 BS	S	99LICA81	N/A	09/27/99	09/27/99
TOTAL CYANIDE	LC1 L	S	99LC109A	N/A	09/28/99	09/29/99
TOTAL CYANIDE	LC2 L	S	99LC109A	N/A	09/28/99	09/29/99
TOTAL CYANIDE	MB1	S	99LC109A	N/A	09/28/99	09/29/99
PHOSPHATE BY IC	MB1	S	99LICA81	N/A	09/27/99	09/27/99
PHOSPHATE BY IC	MB1 BS	S	99LICA81	N/A	09/27/99	09/27/99
CHROMIUM VI	MB1	S	99LVI066	N/A	09/22/99	09/22/99
CHROMIUM VI	MB1 BS	S	99LVI066	N/A	09/22/99	09/22/99
CHROMIUM VI	MB1 BSD	S	99LVI066	N/A	09/22/99	09/22/99
SULFATE BY IC	MB1	S	99LICA83	N/A	10/04/99	10/04/99
SULFATE BY IC	MB1 BS	S	99LICA83	N/A	10/04/99	10/04/99

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/17/99 RFW LOT # :9909L127

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRATE NITRITE	MB1	S	99LN3D47	N/A	09/30/99	10/01/99
NITRATE NITRITE	MB1 BS	S	99LN3D47	N/A	09/30/99	10/01/99
NITRATE NITRITE	MB1 BSD	S	99LN3D47	N/A	09/30/99	10/01/99
AMMONIA	MB1	S	99LAM038	N/A	10/12/99	10/12/99
AMMONIA	MB1 BS	S	99LAM038	N/A	10/12/99	10/12/99
AMMONIA	MB1 BSD	S	99LAM038	N/A	10/12/99	10/12/99
SULFIDE	MB1	S	99LSDA49	N/A	09/27/99	09/27/99
SULFIDE	MB1 BS	S	99LSDA49	N/A	09/27/99	09/27/99
SULFIDE	MB1 BSD	S	99LSDA49	N/A	09/27/99	09/27/99
CHLORIDE BY IC	MB1	S	99LIC083	N/A	10/04/99	10/04/99
CHLORIDE BY IC	MB1 BS	S	99LIC083	N/A	10/04/99	10/04/99
FLUORIDE BY IC	MB1	S	99LIC083	N/A	10/04/99	10/04/99
FLUORIDE BY IC	MB1 BS	S	99LIC083	N/A	10/04/99	10/04/99
NITRITE BY IC	MB1	S	99LIC083	N/A	10/04/99	10/04/99
NITRITE BY IC	MB1 BS	S	99LIC083	N/A	10/04/99	10/04/99
NITRATE BY IC	MB1	S	99LIC083	N/A	10/04/99	10/04/99
NITRATE BY IC	MB1 BS	S	99LIC083	N/A	10/04/99	10/04/99
PHOSPHATE BY IC	MB1	S	99LIC083	N/A	10/04/99	10/04/99
PHOSPHATE BY IC	MB1 BS	S	99LIC083	N/A	10/04/99	10/04/99

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/17/99 RFW LOT # :9909L129

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBR0						
% SOLIDS	001	S	99L%S125	09/14/99	09/22/99	09/23/99
CHLORIDE BY IC	001	S	99LIC083	09/14/99	10/04/99	10/04/99
FLUORIDE BY IC	001	S	99LIC083	09/14/99	10/04/99	10/04/99
NITRITE BY IC	001	S	99LIC083	09/14/99	10/04/99	10/04/99
NITRATE BY IC	001	S	99LIC083	09/14/99	10/04/99	10/04/99
TOTAL CYANIDE	001	S	99LC109A	09/14/99	09/28/99	09/29/99
TOTAL CYANIDE	001 REP	S	99LC115	09/14/99	10/08/99	10/08/99
TOTAL CYANIDE	001 MS	S	99LC115	09/14/99	10/08/99	10/08/99
TOTAL CYANIDE	001 MSD	S	99LC115	09/14/99	10/08/99	10/08/99
PHOSPHATE BY IC	001	S	99LIC083	09/14/99	10/04/99	10/04/99
CHROMIUM VI	001	S	99LVI067	09/14/99	09/29/99	09/29/99
SULFATE BY IC	001	S	99LICA83	09/14/99	10/04/99	10/04/99
NITRATE NITRITE	001	S	99LN3D47	09/14/99	09/30/99	10/01/99
NITRATE NITRITE	001 REP	S	99LANA55	09/14/99	11/17/99	11/18/99
NITRATE NITRITE	001 MS	S	99LANA55	09/14/99	11/17/99	11/18/99
AMMONIA	001	S	99LAM038	09/14/99	10/12/99	10/12/99
PH	001	S	99LPH105	09/14/99	10/01/99	10/01/99
SULFIDE	001	S	99LSDA49	09/14/99	09/27/99	09/27/99
B0WBR1						
% SOLIDS	002	S	99L%S125	09/14/99	09/22/99	09/23/99
CHLORIDE BY IC	002	S	99LIC083	09/14/99	10/04/99	10/04/99
FLUORIDE BY IC	002	S	99LIC083	09/14/99	10/04/99	10/04/99
NITRITE BY IC	002	S	99LIC083	09/14/99	10/04/99	10/04/99
NITRATE BY IC	002	S	99LIC083	09/14/99	10/04/99	10/04/99
TOTAL CYANIDE	002	S	99LC109A	09/14/99	09/28/99	09/29/99
PHOSPHATE BY IC	002	S	99LIC083	09/14/99	10/04/99	10/04/99
CHROMIUM VI	002	S	99LVI067	09/14/99	09/29/99	09/29/99
SULFATE BY IC	002	S	99LICA83	09/14/99	10/04/99	10/04/99
NITRATE NITRITE	002	S	99LN3D47	09/14/99	09/30/99	10/01/99
AMMONIA	002	S	99LAM038	09/14/99	10/12/99	10/12/99
PH	002	S	99LPH105	09/14/99	10/01/99	10/01/99
SULFIDE	002	S	99LSDA49	09/14/99	09/27/99	09/27/99
B0WBR2						
% SOLIDS	003	S	99L%S125	09/14/99	09/22/99	09/23/99

