H0578 - TMA/RECRA

RECEIVED
FEB 14 2000
EDMC

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H0578 was composed of seven solid (soil) samples designated under SAF No. B99-078 with a Project Designation of: 200 Area Source Characterization – 200-CW-1 OU.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Thermo Retec Sample Receipt Checklist. The results were transmitted to BHI via facsimile on January 7, 2000.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

No problems were encountered during the course of the analyses.

2.2 Nickel-63 Analyses

The observed activity of the method blank is most likely due to contamination from the LCS and matrix spike samples.

2.3 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.4 Technetium-99 Analyses

The observed Tc activity of the samples and method blank was greater than the sample specific MDA's, but less than the RDL (15 pCi/g). The consistent activity observed in all the samples suggests beta activity of the tracer not removed during chemistry.

2.5 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

JAN 2000
RECEIVED
Data
Log In

2.6 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.7 Isotopic Uranium Analyses

BHI did not request any of the samples be analyzed for Isotopic Uranium after reporting the Total Uranium results on November 27, 1999 via facsimile.

2.8 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses. The results of the method blank were too small to be reported in standard notation. The result of the method blank for Total Uranium was –3.44 E-5 ± 8.86 E-5 with a MDA of 2.06 E-4.

2.9 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.10 Gamma Spec Analyses

No problems were encountered during the course of the analyses.

TMA/RICEMOND

SAMPLE DELIVERY GROUP H0578

SAMPLE SUMMARY

[illegible]	
Contact	Melissa C. [illegible]

Client	Hanford
Contract	[illegible]
Case no	SDG H0578

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B-WN11	200 B Pond	SOLID		N910146-01	B99-078	B99-078-138	10/14/99 08:35
B-WN12	200 B Pond	SOLID		N910146-02	B99-078	B99-078-138	10/14/99 08:34
B-WN13	200 B Pond	SOLID		N910146-03	B99-078	B99-078-138	10/14/99 08:49
B-WN14	200 B Pond	SOLID		N910146-04	B99-078	B99-078-138	10/14/99 08:58
B-WN16	200 B Pond	SOLID		N910146-05	B99-078	B99-078-139	10/14/99 09:07
B-WN17	200 B Pond	SOLID		N910146-06	B99-078	B99-078-139	10/14/99 09:14
B-WN18	200 B Pond	SOLID		N910146-07	B99-078	B99-078-139	10/14/99 09:24
Method Blank		SOLID		N910146-09	B99-078		
Method Blank		SOLID		N910146-14	B99-078		
Lab Control Sample		SOLID		N910146-08	B99-078		
Lab Control Sample		SOLID		N910146-13	B99-078		
Duplicate (N910146-01)	200 B Pond	SOLID		N910146-10	B99-078		10/14/99 08:35
Duplicate (N910146-01)	200 B Pond	SOLID		N910146-11	B99-078		10/14/99 08:35
Duplicate (N910146-05)	200 B Pond	SOLID		N910146-11	B99-078		10/14/99 09:07
Spike (N910146-05)	200 B Pond	SOLID		N910146-16	B99-078		10/14/99 09:07
Spike (N910146-06)	200 B Pond	SOLID		N910146-12	B99-078		[illegible] 09:14

SAMPLE SUMMARY

Page 1

SUMMARY DATA SECTION

Page 3

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CS
Version	3.06
Report date	01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP [illegible]

QC SUMMARY

SDG [illegible]
Contract [illegible]

Client Hanford
Contract [illegible]
Date [illegible]

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	COLL	LAB SAMPLE ID	TREATMENT SAMPLE ID
[illegible]	[illegible]	[illegible]WN11	[illegible]	[illegible]			[illegible]	5	N91[illegible]-11	[illegible]
		[illegible]WN12	[illegible]	91.3			10/19/99	5	N91[illegible]-12	[illegible]
		[illegible]WN13	[illegible]	[illegible]			[illegible]	5	N91[illegible]-13	[illegible]
		[illegible]WN14	[illegible]	[illegible]			[illegible]	5	N91[illegible]-14	[illegible]
	[illegible]	[illegible]WN16	[illegible]	90.3			[illegible]	5	N91[illegible]-15	[illegible]
		[illegible]WN17	[illegible]	[illegible]			[illegible]	5	N91[illegible]-16	[illegible]
		[illegible]WN18	[illegible]	[illegible]			[illegible]	5	N91[illegible]-17	[illegible]
		[illegible] Blank	[illegible]						N91[illegible]-19	[illegible]
		[illegible] Blank	[illegible]						N91[illegible]-14	[illegible]
		Lab Control Sample	[illegible]						N91[illegible]-18	[illegible]
		Lab Control Sample	[illegible]						N91[illegible]-12	[illegible]
		Duplicate (N91[illegible]-11)	[illegible]				[illegible]	5	N91[illegible]-16	[illegible]
		Duplicate (N91[illegible]-11)	[illegible]				10/19/99	5	N91[illegible]-15	[illegible]
		Duplicate (N91[illegible]-15)	[illegible]				[illegible]	5	N91[illegible]-11	[illegible]
		Spike (N91[illegible]-15)	[illegible]				[illegible]	5	N91[illegible]-16	[illegible]
		Spike (N91[illegible]-16)	[illegible]				10/19/99	5	N91[illegible]-12	[illegible]

Lab Id TMANC
Protocol Hanford
Version Ver 1.0
Form [illegible] QS
Version 3.06
Report date [illegible]

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

PREP BATCH SUMMARY

SDG [illegible]	
Contract [illegible]	