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/17/99 RFW LOT # :9909L129

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	003	S	99LIC083	09/14/99	10/04/99	10/04/99
CHLORIDE BY IC	003 REP	S	99LIC083	09/14/99	10/04/99	10/04/99
CHLORIDE BY IC	003 MS	S	99LIC083	09/14/99	10/04/99	10/04/99
CHLORIDE BY IC	003 MSD	S	99LIC083	09/14/99	10/04/99	10/04/99
FLUORIDE BY IC	003	S	99LIC083	09/14/99	10/04/99	10/04/99
FLUORIDE BY IC	003 REP	S	99LIC083	09/14/99	10/04/99	10/04/99
FLUORIDE BY IC	003 MS	S	99LIC083	09/14/99	10/04/99	10/04/99
FLUORIDE BY IC	003 MSD	S	99LIC083	09/14/99	10/04/99	10/04/99
NITRITE BY IC	003	S	99LIC083	09/14/99	10/04/99	10/04/99
NITRITE BY IC	003 REP	S	99LIC083	09/14/99	10/04/99	10/04/99
NITRITE BY IC	003 MS	S	99LIC083	09/14/99	10/04/99	10/04/99
NITRITE BY IC	003 MSD	S	99LIC083	09/14/99	10/04/99	10/04/99
NITRATE BY IC	003	S	99LIC083	09/14/99	10/04/99	10/04/99
NITRATE BY IC	003 REP	S	99LIC083	09/14/99	10/04/99	10/04/99
NITRATE BY IC	003 MS	S	99LIC083	09/14/99	10/04/99	10/04/99
NITRATE BY IC	003 MSD	S	99LIC083	09/14/99	10/04/99	10/04/99
TOTAL CYANIDE	003	S	99LC109A	09/14/99	09/28/99	09/29/99
PHOSPHATE BY IC	003	S	99LIC083	09/14/99	10/04/99	10/04/99
PHOSPHATE BY IC	003 REP	S	99LIC083	09/14/99	10/04/99	10/04/99
PHOSPHATE BY IC	003 MS	S	99LIC083	09/14/99	10/04/99	10/04/99
PHOSPHATE BY IC	003 MSD	S	99LIC083	09/14/99	10/04/99	10/04/99
CHROMIUM VI	003	S	99LVI067	09/14/99	09/29/99	09/29/99
SULFATE BY IC	003	S	99LICA83	09/14/99	10/04/99	10/04/99
SULFATE BY IC	003 REP	S	99LICA83	09/14/99	10/04/99	10/04/99
SULFATE BY IC	003 MS	S	99LICA83	09/14/99	10/04/99	10/04/99
SULFATE BY IC	003 MSD	S	99LICA83	09/14/99	10/04/99	10/04/99
NITRATE NITRITE	003	S	99LN3D47	09/14/99	09/30/99	10/01/99
AMMONIA	003	S	99LAM038	09/14/99	10/12/99	10/12/99
PH	003	S	99LPH105	09/14/99	10/01/99	10/01/99
SULFIDE	003	S	99LSDA49	09/14/99	09/27/99	09/27/99
B0WBR4						
% SOLIDS	004	S	99L%S125	09/14/99	09/22/99	09/23/99
% SOLIDS	004 REP	S	99L%S125	09/14/99	09/22/99	09/23/99
CHLORIDE BY IC	004	S	99LIC083	09/14/99	10/04/99	10/04/99
FLUORIDE BY IC	004	S	99LIC083	09/14/99	10/04/99	10/04/99
NITRITE BY IC	004	S	99LIC083	09/14/99	10/04/99	10/04/99

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 09/17/99 RFW LOT # :9909L129

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRATE BY IC	004	S	99LIC083	09/14/99	10/04/99	10/04/99
TOTAL CYANIDE	004	S	99LC109A	09/14/99	09/28/99	09/29/99
PHOSPHATE BY IC	004	S	99LIC083	09/14/99	10/04/99	10/04/99
CHROMIUM VI	004	S	99LVI067	09/14/99	09/29/99	09/29/99
CHROMIUM VI	004 REP	S	99LVI067	09/14/99	09/29/99	09/29/99
CHROMIUM VI	004 MS	S	99LVI067	09/14/99	09/29/99	09/29/99
CHROMIUM VI	004 MSD	S	99LVI067	09/14/99	09/29/99	09/29/99
SULFATE BY IC	004	S	99LICA83	09/14/99	10/04/99	10/04/99
NITRATE NITRITE	004	S	99LN3D47	09/14/99	09/30/99	10/01/99
AMMONIA	004	S	99LAM038	09/14/99	10/12/99	10/12/99
PH	004	S	99LPH105	09/14/99	10/01/99	10/01/99
PH	004 REP	S	99LPH105	09/14/99	10/01/99	10/01/99
SULFIDE	004	S	99LSDA49	09/14/99	09/27/99	09/27/99
SULFIDE	004 REP	S	99LSDA49	09/14/99	09/27/99	09/27/99
SULFIDE	004 MS	S	99LSDA49	09/14/99	09/27/99	09/27/99
SULFIDE	004 MSD	S	99LSDA49	09/14/99	09/27/99	09/27/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LIC083	N/A	10/04/99	10/04/99
CHLORIDE BY IC	MB1 BS	S	99LIC083	N/A	10/04/99	10/04/99
FLUORIDE BY IC	MB1	S	99LIC083	N/A	10/04/99	10/04/99
FLUORIDE BY IC	MB1 BS	S	99LIC083	N/A	10/04/99	10/04/99
NITRITE BY IC	MB1	S	99LIC083	N/A	10/04/99	10/04/99
NITRITE BY IC	MB1 BS	S	99LIC083	N/A	10/04/99	10/04/99
NITRATE BY IC	MB1	S	99LIC083	N/A	10/04/99	10/04/99
NITRATE BY IC	MB1 BS	S	99LIC083	N/A	10/04/99	10/04/99
TOTAL CYANIDE	LC1 L	S	99LC109A	N/A	09/28/99	09/29/99
TOTAL CYANIDE	LC2 L	S	99LC109A	N/A	09/28/99	09/29/99
TOTAL CYANIDE	MB1	S	99LC109A	N/A	09/28/99	09/29/99
TOTAL CYANIDE	LC1 L	S	99LC115	N/A	10/08/99	10/08/99
TOTAL CYANIDE	LC2 L	S	99LC115	N/A	10/08/99	10/08/99
TOTAL CYANIDE	MB1	S	99LC115	N/A	10/08/99	10/08/99
PHOSPHATE BY IC	MB1	S	99LIC083	N/A	10/04/99	10/04/99
PHOSPHATE BY IC	MB1 BS	S	99LIC083	N/A	10/04/99	10/04/99
CHROMIUM VI	MB1	S	99LVI067	N/A	09/29/99	09/29/99
CHROMIUM VI	MB1 BS	S	99LVI067	N/A	09/29/99	09/29/99
CHROMIUM VI	MB1 BSD	S	99LVI067	N/A	09/29/99	09/29/99

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L129

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SULFATE BY IC	MB1	S	99LICA83	N/A	10/04/99	10/04/99
SULFATE BY IC	MB1 BS	S	99LICA83	N/A	10/04/99	10/04/99
NITRATE NITRITE	MB1	S	99LN3D47	N/A	09/30/99	10/01/99
NITRATE NITRITE	MB1 BS	S	99LN3D47	N/A	09/30/99	10/01/99
NITRATE NITRITE	MB1 BSD	S	99LN3D47	N/A	09/30/99	10/01/99
NITRATE NITRITE	MB1	S	99LANA55	N/A	11/17/99	11/18/99
NITRATE NITRITE	MB1 BS	S	99LANA55	N/A	11/17/99	11/18/99
NITRATE NITRITE	MB1 BSD	S	99LANA55	N/A	11/17/99	11/18/99
AMMONIA	MB1	S	99LAM038	N/A	10/12/99	10/12/99
AMMONIA	MB1 BS	S	99LAM038	N/A	10/12/99	10/12/99
AMMONIA	MB1 BSD	S	99LAM038	N/A	10/12/99	10/12/99
SULFIDE	MB1	S	99LSDA49	N/A	09/27/99	09/27/99
SULFIDE	MB1 BS	S	99LSDA49	N/A	09/27/99	09/27/99
SULFIDE	MB1 BSD	S	99LSDA49	N/A	09/27/99	09/27/99

RECRA LabNet Use Only
9909L127

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

020

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) PCB wetchem perrone

Client: TRU Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: CJ
QC: spec Del: std TAT: 30 day
Date Rec'd: 9-17-99 Date Due: 10/17/99
Account #:

Refrigerator #		1	6	6				6	6							
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG							
Volume	Liquid															
	Solid	60mL	250						500							
Preservatives																
ANALYSES REQUESTED →	ORGANIC: VOA		BNA		Pest/PCB	Herb			INORG: 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	8024H OGCSC	8025H ODRO	PCB				ICP6	Met①	IC NO2	IC NO3	IC SO4	IC Cl	IC F	IC PO4
001	BOWBR8			S	9-15-99	0945	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓
002	BOWBR5			↓	↓	0739	✓	✓	↓				✓	✓	↓	↓	↓	↓	↓	↓
003	BOWBR10			↓	↓	0834	✓	✓	↓				✓	✓	↓	↓	↓	↓	↓	↓
004	BOWBR7			↓	↓	↓	✓	✓	↓				✓	✓	↓	↓	↓	↓	↓	↓

Special Instructions:

saf # B99-078
sdg with 9909L129

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
Met① = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
3. Cu, Ni, V, Zn, Hg
9/23/99 4. tests added per client coc
5. OGCSC = 1-Propanol + Ethanol
6.

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 4.1 °C

Relinquished by	Received by	Date	Time
Fred Ek	T Murray	9-17-99	1020

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

*N235795295 01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-121	Page 1 of 12

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond (B8758) >15'		SAF No.: B99-078
Ice Chest No.: ERC 96 024	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA	Offsite Property No.: A990259		Bill of Lading/Air Bill No.: 4235795 2956 1
9-15-99			COA: B20CW167K

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

Sample No.	Matrix *	Sample Date	Sample Time										
B0WBR8	Soil	9.15.99	0945	X	X		X			B0WCR1			
~~B0WBR9~~	~~Soil~~		9/15/9										
~~B0WBT0~~	~~Soil~~		9/15/99										
~~B0WBT1~~	~~Soil~~		CT 9/15/99										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Cthu	Date/Time: 9/15/99 1530	Received By: Ref 1B	Date/Time: 9/15/99 1530
Relinquished By: Ref 1B	Date/Time: 9/6/99 1300	Received By: SIGALE	Date/Time: 9/6/99 1300
Relinquished By: SIGALE	Date/Time: 9/6/99 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9-17-99 1020	Received By: T Murray	Date/Time: 9-17-99 1020

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, Ni-63, Tech-99, Tritium, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-120	Page 1 of 2

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 Bpond (B8758) <15'		SAF No.: B99-078
Ice Chest No.: ERC96 024	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA DJB 9-15-99	Offsite Property No.: A990259		Bill of Lading/Air Bill No.: 4235795295 61
			COA: B20CW1 671C

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

	Sample No.	Matrix *	Sample Date	Sample Time										
1	~~B0WBR4~~ DJB 9-15-99	Soil												
2	B0WBR5	Soil	9-15-99 ~~5-15-99~~	0739	X	X		X				BOWCR1		
3	B0WBR6	Soil	9-15-99	0834	X	X		X	~~X~~ 9/16/99			BOWCR1		
4	B0WBR7	Soil	9.15.99	0834	X	X		X				BOWCR1		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: C Mu	Date/Time: 9/15/99 1530	Received By: Rf IB	Date/Time: 9/15/99 1530
Relinquished By: RF IB	Date/Time: 91699 1300	Received By: SJ GALE	Date/Time: 91699 1300
Relinquished By: SJ GALE	Date/Time: 91699 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9-17-99 1020	Received By: TM Murey	Date/Time: 9-17-99 1020

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

COLLECTOR UNAVAILABLE TO SIGN COC

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

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

RECRA LabNet Use Only
9909L 129

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) PCB perrone wet lab

Client TNU HANFORD B099-078

Est. Final Proj. Sampling Date 9/18/99

Project # 16985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager DJ

QC Spec Del std TAT 30 days

Date Rec'd 9/17/99 Date Due 10/17/99

Account #

Refrigerator #		1	6						6							
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG							
Volume	Liquid															
	Solid	60	250						500							
Preservatives		—							—							
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	~~Pest/~~ PCB ~~Herb~~	TPH	WTPHD			Metal	CN						
RECRA LabNet Use Only		OGZ4H OGCSC	OGZSH ODRO						Met(1)	1(2) NTO 1(3)U2	1SFD 1(4)H3U	1PH OPCB	1(2)CL 1CFL 1(5)P4	1(2)N02 1(2)N03 1CR4		

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OGZ4H OGCSC	OGZSH ODRO					Met(1)	1(2) NTO 1(3)U2	1SFD 1(4)H3U	1PH OPCB	1(2)CL 1CFL 1(5)P4	1(2)N02 1(2)N03 1CR4		
S - Soil	001	BOWBRO			S	9-14-99	1216	1	1	✓	✓	✓		✓	X	X	X	X	X		
SE - Sediment	002	1					1300	1	1	✓	✓	✓		✓							
SO - Solid	003	2					1340	1	1	✓	✓	✓		✓							
SL - Sludge	004	4					1510	1	1	✓	✓	✓		✓							
W - Water																					
O - Oil																					
A - Air																					
DS - Drum Solids																					
DL - Drum Liquids																					
L - EP/TCLP Leachate																					
WI - Wipe																					
X - Other																					
F - Fish																					

9/18/99

Special Instructions:

Ref# B99-078

COMPOSITE WASTE

9/23/99 - no matrix QC required

DATE/REVISIONS:

1. Met(1) = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
2. Cu, Ni, V, Zn, Hg, 1CR6
3. 9/23/99 tests ~~on~~ added per client COC 9/23/99
4. OGCSC 2-propanol + ethanol
5. 9/23/99
6. ~~Run matrix QC~~

RECRA LabNet Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___

Airbill # See Below

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Labels Indicate Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

COC Tape was: 1) Present on Outer Package (Y) or N

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 4.1 °C

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

NOTES: 4235795295 50

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	9-17-99	2:45

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-119	Page 1 of 1

Collector Bowers/Trice	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location 200 Bpond (B8758) <15'		SAF No. B99-078
Ice Chest No. ERC 96 065	Field Logbook No. EL-1511		Method of Shipment Fed Ex
Shipped To TMA/RECRA DJB 9-14-99	Offsite Property No. A990257		Bill of Lading/Air Bill No. 11235 7952 9550
			COA B20CW1 671C

Price Code 8N

Data Turnaround 45 Days

030

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

Sample No.	Matrix *	Sample Date	Sample Time										
B0WBR0	Soil	9.14.99	1216	X	X		X		BOWCRO				
B0WBR1	Soil	9.14.99	1300	X	X		X		BOWCRO				
B0WBR2	Soil	9.14.99	1340	X	X		X		BOWCRO				
~~B0WBR3 9.14.99~~	Soil												
BOWBR4	Soil	9.14.99	1510	X	X		X		BOWCRO				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers / Doug Bowers	Date/Time 9-17-99/1700	Received By R F JB	Date/Time 9-17-99/1700
Relinquished By Refer JB	Date/Time 9/16/99 11:30	Received By Brent Porter	Date/Time 9/16/99 11:30
Relinquished By Brent Porter	Date/Time 9/16/99 11:30	Received By Fed Express	Date/Time 9/16/99 11:30
Relinquished By Fed Ex	Date/Time 9-17-99 0245	Received By Vicki Henry	Date/Time 9-17-99 0245

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

Collector unavailable to sign COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L129
SDG/SAF# : H0534/B99-078

W.O.# : 10985-001-001-9999-00
Date Received: 09-17-99

REVISION

METALS CASE NARRATIVE

This package has been revised to include the addition of Antimony and Thallium.

1. This narrative covers the analyses of 4 soil samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

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

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

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

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

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

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

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

10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy 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 016 pages.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B0WBR0	Lead	200	96.8
	Antimony	200	96.8

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

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

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-11-95
Date

mld/m10-129r

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9909L129

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 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L129

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WBR0	Silver, Total	0.29	MG/KG	0.09	1.0
		Arsenic, Total	5.2	MG/KG	0.31	1.0
		Barium, Total	58.6	MG/KG	0.03	1.0
		Beryllium, Total	0.13	MG/KG	0.009	1.0
		Cadmium, Total	1.7	MG/KG	0.03	1.0
		Chromium, Total	8.7	MG/KG	0.07	1.0
		Copper, Total	11.3	MG/KG	0.11	1.0
		Mercury, Total	0.42	MG/KG	0.02	1.0
		Nickel, Total	7.0	MG/KG	0.11	1.0
		Lead, Total	43.4	MG/KG	0.19	1.0
		Antimony, Total	0.23 u	MG/KG	0.23	1.0
		Selenium, Total	0.34 u	MG/KG	0.34	1.0
		Thallium, Total	0.49 u	MG/KG	0.49	1.0
		Vanadium, Total	66.3	MG/KG	0.06	1.0
		Zinc, Total	48.2	MG/KG	0.07	1.0
-002	B0WBR1	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	4.6	MG/KG	0.33	1.0
		Barium, Total	79.9	MG/KG	0.03	1.0
		Beryllium, Total	0.21	MG/KG	0.01	1.0
		Cadmium, Total	0.36	MG/KG	0.03	1.0
		Chromium, Total	6.2	MG/KG	0.08	1.0
		Copper, Total	14.0	MG/KG	0.12	1.0
		Mercury, Total	0.18	MG/KG	0.02	1.0
		Nickel, Total	6.9	MG/KG	0.12	1.0
		Lead, Total	20.8	MG/KG	0.21	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Thallium, Total	0.52 u	MG/KG	0.52	1.0
		Vanadium, Total	53.7	MG/KG	0.06	1.0
		Zinc, Total	44.8	MG/KG	0.08	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L129