Client	Hanford
Contract	[illegible]
Case no	SDG H0578

TEST	MATRIX	METHOD	PREPARATION ERROR BATCH	2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	6904-128	5.0	7			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6904-128	5.0	7			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6904-128	5.0	7			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6904-128	10.0	7			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6904-128	10.0	3			1	1	1/1		
Gamma Spectroscopy												
AM	SOLID	Gamma Scan	6904-128	15.0	7			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6904-128	5.0	7			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6904-128	10.0	3			1	1	1/1	[illegible]	
NI_L	SOLID	Nickel 63 in Soil	6904-128	10.0	3			1	1	1/1	1/1	

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

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-PBS
Version	3.06
Report date	01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP HC078

WORK SUMMARY

[illegible]	Client Hanford
Contract [illegible]	Contract [illegible]
[illegible]	[illegible]

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B-WN11			N910146-01	7245-001	AM		[illegible]	01/07/00	NJV	Americium 241 in Soil
200 B Pond		SOLID	10/14/99	7245-001	GAM		[illegible]	01/07/00	NJV	Gamma Scan
B99-078-138	B99-078		10/19/99	7245-001	PU		[illegible]	01/07/00	NJV	Plutonium, Isotopic in Solids
				7245-001	SR		[illegible]	01/07/00	NJV	Total Strontium in Soil
				7245-001	TH		[illegible]	01/07/00	NJV	Thorium, Isotopic in Soil
				7245-001	U_T			01/07/00	NJV	Uranium, Total in Soil
B-WN12			N910146-02	7245-002	AM		[illegible]	01/07/00	NJV	Americium 241 in Soil
200 B Pond		SOLID	10/14/99	7245-002	GAM		[illegible]	01/07/00	NJV	Gamma Scan
B99-078-138	B99-078		10/19/99	7245-002	PU		[illegible]	01/07/00	NJV	Plutonium, Isotopic in Solids
				7245-002	SR		[illegible]	01/07/00	NJV	Total Strontium in Soil
				7245-002	TH		[illegible]	01/07/00	NJV	Thorium, Isotopic in Soil
				7245-002	U_T		[illegible]	01/07/00	NJV	Uranium, Total in Soil
B-WN13			N910146-03	7245-003	AM		[illegible]	01/07/00	NJV	Americium 241 in Soil
200 B Pond		SOLID	10/14/99	7245-003	GAM		[illegible]	01/07/00	NJV	Gamma Scan
B99-078-138	B99-078		10/19/99	7245-003	PU		[illegible]	01/07/00	NJV	Plutonium, Isotopic in Solids
				7245-003	SR		[illegible]	01/07/00	NJV	Total Strontium in Soil
				7245-003	TH		[illegible]	01/07/00	NJV	Thorium, Isotopic in Soil
				7245-003	U_T		[illegible]	01/07/00	NJV	Uranium, Total in Soil
B-WN14			N910146-04	7245-004	AM		[illegible]	01/07/00	NJV	Americium 241 in Soil
200 B Pond		SOLID	10/14/99	7245-004	GAM		12/01/99	01/07/00	NJV	Gamma Scan
B99-078-138	B99-078		10/19/99	7245-004	PU		[illegible]	01/07/00	NJV	Plutonium, Isotopic in Solids
				7245-004	SR		12/14/99	01/07/00	NJV	Total Strontium in Soil
				7245-004	TH		12/10/99	01/07/00	NJV	Thorium, Isotopic in Soil
				7245-004	U_T		11/08/99	01/07/00	NJV	Uranium, Total in Soil
B-WN16			N910146-05	7245-005	AM		12/27/99	01/07/00	NJV	Americium 241 in Soil
200 B Pond		SOLID	10/14/99	7245-005	GAM		12/01/99	01/07/00	NJV	Gamma Scan
B99-078-139	B99-078		10/19/99	7245-005	H		12/18/99	01/07/00	NJV	Tritium in Soil
				7245-005	NI_L		12/21/99	01/07/00	NJV	Nickel 63 in Soil
				7245-005	PU		[illegible]	01/07/00	NJV	Plutonium, Isotopic in Solids
				7245-005	SR		12/15/99	01/07/00	NJV	Total Strontium in Soil
				7245-005	TC		12/21/99	01/07/00	NJV	Technetium 99 in Soil
				7245-005	TH		12/18/99	01/07/00	NJV	Thorium, Isotopic in Soil
				7245-005	U_T		11/08/99	01/07/00	NJV	Uranium, Total in Soil

WORK SUMMARY
Page 1
SUMMARY DATA SECTION
Page 6

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	PVD-CWS
Version	3.06
Report date	01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP B9178

WORK SUMMARY, cont.

SDG: B9178	Client: [illegible]
Project: [illegible]	Contract: [illegible]
	Task No: [illegible]