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0WBR2	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	2.0	MG/KG	0.33	1.0
		Barium, Total	58.7	MG/KG	0.03	1.0
		Beryllium, Total	0.14	MG/KG	0.01	1.0
		Cadmium, Total	0.09	MG/KG	0.03	1.0
		Chromium, Total	4.2	MG/KG	0.08	1.0
		Copper, Total	12.6	MG/KG	0.12	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	4.7	MG/KG	0.12	1.0
		Lead, Total	3.1	MG/KG	0.21	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Thallium, Total	0.53 u	MG/KG	0.53	1.0
		Vanadium, Total	40.5	MG/KG	0.06	1.0
		Zinc, Total	33.9	MG/KG	0.08	1.0
-004	B0WBR4	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.0	MG/KG	0.30	1.0
		Barium, Total	60.5	MG/KG	0.03	1.0
		Beryllium, Total	0.11	MG/KG	0.009	1.0
		Cadmium, Total	0.09	MG/KG	0.03	1.0
		Chromium, Total	10.4	MG/KG	0.07	1.0
		Copper, Total	11.6	MG/KG	0.11	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	7.7	MG/KG	0.11	1.0
		Lead, Total	2.8	MG/KG	0.19	1.0
		Antimony, Total	0.23 u	MG/KG	0.23	1.0
		Selenium, Total	0.34 u	MG/KG	0.34	1.0
		Thallium, Total	0.49 u	MG/KG	0.49	1.0
		Vanadium, Total	50.4	MG/KG	0.06	1.0
		Zinc, Total	37.6	MG/KG	0.07	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L129

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0674-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Barium, Total	0.05	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	0.10	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	0.21 u	MG/KG	0.21	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Thallium, Total	0.53 u	MG/KG	0.53	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.08 u	MG/KG	0.08	1.0
BLANK1	99C0283-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

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INORGANICS ACCURACY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L129

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WBR0	Silver, Total	5.3	0.29	5.4	92.8	1.0
		Arsenic, Total	204	5.2	214	92.7	1.0
		Barium, Total	260	58.6	214	94.0	1.0
		Beryllium, Total	5.1	0.13	5.4	92.0	1.0
		Cadmium, Total	6.3	1.7	5.4	85.2	1.0
		Chromium, Total	29.9	8.7	21.4	99.1	1.0
		Copper, Total	36.1	11.3	26.8	92.5	1.0
		Mercury, Total	0.62	0.42	0.17	119.1	1.0
		Nickel, Total	56.2	7.0	53.6	91.8	1.0
		Lead, Total	83.3	43.4	53.6	74.4	1.0
		Antimony, Total	26.6	0.23u	53.6	49.6	1.0
		Selenium, Total	195	0.34u	214	91.0	1.0
		Thallium, Total	202	0.49u	214	94.0	1.0
		Vanadium, Total	111	66.3	53.6	83.5	1.0
		Zinc, Total	93.3	48.2	53.6	84.2	1.0

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INORGANICS PRECISION REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L129

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WBR0	Silver, Total	0.29	0.28	3.3	1.0
		Arsenic, Total	5.2	4.0	26.1	1.0
		Barium, Total	58.6	57.9	1.2	1.0
		Beryllium, Total	0.13	0.14	8.4	1.0
		Cadmium, Total	1.7	1.5	12.5	1.0
		Chromium, Total	8.7	9.2	5.6	1.0
		Copper, Total	11.3	11.1	1.8	1.0
		Mercury, Total	0.42	0.48	14.0	1.0
		Nickel, Total	7.0	6.9	1.4	1.0
		Lead, Total	43.4	45.0	3.6	1.0
		Antimony, Total	0.23u	0.27u	NC	1.0
		Selenium, Total	0.34u	0.39u	NC	1.0
		Thallium, Total	0.49u	0.56u	NC	1.0
		Vanadium, Total	66.3	60.0	10	1.0
		Zinc, Total	48.2	47.9	0.62	1.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L129

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0674-LC1	Silver, LCS	48.8	50.0	MG/KG	97.6
		Arsenic, LCS	952	1000	MG/KG	95.2
		Barium, LCS	500	500	MG/KG	100.0
		Beryllium, LCS	24.3	25.0	MG/KG	97.2
		Cadmium, LCS	24.2	25.0	MG/KG	96.8
		Chromium, LCS	50.8	50.0	MG/KG	101.6
		Copper, LCS	126	125	MG/KG	100.7
		Nickel, LCS	195	200	MG/KG	97.4
		Lead, LCS	242	250	MG/KG	96.8
		Antimony, LCS	292	300	MG/KG	97.2
		Selenium, LCS	921	1000	MG/KG	92.1
		Thallium, LCS	974	1000	MG/KG	97.4
		Vanadium, LCS	259	250	MG/KG	103.4
		Zinc, LCS	95.2	100	MG/KG	95.2
LCS1	99C0283-LC1	Mercury, LCS	1.0	1.0	MG/KG	101.8

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L129

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBR0						
SILVER, TOTAL	001	S	99L0674	09/14/99	10/04/99	10/15/99
SILVER, TOTAL	001 REP	S	99L0674	09/14/99	10/04/99	10/15/99
SILVER, TOTAL	001 MS	S	99L0674	09/14/99	10/04/99	10/15/99
ARSENIC, TOTAL	001	S	99L0674	09/14/99	10/04/99	10/15/99
ARSENIC, TOTAL	001 REP	S	99L0674	09/14/99	10/04/99	10/15/99
ARSENIC, TOTAL	001 MS	S	99L0674	09/14/99	10/04/99	10/15/99
BARIUM, TOTAL	001	S	99L0674	09/14/99	10/04/99	10/15/99
BARIUM, TOTAL	001 REP	S	99L0674	09/14/99	10/04/99	10/15/99
BARIUM, TOTAL	001 MS	S	99L0674	09/14/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	001	S	99L0674	09/14/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	001 REP	S	99L0674	09/14/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	001 MS	S	99L0674	09/14/99	10/04/99	10/15/99
CADMIUM, TOTAL	001	S	99L0674	09/14/99	10/04/99	10/15/99
CADMIUM, TOTAL	001 REP	S	99L0674	09/14/99	10/04/99	10/15/99
CADMIUM, TOTAL	001 MS	S	99L0674	09/14/99	10/04/99	10/15/99
CHROMIUM, TOTAL	001	S	99L0674	09/14/99	10/04/99	10/15/99
CHROMIUM, TOTAL	001 REP	S	99L0674	09/14/99	10/04/99	10/15/99
CHROMIUM, TOTAL	001 MS	S	99L0674	09/14/99	10/04/99	10/15/99
COPPER, TOTAL	001	S	99L0674	09/14/99	10/04/99	10/15/99
COPPER, TOTAL	001 REP	S	99L0674	09/14/99	10/04/99	10/15/99
COPPER, TOTAL	001 MS	S	99L0674	09/14/99	10/04/99	10/15/99
MERCURY, TOTAL	001	S	99C0283	09/14/99	09/30/99	10/01/99
MERCURY, TOTAL	001 REP	S	99C0283	09/14/99	09/30/99	10/01/99
MERCURY, TOTAL	001 MS	S	99C0283	09/14/99	09/30/99	10/01/99
NICKEL, TOTAL	001	S	99L0674	09/14/99	10/04/99	10/15/99
NICKEL, TOTAL	001 REP	S	99L0674	09/14/99	10/04/99	10/15/99
NICKEL, TOTAL	001 MS	S	99L0674	09/14/99	10/04/99	10/15/99
LEAD, TOTAL	001	S	99L0674	09/14/99	10/04/99	10/15/99
LEAD, TOTAL	001 REP	S	99L0674	09/14/99	10/04/99	10/15/99
LEAD, TOTAL	001 MS	S	99L0674	09/14/99	10/04/99	10/15/99
ANTIMONY, TOTAL	001	S	99L0674	09/14/99	10/04/99	10/15/99
ANTIMONY, TOTAL	001 REP	S	99L0674	09/14/99	10/04/99	10/15/99
ANTIMONY, TOTAL	001 MS	S	99L0674	09/14/99	10/04/99	10/15/99
SELENIUM, TOTAL	001	S	99L0674	09/14/99	10/04/99	10/15/99
SELENIUM, TOTAL	001 REP	S	99L0674	09/14/99	10/04/99	10/15/99

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L129

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001 MS	S	99L0674	09/14/99	10/04/99	10/15/99
THALLIUM, TOTAL	001	S	99L0674	09/14/99	10/04/99	10/15/99
THALLIUM, TOTAL	001 REP	S	99L0674	09/14/99	10/04/99	10/15/99
THALLIUM, TOTAL	001 MS	S	99L0674	09/14/99	10/04/99	10/15/99
VANADIUM, TOTAL	001	S	99L0674	09/14/99	10/04/99	10/15/99
VANADIUM, TOTAL	001 REP	S	99L0674	09/14/99	10/04/99	10/15/99
VANADIUM, TOTAL	001 MS	S	99L0674	09/14/99	10/04/99	10/15/99
ZINC, TOTAL	001	S	99L0674	09/14/99	10/04/99	10/15/99
ZINC, TOTAL	001 REP	S	99L0674	09/14/99	10/04/99	10/15/99
ZINC, TOTAL	001 MS	S	99L0674	09/14/99	10/04/99	10/15/99
B0WBR1						
SILVER, TOTAL	002	S	99L0674	09/14/99	10/04/99	10/15/99
ARSENIC, TOTAL	002	S	99L0674	09/14/99	10/04/99	10/15/99
BARIUM, TOTAL	002	S	99L0674	09/14/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	002	S	99L0674	09/14/99	10/04/99	10/15/99
CADMIUM, TOTAL	002	S	99L0674	09/14/99	10/04/99	10/15/99
CHROMIUM, TOTAL	002	S	99L0674	09/14/99	10/04/99	10/15/99
COPPER, TOTAL	002	S	99L0674	09/14/99	10/04/99	10/15/99
MERCURY, TOTAL	002	S	99C0283	09/14/99	09/30/99	10/01/99
NICKEL, TOTAL	002	S	99L0674	09/14/99	10/04/99	10/15/99
LEAD, TOTAL	002	S	99L0674	09/14/99	10/04/99	10/15/99
ANTIMONY, TOTAL	002	S	99L0674	09/14/99	10/04/99	10/15/99
SELENIUM, TOTAL	002	S	99L0674	09/14/99	10/04/99	10/15/99
THALLIUM, TOTAL	002	S	99L0674	09/14/99	10/04/99	10/15/99
VANADIUM, TOTAL	002	S	99L0674	09/14/99	10/04/99	10/15/99
ZINC, TOTAL	002	S	99L0674	09/14/99	10/04/99	10/15/99
B0WBR2						
SILVER, TOTAL	003	S	99L0674	09/14/99	10/04/99	10/15/99
ARSENIC, TOTAL	003	S	99L0674	09/14/99	10/04/99	10/15/99
BARIUM, TOTAL	003	S	99L0674	09/14/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	003	S	99L0674	09/14/99	10/04/99	10/15/99
CADMIUM, TOTAL	003	S	99L0674	09/14/99	10/04/99	10/15/99
CHROMIUM, TOTAL	003	S	99L0674	09/14/99	10/04/99	10/15/99
COPPER, TOTAL	003	S	99L0674	09/14/99	10/04/99	10/15/99

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L129

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	003	S	99C0283	09/14/99	09/30/99	10/01/99
NICKEL, TOTAL	003	S	99L0674	09/14/99	10/04/99	10/15/99
LEAD, TOTAL	003	S	99L0674	09/14/99	10/04/99	10/15/99
ANTIMONY, TOTAL	003	S	99L0674	09/14/99	10/04/99	10/15/99
SELENIUM, TOTAL	003	S	99L0674	09/14/99	10/04/99	10/15/99
THALLIUM, TOTAL	003	S	99L0674	09/14/99	10/04/99	10/15/99
VANADIUM, TOTAL	003	S	99L0674	09/14/99	10/04/99	10/15/99
ZINC, TOTAL	003	S	99L0674	09/14/99	10/04/99	10/15/99
B0WBR4						
SILVER, TOTAL	004	S	99L0674	09/14/99	10/04/99	10/15/99
ARSENIC, TOTAL	004	S	99L0674	09/14/99	10/04/99	10/15/99
BARIUM, TOTAL	004	S	99L0674	09/14/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	004	S	99L0674	09/14/99	10/04/99	10/15/99
CADMIUM, TOTAL	004	S	99L0674	09/14/99	10/04/99	10/15/99
CHROMIUM, TOTAL	004	S	99L0674	09/14/99	10/04/99	10/15/99
COPPER, TOTAL	004	S	99L0674	09/14/99	10/04/99	10/15/99
MERCURY, TOTAL	004	S	99C0283	09/14/99	09/30/99	10/01/99
NICKEL, TOTAL	004	S	99L0674	09/14/99	10/04/99	10/15/99
LEAD, TOTAL	004	S	99L0674	09/14/99	10/04/99	10/15/99
ANTIMONY, TOTAL	004	S	99L0674	09/14/99	10/04/99	10/15/99
SELENIUM, TOTAL	004	S	99L0674	09/14/99	10/04/99	10/15/99
THALLIUM, TOTAL	004	S	99L0674	09/14/99	10/04/99	10/15/99
VANADIUM, TOTAL	004	S	99L0674	09/14/99	10/04/99	10/15/99
ZINC, TOTAL	004	S	99L0674	09/14/99	10/04/99	10/15/99

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
SILVER, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
ARSENIC LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
ARSENIC, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
BARIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
BARIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
BERYLLIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
CADMIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L129

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CADMIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
CHROMIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
CHROMIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
COPPER LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
COPPER, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
MERCURY LABORATORY	LC1 BS	S	99C0283	N/A	09/30/99	10/01/99
MERCURY, TOTAL	MB1	S	99C0283	N/A	09/30/99	10/01/99
NICKEL LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
NICKEL, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
LEAD LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
LEAD, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
ANTIMONY LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
ANTIMONY, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
SELENIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
SELENIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
THALLIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
THALLIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
VANADIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
VANADIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
ZINC LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
ZINC, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99

RECRA LabNet Use Only

9909L 129

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) ~~PCB pesticide wet chem~~ metals

Client TNU HANFORD B099-078

Est. Final Proj. Sampling Date 9/18/99

Project # 109985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC spec Del std TAT 30 days

Date Rec'd 9/17/99 Date Due 10/17/99

Account #

Refrigerator #		1	6							6							
#/Type Container	Liquid																
	Solid	1AG	1AG							1AG							
Volume	Liquid																
	Solid	60	25							500							
Preservatives		—								—							
ANALYSES REQUESTED		ORGANIC								INORG							
		VOA	BNA	~~Pest~~ PCB	~~TPH~~	~~Herb~~	WTPHD			Metal	CN						