CLIENT SAMPLE ID / LOCATION / DESCRIPTION	LAB SAMPLE ID / COLLECTED / RECEIVED	MATRIX	LAB No	DILUTION	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
P-WN17	N910146-16		B9178	7145-116	AM		12/13/99	01/07/00	NJV	Americium 241 in Soil
100 B Field	12/14/99	SOLID		7145-116	GAM		12/22/99	01/07/00	NJV	Gamma Scan
1.5-2.0' 1.9	12/17/99		B9178	7145-116	H		12/18/99	01/07/00	NJV	Tritium in Soil
				7145-116	NI_L		12/21/99	01/07/00	NJV	Nickel 63 in Soil
				7145-116	PU		12/20/99	01/07/00	NJV	Plutonium, Isotopic in Solids
				7145-116	SR		12/24/99	01/07/00	NJV	Total Strontium in Soil
				7145-116	TC		12/21/99	01/07/00	NJV	Technetium 99 in Soil
				7145-116	TH		12/21/99	01/07/00	NJV	Thorium, Isotopic in Soil
				7145-116	U_T		12/21/99	01/07/00	NJV	Uranium, Total in Soil
P-WN18	N910146-17			7145-117	AM		12/13/99	01/07/00	NJV	Americium 241 in Soil
100 B Field	12/14/99	SOLID		7145-117	GAM		12/22/99	01/07/00	NJV	Gamma Scan
0.5-1.0' 1.9	12/15/99		B9178	7145-117	H		12/18/99	01/07/00	NJV	Tritium in Soil
				7145-117	NI_L		12/21/99	01/07/00	NJV	Nickel 63 in Soil
				7145-117	PU		12/20/99	01/07/00	NJV	Plutonium, Isotopic in Solids
				7145-117	SR		12/24/99	01/07/00	NJV	Total Strontium in Soil
				7145-117	TC		12/21/99	01/07/00	NJV	Technetium 99 in Soil
				7145-117	TH		12/18/99	01/07/00	NJV	Thorium, Isotopic in Soil
				7145-117	U_T		12/18/99	01/07/00	NJV	Uranium, Total in Soil
Method Blank	N910146-09			7145-109	AM		12/13/99	01/07/00	NJV	Americium 241 in Soil
		SOLID		7145-109	GAM		12/22/99	01/07/00	NJV	Gamma Scan
			B9178	7145-109	H		12/18/99	01/07/00	NJV	Tritium in Soil
				7145-109	NI_L		12/21/99	01/07/00	NJV	Nickel 63 in Soil
				7145-109	PU		12/22/99	01/07/00	NJV	Plutonium, Isotopic in Solids
				7145-109	SR		12/29/99	01/07/00	NJV	Total Strontium in Soil
				7145-109	TC		12/21/99	01/07/00	NJV	Technetium 99 in Soil
				7145-109	TH		12/17/99	01/07/00	NJV	Thorium, Isotopic in Soil
Method Blank	N910146-14			7145-114	U_T		12/08/99	01/07/00	NJV	Uranium, Total in Soil
		SOLID								
			B9178							

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CWS
Version	3.06
Report date	01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0178

WORK SUMMARY, cont.

SDG 7245
Contact [illegible]

Client Hanford
Contract [illegible]
Case no SDG H0178

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			N910146-08	7245-008	AM		12/21/99	01/07/00	NJV	Americium 241 in Soil
		SOLID		7245-008	GAM		12/02/99	01/07/00	NJV	Gamma Scan
	B99-078			7245-008	H		12/18/99	01/07/00	NJV	Tritium in Soil
				7245-008	NI_L		12/21/99	01/07/00	NJV	Nickel 63 in Soil
				7245-008	PU		12/20/99	01/07/00	NJV	Plutonium, Isotopic in Soils
				7245-008	SR		12/09/99	01/07/00	NJV	Total Strontium in Soil
				7245-008	TC		12/21/99	01/07/00	NJV	Technetium 99 in Soil
				7245-008	TH		12/17/99	01/07/00	NJV	Thorium, Isotopic in Soil
Lab Control Sample			N910146-13	7245-013	U_T		12/08/99	01/07/00	NJV	Uranium, Total in Soil
		SOLID								
	B99-078									
Duplicate (N910146-01)			N910146-10	7245-010	AM		12/21/99	01/07/00	NJV	Americium 241 in Soil
200 B Pond		SOLID	10/14/99	7245-010	GAM		12/02/99	01/07/00	NJV	Gamma Scan
	B99-078		10/19/99	7245-010	PU		12/21/99	01/07/00	NJV	Plutonium, Isotopic in Soils
				7245-010	SR		12/11/99	01/07/00	NJV	Total Strontium in Soil
				7245-010	TH		12/20/99	01/07/00	NJV	Thorium, Isotopic in Soil
Duplicate (N910146-01)			N910146-15	7245-015	U_T		12/08/99	01/07/00	NJV	Uranium, Total in Soil
200 B Pond		SOLID	10/14/99							
	B99-078		10/19/99							
Duplicate (N910146-05)			N910146-11	7245-011	H		12/18/99	01/07/00	NJV	Tritium in Soil
200 B Pond		SOLID	10/14/99	7245-011	NI_L		12/21/99	01/07/00	NJV	Nickel 63 in Soil
	B99-078		10/19/99	7245-011	TC		12/21/99	01/07/00	NJV	Technetium 99 in Soil
Spike (N910146-05)			N910146-16	7245-016	NI_L		12/21/99	01/07/00	NJV	Nickel 63 in Soil
200 B Pond		SOLID	10/14/99							
	B99-078		10/19/99							
Spike (N910146-06)			N910146-12	7245-012	H		12/18/99	01/07/00	NJV	Tritium in Soil
200 B Pond		SOLID	10/14/99							
	B99-078		10/19/99							

WORK SUMMARY
Page 3
SUMMARY DATA SECTION
Page 8

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

WORK SUMMARY, cont.

SDG [illegible]
Contact [illegible]

Client Hanford
Contract [illegible]
Case no SDG H0578

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
AM	B99-078	Americium 241 in Soil	AM/CMPLATE	7			1	1	1		10
GAM	B99-078	Gamma Scan	GAMMAHI	7			1	1	1		10
H	B99-078	Tritium in Soil	EPA906.0	3			1	1	1	1	7
NI_L	B99-078	Nickel 63 in Soil	NI63LSC	3			1	1	1	1	7
PU	B99-078	Plutonium, Isotopic in Solids	PUPLATE	7			1	1	1		10
SR	B99-078	Total Strontium in Soil	SRTOTAL	7			1	1	1		10
TC	B99-078	Technetium 99 in Soil	TC99TRLSC	3			1	1	1		6
TH	B99-078	Thorium, Isotopic in Soil	THPLATE	7			1	1	1		10
U_T	B99-078	Uranium, Total in Soil	UKPA	7			1	1	1		10
TOTALS				51			9	9	9	2	80

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

N910146-09 Method Blank

METHOD BLANK

SDG 7245 Client/Case no Hanford SDG H0578
Contact Melissa C. Mannion Contract TRP-SRR-207925

Lab sample id N910146-09 Client sample id Method Blank
Dept sample id 7245-009 Material/Matrix SOLID
SAF No H99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.096	0.11	0.18	400	U	H
Technetium 99	14133-76-7	1.63	0.36	0.24	15	J	TC
Plutonium 238	13981-16-3	-0.018	0.026	0.067	1.0	U	PU
Plutonium 239/240	PU 239/240	-0.004	0.018	0.042	1.0	U	PU
Nickel 63	13981-37-8	7.98	1.5	2.0	30	J	NI_L
Americium 241	14596-10-2	0.012	0.029	0.052	1.0	U	AM
Total Strontium	SR90	-0.043	0.12	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.014	0.10	0.19	1.0	U	TH
Thorium 230	14269-63-7	0.021	0.10	0.16	1.0	U	TH
Thorium 232	TH-232	0.028	0.028	0.054	1.0	U	TH
Potassium 40	13966-00-2	U		0.86		U	GAM
Cobalt 60	10198-40-0	U		0.079	0.050	U	GAM
Cesium 137	10045-97-3	U		0.064	0.10	U	GAM
Europium 152	14683-23-9	U		0.16	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Europium 155	14391-16-3	U		0.084	0.10	U	GAM
Radium 226	13982-63-3	U		0.13	0.10	U	GAM
Radium 228	15262-20-1	U		0.30	0.20	U	GAM
Thorium 228	14274-82-9	U		0.084		U	GAM
Thorium 232	TH-232	U		0.30		U	GAM
Americium 241	14596-10-2	U		0.064		U	GAM
Uranium 238	U-238	U		8.2		U	GAM
Uranium 235	15117-96-1	U		0.18		U	GAM

200 Area Source Chara. - 200-CW-1 OU

QC-BLANK 32544
QC-BLANK 32543

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 01/07/00

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0578

N910146-14 Method Blank

METHOD BLANK

SDG	7245	Client/Case no	Hanford SDG H0578
Contact	Melissa C. Mannion	Contract	TRB-CPB-207925
Lab sample id	N910146-14	Client sample id	Method Blank
Dept sample id	7245-014	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
Total Uranium (ug/g)	7440-61-1	0	0	0	1.0	J	U_T

200 Area Source Chara. - 200-CW-1 OU

QC-BLANK 32289

METHOD BLANKS
Page 2
SUMMARY DATA SECTION
Page 11

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

N910146 08 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7245
Contact Melissa C. Mannion

Client/Case no Hanford SDG H0578
Case no TRP-SBP-[illegible]

Lab sample id N910146-08
Dept sample id 7245 008

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No [illegible] 078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	13.0	0.34	0.17	400	J	H	12.8	0.51	102	83-117	80-120
Technetium 99	48.8	0.97	0.29	15	B	TC	51.3	2.1	95	84-116	80-120
Plutonium 238	12.4	1.1	0.088	1.0		PU	12.5	0.50	99	84-116	80-120
Plutonium 239/240	12.9	1.1	0.049	1.0		PU	13.2	0.53	98	84-116	80-120
Nickel 63	152	3.8	2.0	30	B	NI-I	147	5.9	103	83-117	
Americium 241	10.8	0.81	0.049	1.0		AM	11.5	0.46	94	86-114	80-120
Total Strontium	13.5	0.75	0.27	1.0		SR	12.4	0.50	109	80-120	
Thorium 228	0.109	0.078	0.13	1.0	U	TH					
Thorium 230	23.9	1.3	0.15	1.0		TH	22.4	0.90	107	87-113	
Thorium 232	0.039	0.047	0.075	1.0	U	TH					
Cobalt 60	1.59	0.059	0.049	0.050		GAM	1.50	0.060	106	73-127	80-120
Cesium 137	1.91	0.11	0.074	0.10		GAM	1.65	0.066	116	71-129	80-120

200 Area Source Chara. - 200-CW-1 OU

QC-LCS 32543

LAB CONTROL SAMPLES
Page 1
SUMMARY DATA SECTION
Page 12

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD LCS
Version 3.06
Report date 01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

N910146-13 Lab Control Sample

LAB CONTROL SAMPLE

SDG T245	Client/Case no Hanford SDG H0578
Contact Melissa C. Mannion	Case no TRP-SRP-207925
Lab sample id N910146-13	Client sample id Lab Control Sample
Dept sample id T245-013	Material/Matrix SOLID
	SAF No H0578

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
Total Uranium (ug/g)	30.0	3.7	0.641	1.0		U_T	33.0	1.3	91	78-122	80-120

[illegible] Area Source Chara. - 200 CW 1 CU

QC DCS 32188

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVP-LCS
Version	3.06
Report date	01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP BC578

N910146-10 P0WN11

DUPLICATE

SDG 1145

Contact Melissa C. Marsden

Client/Case no Hanford SDG BC578

Case no DBF-BB-210615

DUPLICATE	ORIGINAL	
Lab sample id N910146-10	Lab sample id N910146-01	Client sample id P0WN11
Dept sample id 1145-010	Dept sample id 1145-001	Location/Matrix 200 E Field SOIL
	Received 10/19/99	Collected 10/14/99 18:15
	% solids 83.0	Chain-of-Custody/COC No HCP 128 138 BC578