RECRA LabNet Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OG 24H OGCSC	OG 25H O DRO					Metal	1Q NO3 1N3U2	1SFD 1UH3U	1PH	OPCB	1CCL 1CFL 1CSO4	1CNO2 1CNO3 1CPO4		
S - Soil	001	BOWBRO			S	9-14-99	1216	1	1	✓	✓	✓		✓	X	X	X	X	X	X		
SE - Sediment	002	1					1300	1	1	✓	✓	✓		✓								
SO - Solid	003	2					1340	1	1	✓	✓	✓		✓								
SL - Sludge	004	4					1510	1	1	✓	✓	✓		✓								
W - Water																						
O - Oil																						
A - Air																						
DS - Drum Solids																						
DL - Drum Liquids																						
L - EP/TCLP Leachate																						
WI - Wipe																						
X - Other																						
F - Fish																						

9/18/99

11/3/99
SB and TL added to all metals samples per client

Special Instructions:

paf# B99-078

COMPOSITE WASTE

9/23/99 - no matrix QC required

DATE/REVISIONS:

Met (1) = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
2. Cu, Ni, V, Zn, Hg, ICR6
9/23/99 3. tests ~~are~~ added per client COC 9/23/99
4. OGCSC 2-propanol + ethanol
5. 9/23/99
6. ~~Run matrix QC~~

RECRA LabNet Use Only

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

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

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 4.1 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235795 29550

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	9-17-99	2:45

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

025

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-119	Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 Bpond (B8758) <15'		SAF No.: B99-078
Ice Chest No.: ERC 96 065	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA DJB 9-14-99	Offsite Property No.: A990257		Bill of Lading/Air Bill No.: 11235 7952 9550
			COA B20CW1 67/C

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	Cool 4C	None	Cool 4C							
	Type of Container	aG	aG	aG	aG							
Special Handling and/or Storage	No. of Container(s)	1	1	1	1							
	Volume	60mL	250mL	250mL	500mL							
SAMPLE ANALYSIS		VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (1) in Special Instructions.	See item (2) in Special Instructions.							
Sample No.	Matrix *	Sample Date	Sample Time									
B0WBR0	Soil	9.14.99	1216	X	X		X		BOWCRO			
B0WBR1	Soil	9.14.99	1300	X	X		X		BOWCRO			
B0WBR2	Soil	9.14.99	1340	X	X		X		BOWCRO			
~~B0WBR3 9.14.99~~ a	Soil											
BOWBR4	Soil	9.14.99	1510	X	X		X		BOWCRO			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 9-17-99/1700	Received By: R F IB	Date/Time: 9-17-99/1700
Relinquished By: Refer IB	Date/Time: 9/16/99 11:30	Received By: Brent Porter	Date/Time: 9/16/99 11:30
Relinquished By: Brent Porter	Date/Time: 9/16/99 11:30	Received By: Fed Express	Date/Time: 9/16/99 11:30
Relinquished By: [illegible]	Date/Time: 9-17-99 0245	Received By: [illegible]	Date/Time: 9-17-99 0245

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

Collector [illegible] to sign COC

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

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

019

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L127
SDG/SAF# : H0534/B99-078

W.O.# : 10985-001-001-9999-00
Date Received: 09-17-99

REVISION

METALS CASE NARRATIVE

This package has been revised to include the addition of Antimony and Thallium.

1. This narrative covers the analyses of 4 soil samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

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

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

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

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

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

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

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

10. The matrix spike (MS) recovery for 1 analyte was outside the 75-125% control limits. Refer to the Inorganics Accuracy 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 017 pages.

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

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B0WBR8	Antimony	200	94.8

12. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

Pat E.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-11-99
Date

mld/m09-127r

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9909L127

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 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L127

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WBR8	Silver, Total	0.1	u	MG/KG	0.1	1.0
		Arsenic, Total	2.8		MG/KG	0.32	1.0
		Barium, Total	100		MG/KG	0.03	1.0
		Beryllium, Total	0.29		MG/KG	0.01	1.0
		Cadmium, Total	0.34		MG/KG	0.03	1.0
		Chromium, Total	5.1		MG/KG	0.08	1.0
		Copper, Total	16.6		MG/KG	0.11	1.0
		Mercury, Total	0.02	u	MG/KG	0.02	1.0
		Nickel, Total	7.3		MG/KG	0.11	1.0
		Lead, Total	3.1		MG/KG	0.20	1.0
		Antimony, Total	0.24	u	MG/KG	0.24	1.0
		Selenium, Total	0.35	u	MG/KG	0.35	1.0
		Thallium, Total	0.51	u	MG/KG	0.51	1.0
		Vanadium, Total	91.4		MG/KG	0.06	1.0
		Zinc, Total	50.2		MG/KG	0.08	1.0
-002	B0WBR5	Silver, Total	0.10	u	MG/KG	0.10	1.0
		Arsenic, Total	1.8		MG/KG	0.34	1.0
		Barium, Total	60.7		MG/KG	0.03	1.0
		Beryllium, Total	0.12		MG/KG	0.01	1.0
		Cadmium, Total	0.24		MG/KG	0.03	1.0
		Chromium, Total	4.9		MG/KG	0.08	1.0
		Copper, Total	12.1		MG/KG	0.12	1.0
		Mercury, Total	0.01	u	MG/KG	0.01	1.0
		Nickel, Total	5.3		MG/KG	0.12	1.0
		Lead, Total	3.7		MG/KG	0.21	1.0
		Antimony, Total	0.25	u	MG/KG	0.25	1.0
		Selenium, Total	0.38	u	MG/KG	0.38	1.0
		Thallium, Total	0.54	u	MG/KG	0.54	1.0
		Vanadium, Total	52.9		MG/KG	0.06	1.0
		Zinc, Total	37.2		MG/KG	0.08	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L127

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0WBR6	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	2.5	MG/KG	0.33	1.0
		Barium, Total	91.5	MG/KG	0.03	1.0
		Beryllium, Total	0.23	MG/KG	0.01	1.0
		Cadmium, Total	0.28	MG/KG	0.03	1.0
		Chromium, Total	4.3	MG/KG	0.08	1.0
		Copper, Total	15.6	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	6.3	MG/KG	0.12	1.0
		Lead, Total	3.1	MG/KG	0.21	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Thallium, Total	0.53 u	MG/KG	0.53	1.0
		Vanadium, Total	89.7	MG/KG	0.06	1.0
		Zinc, Total	48.8	MG/KG	0.08	1.0
-004	B0WBR7	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	2.2	MG/KG	0.32	1.0
		Barium, Total	64.9	MG/KG	0.03	1.0
		Beryllium, Total	0.17	MG/KG	0.01	1.0
		Cadmium, Total	0.29	MG/KG	0.03	1.0
		Chromium, Total	6.7	MG/KG	0.08	1.0
		Copper, Total	14.3	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	6.9	MG/KG	0.12	1.0
		Lead, Total	4.0	MG/KG	0.21	1.0
		Antimony, Total	0.24 u	MG/KG	0.24	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
		Thallium, Total	0.52 u	MG/KG	0.52	1.0
		Vanadium, Total	61.5	MG/KG	0.06	1.0
		Zinc, Total	44.1	MG/KG	0.08	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L127

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0674-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Barium, Total	0.05	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	0.10	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	0.21 u	MG/KG	0.21	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Thallium, Total	0.53 u	MG/KG	0.53	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.08 u	MG/KG	0.08	1.0
BLANK1	99C0282-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L127

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WBR8	Silver, Total	4.7	0.1 u	5.1	92.2	1.0
		Arsenic, Total	190	2.8	204	91.7	1.0
		Barium, Total	313	100	204	104.3	1.0
		Beryllium, Total	5.0	0.29	5.1	92.3	1.0
		Cadmium, Total	5.0	0.34	5.1	91.3	1.0
		Chromium, Total	25.1	5.1	20.4	98.0	1.0
		Copper, Total	40.8	16.6	25.5	95.2	1.0
		Mercury, Total	0.19	0.02u	0.18	105.6	1.0
		Nickel, Total	53.3	7.3	50.9	90.4	1.0
		Lead, Total	49.7	3.1	51.0	91.4	1.0
		Antimony, Total	24.3	0.24u	50.9	47.7	1.0
		Selenium, Total	182	0.35u	204	89.2	1.0
		Thallium, Total	188	0.51u	204	92.3	1.0
		Vanadium, Total	149	91.4	50.9	112.6	1.0
		Zinc, Total	99.6	50.2	51.0	96.9	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L127