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALIFIERS	RPD %	3σ TOT	PROT LIMIT
Plutonium 238	-0.010	0.021	0.024	1.0	U	PU	0.024	0.024	0.049	U	-		
Plutonium 239/240	0.419	0.10	0.018	1.0	J	PU	0.266	0.083	0.030	J	8	50	
Americium 241	0.185	0.11	0.048	1.0	J	AM	0.078	0.029	0.048	J	30	106	
Total Uranium	0.108	0.13	0.16	1.0	U	UK	0.095	0.13	0.18	U	-		
Thorium 228	1.67	0.25	0.21	1.0		TH	0.557	0.20	0.13	J	9	48	
Thorium 230	0.316	0.14	0.16	1.0	J	TH	0.171	0.19	0.14	J	7	43	
Thorium 232	0.557	0.19	0.191	1.0	J	TH	0.350	0.17	0.180	J	6	51	
Potassium 40	15.4	0.98	0.47			GAM	16.0	0.96	0.50		4	34	
Cobalt 60	U		0.048	0.150	U	GAM	U		0.049	U	-		
Cesium 137	36.5	0.93	0.22	0.10		GAM	40.5	0.21	0.189		2	32	
Europium 152	U		0.34	0.10	U	GAM	U		0.32	U	-		
Europium 154	U		0.15	0.10	U	GAM	U		0.17	U	-		
Europium 155	U		0.26	0.10	U	GAM	U		0.18	U	-		
Radium 226	0.456	0.16	0.20	0.10		GAM	0.699	0.14	0.16		6	57	
Radium 228	0.977	0.22	0.22	0.20		GAM	0.983	0.24	0.23		1	59	
Thorium 228	0.125	0.10	0.14			GAM	0.076	0.084	0.12		5	38	
Thorium 232	0.977	0.22	0.22			GAM	0.983	0.24	0.23		1	59	
Americium 241	U		0.33		U	GAM	U		0.12	U	-		
Cesium 134	U		5.6		U	GAM	U		5.8	U	-		
Cesium 135	U		0.35		U	GAM	U		0.31	U	-		

200 Area Source Chara. - 200-CW-1 OU

QC 1031#1 -1945

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-TOP

Version 3.06

Report date 01/17/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

N910146-15 H0WN11

DUPLICATE

SDG	[illegible]	Client/Case no	Hanford SDG H0578
Contact	Melissa C. Mannion	Case no	[illegible]

DUPLICATE		ORIGINAL			
Lab sample id	N910146-15	Lab sample id	N910146-01	Client sample id	H0WN11
Dept sample id	[illegible]	Dept sample id	[illegible]	Location/Matrix	[illegible] Pond SOLID
		Received	10/19/99	Collected	10/14/99 08:15
		% solids	83.0	Custody/SAF No	[illegible]

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALIFIERS	RPD %	3σ TOT	PROT LIMIT
Total Uranium (ug/g)	0.844	0.098	0.004	1.0	J	U_T	0.848	0.098	0.004	J	0	21	

[illegible] Area Source Chara. - [illegible]

[illegible]

DUPLICATES

Page 2

SUMMARY DATA SECTION

Page 15

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVP-DUP
Version	3.06
Report date	01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

N910146-11 B0WN16

DUPLICATE

SDG	[illegible]	Client/Case no	Hanford [illegible]
Contact	[illegible]	Case no	[illegible]

DUPLICATE	ORIGINAL	
Lab sample id [illegible]	Lab sample id [illegible]	Client sample id B0WN16
Dept sample id [illegible]	Dept sample id [illegible]	Location/Matrix [illegible]
	Received [illegible]	Collected [illegible]
	% solids [illegible]	Cust. by/SAF No [illegible]

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALIFIERS	RPD %	3σ PROT TOT LIMIT
Tritium	[illegible]	[illegible]	[illegible]	400	U	H	0.005	[illegible]	0.090	U	-	
Technetium 99	1.51	0.31	0.20	15	JB	TC	1.45	0.16	0.22	JB	4	41
Nickel 63	[illegible]	1.2	2.0	30	U	NI_L	[illegible]	1.2	2.0	U	-	

[illegible] Area Source Charal - [illegible] OU

QC-[illegible]#5 [illegible]46

DUPLICATES

Page 3

SUMMARY DATA SECTION

Page 16

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	[illegible]
Version	3.06
Report date	01/07/[illegible]

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

N910146 16 H0WN16

MATRIX SPIKE

SDG 145		Client/Case no Hanford SDG H0578
Contact Melissa C. Marsden		Case no [illegible]
MATRIX SPIKE	ORIGINAL	
Lab sample id N910146 16	Lab sample id N910146 [illegible]	Client sample id H0WN16
Dept sample id [illegible]	Dept sample id [illegible]	Location/Matrix 200 E Land SOLID
	Received [illegible]	Collected 10/24/99 09:07
	% solids 90.3	Custody/SAF No H99-078-139 H99-078

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Nickel 63	86.0	2.9	2.0	30	B	NI 1	100	4.0	0.939	1.2	85	85-115	

[illegible] - [illegible]

[illegible]

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVP MS
Version	3.06
Report date	01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP HC78

N910146-12 P0WN17

MATRIX SPIKE

[illegible]		Client/Case no	Hanford [illegible]
Contact	[illegible]	Case no	[illegible]
MATRIX SPIKE	ORIGINAL		
Lab sample id	N910146-12	Lab sample id	N910146-06
Dept sample id	[illegible]	Dept sample id	[illegible]
		Received	10/19/99
		% solids	93.8
Client sample id	P0WN17		
Location/Matrix	[illegible]		[illegible]
Collected	[illegible]		
Custody/SAF No	[illegible]		

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	42.5	0.43	0.091	400	J	H	48.0	1.9	0.013	[illegible]	[illegible]	[illegible]	

[illegible] Area Source Chara. [illegible] CW-1 CU

[illegible] 47

MATRIX SPIKES

Page 2

SUMMARY DATA SECTION

Page 18

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	[illegible]
Version	3.06
Report date	01/27/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

N910146 01 BOWN11

DATA SHEET

SDG 1145 Client/Case to Hanford SDG H0578

Contact Melissa C. Marsden Contract 38E-1EB-10295

Lab sample id N910146.01 Client sample id BOWN11

Test sample id 1145.001 Location/Matrix 200 Area Soil SOILD

Received 10/15/99 Collected 10/14/99 08:15

% solids 82.0 Custody/SAF No 99-078.118 99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (mg/g)	7440-61-1	0.848	0.098	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0.004	0.024	0.049	1.0	U	PU
Plutonium 239/240	PU-239/240	0.386	0.083	0.050	1.0	J	PU
Americium 241	14596-10-2	0.078	0.039	0.048	1.0	J	AM
Total Strontium	7390	0.065	0.13	0.18	1.0	U	SR
Thorium 228	14274-82-9	0.977	0.10	0.13	1.0	J	TH
Thorium 230	14269-63-7	0.851	0.19	0.14	1.0	J	TH
Thorium 232	TH-232	0.950	0.17	0.150	1.0	J	TH
Potassium 40	13966-00-2	16.0	0.96	0.50			GAM
Cobalt 60	10198-40-0	U		0.049	0.050	U	GAM
Cesium 137	10045-97-3	40.5	0.31	0.089	0.10		GAM
Europium 152	14683-23-9	U		0.23	0.10	U	GAM
Europium 154	15585-10-1	U		0.17	0.10	U	GAM
Europium 155	14391-16-3	U		0.18	0.10	U	GAM
Radium 226	13982-63-3	0.699	0.14	0.16	0.10		GAM
Radium 228	15262-20-1	0.983	0.24	0.13	0.10		GAM
Thorium 228	14274-82-9	0.976	0.084	0.12			GAM
Thorium 232	TH-232	0.983	0.24	0.13			GAM
Americium 241	14596-10-2	U		0.12		U	GAM
Uranium 238	U-238	U		5.8		U	GAM
Uranium 235	15117-96-1	U		0.31		U	GAM

200 Area Source Chara. - 200 CW-1 OU

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 01/07/00

TMA / RICHMOND

SAMPLE DELIVERY GROUP B0578

N910146-02 B0WN12

DATA SHEET

SDG 1145		Client/Case no Hanford	SDG B0578
Project Melissa C. Marshall		Contract 368-GEN-00115	
Lab sample id N910146-02		Client sample id B0WN12	
Client sample id 1145-002		Location/Matrix 200 Area Soil	SOILD
Received 10/15/99		Collected 10/14/99 08:34	
% solids 91.3		Custody/COC No B99-078-118	B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Total Uranium (mg/g)	7440-61-1	0.705	0.083	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0.013	0.027	0.043	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.004	0.018	0.043	1.0	U	PU
Americium 241	14596-10-2	0.011	0.013	0.019	1.0	U	AM
Total Strontium	8890	0.112	0.11	0.14	1.0	U	SR
Thorium 228	14274-82-9	0.743	0.19	0.15	1.0	J	TH
Thorium 230	14269-63-7	0.612	0.18	0.18	1.0	J	TH
Thorium 232	TH-232	0.492	0.14	0.077	1.0	J	TH
Potassium 40	13966-00-2	12.9	0.85	0.36			GAM
Cobalt 60	10198-40-0	U		0.050	0.050	U	GAM
Cesium 137	10045-97-3	U		0.040	0.10	U	GAM
Europium 152	14683-23-9	U		0.092	0.10	U	GAM
Europium 154	15185-18-1	U		0.16	0.10	U	GAM
Europium 155	14391-16-3	U		0.078	0.10	U	GAM
Radium 226	13982-63-3	0.524	0.080	0.074	0.10		GAM
Radium 228	15262-20-1	0.867	0.10	0.18	0.20		GAM
Thorium 228	14274-82-9	0.894	0.069	0.063			GAM
Thorium 232	TH-232	0.867	0.20	0.18			GAM
Americium 241	14596-10-2	U		0.002		U	GAM
Uranium 238	U-238	U		5.5		U	GAM
Uranium 235	15117-96-1	U		0.13		U	GAM

200 Area Source Chara. - 200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP B0578

N910146-03 B0WN13

DATA SHEET

SDG 7245	Client/Case no Hanford SDG B0578
Contact Melissa C. Munnion	Contract TRP-SRP-107925
Lab sample id N910146-03	Client sample id B0WN13
Dept sample id 7245-003	Location/Matrix 200 E Pond SOLID
Received 10/19/99	Collected 10/14/99 08:49
% solids 93.5	Custody/SAF No R99-078-138 R99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.635	0.074	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0.077	0.045	0.060	1.0	J	PU
Plutonium 239/240	PU-239/240	0.125	0.074	0.055	1.0	J	PU
Americium 241	14596-10-2	0.024	0.041	0.069	1.0	U	AM
Total Strontium	SR90	0.231	0.11	0.16	1.0	J	SR
Thorium 228	14274-82-9	0.756	0.17	0.14	1.0	J	TH
Thorium 230	14269-63-7	0.910	0.19	0.14	1.0	J	TH
Thorium 232	TH-232	0.833	0.16	0.060	1.0	J	TH
Potassium 40	13966-00-2	11.6	0.70	0.31			GAM
Cobalt 60	10198-40-0	U		0.033	0.050	U	GAM
Cesium 137	10045-97-3	6.86	0.12	0.052	0.10		GAM
Europium 152	14683-23-9	U		0.14	0.10	U	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM
Radium 226	13982-63-3	0.445	0.085	0.093	0.10		GAM
Radium 228	15262-20-1	0.570	0.14	0.15	0.20		GAM
Thorium 228	14274-82-9	0.551	0.050	0.002			GAM
Thorium 232	TH-232	0.570	0.14	0.15			GAM
Americium 241	14596-10-2	U		0.16		U	GAM
Uranium 238	U-238	U		3.8		U	GAM
Uranium 235	15117-96-1	U		0.17		U	GAM

200 Area Source Chara. - 200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVP-DS
Version	3.06
Report date	01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