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WBR8	Silver, Total	0.1 u	0.09u	NC	1.0
		Arsenic, Total	2.8	2.7	3.6	1.0
		Barium, Total	100	100	0.00	1.0
		Beryllium, Total	0.29	0.33	10.3	1.0
		Cadmium, Total	0.34	0.39	12.3	1.0
		Chromium, Total	5.1	5.2	1.9	1.0
		Copper, Total	16.6	16.3	1.8	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	7.3	7.2	1.4	1.0
		Lead, Total	3.1	3.4	9.2	1.0
		Antimony, Total	0.24u	0.21u	NC	1.0
		Selenium, Total	0.35u	0.32u	NC	1.0
		Thallium, Total	0.51u	0.45u	NC	1.0
		Vanadium, Total	91.4	89.7	1.9	1.0
		Zinc, Total	50.2	49.8	0.80	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9909L127

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0674-LC1	Silver, LCS	48.8	50.0	MG/KG	97.6
		Arsenic, LCS	952	1000	MG/KG	95.2
		Barium, LCS	500	500	MG/KG	100.0
		Beryllium, LCS	24.3	25.0	MG/KG	97.2
		Cadmium, LCS	24.2	25.0	MG/KG	96.8
		Chromium, LCS	50.8	50.0	MG/KG	101.6
		Copper, LCS	126	125	MG/KG	100.7
		Nickel, LCS	195	200	MG/KG	97.4
		Lead, LCS	242	250	MG/KG	96.8
		Antimony, LCS	292	300	MG/KG	97.2
		Selenium, LCS	921	1000	MG/KG	92.1
		Thallium, LCS	974	1000	MG/KG	97.4
		Vanadium, LCS	259	250	MG/KG	103.4
		Zinc, LCS	95.2	100	MG/KG	95.2
LCS1	99C0282-LC1	Mercury, LCS	1.0	1.0	MG/KG	105.0

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L127

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBR8						
SILVER, TOTAL	001	S	99L0674	09/15/99	10/04/99	10/15/99
SILVER, TOTAL	001 REP	S	99L0674	09/15/99	10/04/99	10/15/99
SILVER, TOTAL	001 MS	S	99L0674	09/15/99	10/04/99	10/15/99
ARSENIC, TOTAL	001	S	99L0674	09/15/99	10/04/99	10/15/99
ARSENIC, TOTAL	001 REP	S	99L0674	09/15/99	10/04/99	10/15/99
ARSENIC, TOTAL	001 MS	S	99L0674	09/15/99	10/04/99	10/15/99
BARIUM, TOTAL	001	S	99L0674	09/15/99	10/04/99	10/15/99
BARIUM, TOTAL	001 REP	S	99L0674	09/15/99	10/04/99	10/15/99
BARIUM, TOTAL	001 MS	S	99L0674	09/15/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	001	S	99L0674	09/15/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	001 REP	S	99L0674	09/15/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	001 MS	S	99L0674	09/15/99	10/04/99	10/15/99
CADMIUM, TOTAL	001	S	99L0674	09/15/99	10/04/99	10/15/99
CADMIUM, TOTAL	001 REP	S	99L0674	09/15/99	10/04/99	10/15/99
CADMIUM, TOTAL	001 MS	S	99L0674	09/15/99	10/04/99	10/15/99
CHROMIUM, TOTAL	001	S	99L0674	09/15/99	10/04/99	10/15/99
CHROMIUM, TOTAL	001 REP	S	99L0674	09/15/99	10/04/99	10/15/99
CHROMIUM, TOTAL	001 MS	S	99L0674	09/15/99	10/04/99	10/15/99
COPPER, TOTAL	001	S	99L0674	09/15/99	10/04/99	10/17/99
COPPER, TOTAL	001 REP	S	99L0674	09/15/99	10/04/99	10/15/99
COPPER, TOTAL	001 MS	S	99L0674	09/15/99	10/04/99	10/15/99
MERCURY, TOTAL	001	S	99C0282	09/15/99	09/30/99	10/01/99
MERCURY, TOTAL	001 REP	S	99C0282	09/15/99	09/30/99	10/01/99
MERCURY, TOTAL	001 MS	S	99C0282	09/15/99	09/30/99	10/01/99
NICKEL, TOTAL	001	S	99L0674	09/15/99	10/04/99	10/15/99
NICKEL, TOTAL	001 REP	S	99L0674	09/15/99	10/04/99	10/15/99
NICKEL, TOTAL	001 MS	S	99L0674	09/15/99	10/04/99	10/15/99
LEAD, TOTAL	001	S	99L0674	09/15/99	10/04/99	10/17/99
LEAD, TOTAL	001 REP	S	99L0674	09/15/99	10/04/99	10/15/99
LEAD, TOTAL	001 MS	S	99L0674	09/15/99	10/04/99	10/15/99
ANTIMONY, TOTAL	001	S	99L0674	09/15/99	10/04/99	10/15/99
ANTIMONY, TOTAL	001 REP	S	99L0674	09/15/99	10/04/99	10/15/99
ANTIMONY, TOTAL	001 MS	S	99L0674	09/15/99	10/04/99	10/15/99
SELENIUM, TOTAL	001	S	99L0674	09/15/99	10/04/99	10/15/99
SELENIUM, TOTAL	001 REP	S	99L0674	09/15/99	10/04/99	10/15/99

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L127

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001 MS	S	99L0674	09/15/99	10/04/99	10/15/99
THALLIUM, TOTAL	001	S	99L0674	09/15/99	10/04/99	10/17/99
THALLIUM, TOTAL	001 REP	S	99L0674	09/15/99	10/04/99	10/15/99
THALLIUM, TOTAL	001 MS	S	99L0674	09/15/99	10/04/99	10/15/99
VANADIUM, TOTAL	001	S	99L0674	09/15/99	10/04/99	10/15/99
VANADIUM, TOTAL	001 REP	S	99L0674	09/15/99	10/04/99	10/15/99
VANADIUM, TOTAL	001 MS	S	99L0674	09/15/99	10/04/99	10/15/99
ZINC, TOTAL	001	S	99L0674	09/15/99	10/04/99	10/17/99
ZINC, TOTAL	001 REP	S	99L0674	09/15/99	10/04/99	10/15/99
ZINC, TOTAL	001 MS	S	99L0674	09/15/99	10/04/99	10/15/99
B0WBR5						
SILVER, TOTAL	002	S	99L0674	09/15/99	10/04/99	10/15/99
ARSENIC, TOTAL	002	S	99L0674	09/15/99	10/04/99	10/15/99
BARIUM, TOTAL	002	S	99L0674	09/15/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	002	S	99L0674	09/15/99	10/04/99	10/15/99
CADMIUM, TOTAL	002	S	99L0674	09/15/99	10/04/99	10/15/99
CHROMIUM, TOTAL	002	S	99L0674	09/15/99	10/04/99	10/15/99
COPPER, TOTAL	002	S	99L0674	09/15/99	10/04/99	10/15/99
MERCURY, TOTAL	002	S	99C0282	09/15/99	09/30/99	10/01/99
NICKEL, TOTAL	002	S	99L0674	09/15/99	10/04/99	10/15/99
LEAD, TOTAL	002	S	99L0674	09/15/99	10/04/99	10/15/99
ANTIMONY, TOTAL	002	S	99L0674	09/15/99	10/04/99	10/15/99
SELENIUM, TOTAL	002	S	99L0674	09/15/99	10/04/99	10/15/99
THALLIUM, TOTAL	002	S	99L0674	09/15/99	10/04/99	10/15/99
VANADIUM, TOTAL	002	S	99L0674	09/15/99	10/04/99	10/15/99
ZINC, TOTAL	002	S	99L0674	09/15/99	10/04/99	10/15/99
B0WBR6						
SILVER, TOTAL	003	S	99L0674	09/15/99	10/04/99	10/15/99
ARSENIC, TOTAL	003	S	99L0674	09/15/99	10/04/99	10/15/99
BARIUM, TOTAL	003	S	99L0674	09/15/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	003	S	99L0674	09/15/99	10/04/99	10/15/99
CADMIUM, TOTAL	003	S	99L0674	09/15/99	10/04/99	10/15/99
CHROMIUM, TOTAL	003	S	99L0674	09/15/99	10/04/99	10/15/99
COPPER, TOTAL	003	S	99L0674	09/15/99	10/04/99	10/15/99

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L127

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	003	S	99C0282	09/15/99	09/30/99	10/01/99
NICKEL, TOTAL	003	S	99L0674	09/15/99	10/04/99	10/15/99
LEAD, TOTAL	003	S	99L0674	09/15/99	10/04/99	10/15/99
ANTIMONY, TOTAL	003	S	99L0674	09/15/99	10/04/99	10/15/99
SELENIUM, TOTAL	003	S	99L0674	09/15/99	10/04/99	10/15/99
THALLIUM, TOTAL	003	S	99L0674	09/15/99	10/04/99	10/15/99
VANADIUM, TOTAL	003	S	99L0674	09/15/99	10/04/99	10/15/99
ZINC, TOTAL	003	S	99L0674	09/15/99	10/04/99	10/15/99
B0WBR7						
SILVER, TOTAL	004	S	99L0674	09/15/99	10/04/99	10/15/99
ARSENIC, TOTAL	004	S	99L0674	09/15/99	10/04/99	10/15/99
BARIUM, TOTAL	004	S	99L0674	09/15/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	004	S	99L0674	09/15/99	10/04/99	10/15/99
CADMIUM, TOTAL	004	S	99L0674	09/15/99	10/04/99	10/15/99
CHROMIUM, TOTAL	004	S	99L0674	09/15/99	10/04/99	10/15/99
COPPER, TOTAL	004	S	99L0674	09/15/99	10/04/99	10/15/99
MERCURY, TOTAL	004	S	99C0282	09/15/99	09/30/99	10/01/99
NICKEL, TOTAL	004	S	99L0674	09/15/99	10/04/99	10/15/99
LEAD, TOTAL	004	S	99L0674	09/15/99	10/04/99	10/15/99
ANTIMONY, TOTAL	004	S	99L0674	09/15/99	10/04/99	10/15/99
SELENIUM, TOTAL	004	S	99L0674	09/15/99	10/04/99	10/15/99
THALLIUM, TOTAL	004	S	99L0674	09/15/99	10/04/99	10/15/99
VANADIUM, TOTAL	004	S	99L0674	09/15/99	10/04/99	10/15/99
ZINC, TOTAL	004	S	99L0674	09/15/99	10/04/99	10/15/99

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
SILVER, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
ARSENIC LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
ARSENIC, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
BARIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
BARIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
BERYLLIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
CADMIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99

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

DATE RECEIVED: 09/17/99 RFW LOT # :9909L127

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CADMIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
CHROMIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
CHROMIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
COPPER LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
COPPER, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
MERCURY LABORATORY	LC1 BS	S	99C0282	N/A	09/30/99	10/01/99
MERCURY, TOTAL	MB1	S	99C0282	N/A	09/30/99	10/01/99
NICKEL LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
NICKEL, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
LEAD LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
LEAD, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
ANTIMONY LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
ANTIMONY, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
SELENIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
SELENIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
THALLIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
THALLIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
VANADIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
VANADIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
ZINC LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
ZINC, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99

RECRA LabNet Use Only

9909L127

Custody Transfer Record/Lab Work Request

Page 1 of 1

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) ~~PCB~~ ~~wetchem~~ ~~perchlorate~~ metals

RECRA LabNet

Client: TRU Hanford B99-078

Est. Final Proj. Sampling Date:

Project #: 109985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: CJ

QC: spec Del: std TAT: 30 day

Date Rec'd: 9-17-99 Date Due: 10/17/99

Account #:

Refrigerator #		1	6	6				6	6					
#/Type Container	Liquid													
	Solid	1AG	1AG						1AG					
Volume	Liquid													
	Solid	60mL	250						500					
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	OG24H	OGCSC	OG25H	ODRO	OPCB			ICP6	Met①	IC NITU	IN3N4	ISFD	IN1H3N	IPH	IC Br02	IC NO3	IC PO4	IC SO4	IC FCL
001	BOWBR8			S	9-15-99	0945	✓	✓			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
002	BOWBR5					0739	✓	✓						✓	✓										
003	BOWBR6					0834	✓	✓						✓	✓										
004	BOWBR7						✓	✓						✓	✓										

11/3/99
SB and TL added to all metals samples per client

Special Instructions:

saf # B99-078
s/d/g with 99091L129

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
2. Met① = As, Ba, Cd, Cr, Pb, Se, Ag, Be,
3. Cu, Ni, V, Zn, Hg
4. 9/23/99 tests added per client coc
5. OGCSC = 1-Propanol + Ethanol
6.

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 4.1 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
*4235795295 e1

Relinquished by	Received by	Date	Time
Fed Ex	TMurray	9-17-99	1020

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

05

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-121	Page 1 of 12

Collector: Bowers/Trice	Company Contact: Chris Cearlock — Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond (B8758) >15'	SAF No.: B99-078	
Ice Chest No.: ERC 96 024	Field Logbook No.: EL-1511	Method of Shipment: Fed Ex	
Shipped To: TMA/RECRA	Offsite Property No.: A990259	Bill of Lading/Air Bill No.: 4235795295 61	
9-15-99		COA: B20CW167K	

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

Sample No.	Matrix *	Sample Date	Sample Time										
B0WBR8	Soil	9.15.99	0945	X	X		X			B0WCA1			
~~B0WBR9~~	~~Soil~~		9/15/9										
~~B0WBT0~~	~~Soil~~		9/15/99										
~~B0WBT1~~	~~Soil~~		CT 9/15/90										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Cathie	Date/Time: 9/15/99 1530	Received By: Ref 1B	Date/Time: 9/15/99 1530
Relinquished By: Ref 1B	Date/Time: 9/6/99 1300	Received By: SIGALE	Date/Time: 9/6/99 1300
Relinquished By: SIGALE	Date/Time: 9/6/99 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9-17-99 1020	Received By: TTMurray	Date/Time: 9-17-99 1020

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, Ni-63, Tech-99, Tritium, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

016

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-120	Page 1 of 2

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 Bpond (B8758) <15'		SAF No.: B99-078
Ice Chest No.: ERC96 024	Field Logbook No.: EL-1511		Method of Shipment: Fed Ex
Shipped To: TMA/RECRA DAB 9-15-99	Offsite Property No.: A990259		Bill of Lading/Air Bill No.: 4235795295 61
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

	Sample No.	Matrix *	Sample Date	Sample Time										
1	~~B0WBR4~~ DAB 9-15-99	Soil												
2	B0WBR5	Soil	9.15.99 CX 9-15-99	0739	X	X		X				BOWCR1		
3	B0WBR6	Soil	9-15-99	0834	X	X		X	X 9/16/99			BOWCR1		
4	B0WBR7	Soil	9.15.99	0834	X	X		X				BOWCR1		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: C Trice	Date/Time: 9/15/99 1530	Received By: RF IB	Date/Time: 9/15/99 1530
Relinquished By: RF IB	Date/Time: 91699 1300	Received By: SJ GALE	Date/Time: 91699 1300
Relinquished By: SJ GALE	Date/Time: 91699 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9-17-99 1020	Received By: TM Murey	Date/Time: 9-17-99 1020

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078. Out of Gamma Spec. bottle also analyze for Np-237, isotopic U, . Out of ICP bottle also analyze for NO2/NO3, IC anions, Sulfides, Ammonia, Total Cyanide, and pH.

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

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

017