N910146-04 BCWN14

DATA SHEET

SDG 1245 Client/Case no Hanford 200-CW-1

Contact Melissa C. Marsden Contract 68-W8-0055

Lab sample id N910146-04 Client sample id BCWN14

Dept sample id 1141-214 Location/Matrix 200 Area Soil

Received 10/19/99 Collected 10/14/99 08:58

% solids 91.6 Custody/COC No 199-028-198 199-028

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Total Uranium (mg/g)	7440-61-1	0.816	0.095	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0.013	0.125	0.059	1.0	U	PU
Plutonium 239/240	PU-239/240	0.019	0.026	0.054	1.0	U	PU
Americium 241	14596-10-2	0.011	0.030	0.047	1.0	U	AM
Total Strontium	1890	0.310	0.11	0.16	1.0	J	SR
Thorium 228	14274-82-9	0.583	0.16	0.16	1.0	J	TH
Thorium 230	14269-63-7	0.417	0.14	0.16	1.0	J	TH
Thorium 232	TH-232	0.475	0.12	0.055	1.0	J	TH
Potassium 40	13966-00-2	13.6	0.09	0.35			GAM
Cobalt 60	10198-40-0	U		0.030	0.050	U	GAM
Cesium 137	10045-97-3	0.076	0.021	0.015	0.30	J	GAM
Europium 152	14683-23-9	U		0.071	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.10	0.10	U	GAM
Radium 226	13982-63-3	0.492	0.065	0.060	0.10		GAM
Radium 228	15262-20-1	0.996	0.15	0.14	0.30		GAM
Thorium 228	14274-82-9	0.611	0.040	0.042			GAM
Thorium 232	TH-232	0.756	0.15	0.14			GAM
Americium 241	14596-10-2	U		0.26		U	GAM
Uranium 238	U-238	U		3.7		U	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM

200 Area Source Chara. - 200-CW-1 OU

Lab id FMLNC
Protocol Hanford
Version Ver 1.0
Form LVP DS
Version 2.06
Report date 01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

N910146-05 P0WN16

DATA SHEET

SDG 1045 Client/Case no Hanford SDG H0578

Contact Melissa C. Marsden Contract TMS-SSF 10115

Lab sample id P0N0146-05 Client sample id P0WN16

Dept sample id 1145-105 Location/Matrix 200 Area Soil SOILD

Received 10/20/99 Collected 10/14/99 09:07

% solids 88.3 Custody/SAF No H99-078-119 H99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Tritium	10028-17-8	0.085	0.053	0.090	40.0	U	H
Technetium 99	14133-76-7	1.45	0.16	0.12	15	CB	TC
Total Uranium (ug/g)	7440-61-1	0.670	0.078	0.094	1.0	J	U_T
Plutonium 238	13981-16-3	0.004	0.023	0.042	1.0	U	PU
Plutonium 239/240	PU-239/240	0.004	0.015	0.029	1.0	U	PU
Nickel 63	14481-37-8	0.[illegible]9	1.2	2.0	50	U	NI_L
Americium 241	14596-10-2	0	0.021	0.040	1.0	U	AM
Total Strontium	SR90	0.185	0.089	0.13	1.0	J	SR
Thorium 228	14274-82-9	0.860	0.19	0.16	1.0	J	TH
Thorium 230	14269-63-7	0.700	0.17	0.17	1.0	J	TH
Thorium 232	TH-232	0.852	0.17	0.058	1.0	J	TH
Potassium 40	13966-00-2	14.0	0.90	0.40			GAM
Cobalt 60	10198-40-0	U		0.046	0.050	U	GAM
Cesium 137	10045-97-3	0.149	0.041	0.042	0.10		GAM
Europium 152	14683-23-9	U		0.091	0.10	U	GAM
Europium 154	15585-10-1	U		0.15	0.10	U	GAM
Europium 155	14391-16-3	U		0.081	0.10	U	GAM
Radium 226	13982-63-3	0.149	0.084	0.079	0.10		GAM
Radium 228	15262-20-1	0.752	0.22	0.20	0.20		GAM
Thorium 228	14274-82-9	0.978	0.074	0.068			GAM
Thorium 232	TH-232	0.752	0.22	0.20			GAM
Americium 241	14596-10-2	U		0.064		U	GAM
Uranium 238	U-238	U		5.6		U	GAM
Uranium 235	15117-96-1	U		0.13		U	GAM

200 Area Source Chara. - 200-CW-1 OU

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form FVD-DS
Version 3.06
Report date 01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

N910146 06 | RCWN17

DATA SHEET

SDG 2145	Client/Case no Hanford SDG H0578
Contact Melissa C. Mannion	Contract [illegible]
Lab sample id N910146 06	Client sample id RCWN17
Dept sample id 2145-006	Location/Matrix [illegible] SOLID
Received 10/19/99	Collected 10/14/99 09:14
% solids 92.8	Custody/SAF No [illegible]

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.023	0.051	0.086	400	U	H
Technetium 99	14133-76-7	1.54	0.23	0.29	15	JB	TC
Total Uranium (ug/g)	7440-61-1	0.559	0.005	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0.007	0.022	0.041	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.004	0.015	0.041	1.0	U	PU
Nickel 63	13981-37-8	1.35	1.2	2.0	20	U	NI_D
Americium 241	14596-10-2	0.002	0.014	0.023	1.0	U	AM
Total Strontium	SR90	0.067	0.10	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.832	0.20	0.19	1.0	J	TH
Thorium 230	14269-63-7	0.686	0.18	0.17	1.0	J	TH
Thorium 232	TH-232	0.560	0.15	0.069	1.0	J	TH
Potassium 40	13966-00-2	15.1	0.78	0.39			GAM
Cobalt 60	10198-40-0	U		0.037	0.050	U	GAM
Cesium 137	10045-97-3	U		0.033	0.10	U	GAM
Europium 152	14683-23-9	U		0.073	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.004	0.10	U	GAM
Radium 226	13982-63-3	0.518	0.057	0.056	0.10		GAM
Radium 228	15262-20-1	0.877	0.18	0.17	0.20		GAM
Thorium 228	14274-82-9	0.927	0.061	0.054			GAM
Thorium 232	TH-232	0.877	0.18	0.17			GAM
Americium 241	14596-10-2	U		0.052		U	GAM
Uranium 238	U-238	U		4.4		U	GAM
Uranium 235	15117-96-1	U		0.11		U	GAM

200 Area Source Chara. - 200-CW 1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/07/00

TMA / RICHMOND

SAMPLE DELIVERY GROUP B0578

N910146-07 B0WN18

DATA SHEET

SDG [illegible]	Client/Case no Prefixed [illegible] SDG B0578
Project Melissa C. Marquardt	Contract [illegible]
Lab sample id N910146-07	Client sample id B0WN18
Test sample id [illegible]	Location/Matrix 200 P Pond SOILD
Received 10/30/99	Collected 10/04/99 09:24
% solids 99.9	Custody/DAF No B99 [illegible] B99 078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.038	0.014	0.089	400	U	H
Technetium 99	14133-76-7	1.02	0.21	0.28	15	UB	TC
Total Uranium (mg/g)	7440-61-1	0.441	0.051	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0	0.023	0.071	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.015	0.070	1.0	U	PU
Nickel 63	13981-37-8	0.298	1.2	2.1	20	U	NI_L
Americium 241	14596-10-2	-0.035	0.040	0.085	1.0	U	AM
Total Strontium	1890	0.029	0.31	0.35	1.0	U	SR
Thorium 228	14274-82-9	0.167	0.16	0.16	1.0	J	TH
Thorium 230	14269-63-7	0.398	0.16	0.16	1.0	J	TH
Thorium 232	TH-232	0.425	0.13	0.168	1.0	J	TH
Potassium 40	13966-00-2	12.6	0.63	0.30			GAM
Cobalt 60	10198-40-0	U		0.027	0.050	U	GAM
Cesium 137	10045-97-3	U		0.027	0.10	U	GAM
Europium 152	14683-23-9	U		0.068	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.096	0.10	U	GAM
Radium 226	13982-63-3	0.366	0.048	0.050	0.10		GAM
Radium 228	15262-20-1	0.186	0.11	0.12	0.20		GAM
Thorium 228	14274-82-9	0.157	0.034	0.033			GAM
Thorium 232	TH-232	0.586	0.11	0.12			GAM
Americium 241	14596-10-2	U		0.10		U	GAM
Uranium 238	U-238	U		3.5		U	GAM
Uranium 235	15117-96-1	U		0.10		U	GAM

100 Area Source Chara. - 200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP [illegible]

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241
Preparation batch 6904 128					
[illegible]	N910146-01			7145-001	0.078 J
[illegible]	N910146-02			7145-002	U
[illegible]	N910146-03			7145-003	U
[illegible]	N910146-04			7145-004	U
[illegible]	N910146-05			7145-005	U
[illegible]	N910146-06			7145-006	U
[illegible]	N910146-07			7145-007	U
[illegible]	N910146-09			7145-009	U
[illegible]	N910146-08			7145-008	ok
Duplicate (N910146-01)	N910146-10			7145-010	ok J

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

200 Area Source Chara. 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 %	LFF %	COUNT min	DWHM keV	DRIFT keV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904 128 2σ prep error 5.0 % Reference Lab Notebook 6904 pg. 128																
[illegible]	N910146-01			0.048	0.500			78		747			67	[illegible]	12/20	SS-060
[illegible]	N910146-02			0.029	0.500			85		748			67	[illegible]	12/20	SS-058
[illegible]	N910146-03			0.069	0.500			84		706			67	[illegible]	12/20	SS-036
[illegible]	N910146-04			0.067	0.500			94		706			67	[illegible]	12/20	SS-038
[illegible]	N910146-05			0.040	0.500			82		1126			74	[illegible]	12/27	SS-016
[illegible]	N910146-06			0.023	0.500			87		1092			74	[illegible]	12/27	SS-055
[illegible]	N910146-07			0.085	0.500			66		702			67	[illegible]	12/20	SS-044
BLK (QC ID=[illegible]544)	N910146-09			0.052	0.500			93		1129				[illegible]	12/20	SS-050
LCS (QC ID=[illegible]543)	N910146-08			0.049	0.500			72		747				[illegible]	12/20	SS-059
Duplicate (N910146-01) (QC ID=[illegible]545)	N910146-10			0.048	0.500			81		609			68	[illegible]	12/21	SS-015
Nominal values and limits from method				1.0	0.500			20-105		700	100		180			

METHOD SUMMARIES

Page 1

SUMMARY DATA SECTION

Page 26

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD CMS

Version 3.06

Report date 01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H5578

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Test AM Matrix [illegible]	Client Hanford
[illegible]	Contract [illegible]
[illegible]	[illegible] H5578

PROCEDURES	REFERENCE	AMSTMPLATE
	[illegible]	Soil Preparation, rev 0
	[illegible]	Soil Dissolution, rev 0
	[illegible]	Plutonium Purification, rev 0
	[illegible]	Americium Curium Purification, rev 0
	[illegible]	Heavy Elements Electroplating, rev 0

AVERAGES + 2 SD	MDA	[illegible] + [illegible]
FOR 10 SAMPLES	YIELD	82 + 17

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP B0978

Test ID: Matrix [illegible]
[illegible]
Project [illegible]

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOILS

ALPHA SPECTROSCOPY

Client [illegible]
Project [illegible]
Date [illegible]

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	BLANCHET	Plutonium 238	Plutonium 239/240
Preparation Batch 0904 128						
B:WN11	N910146-01			9145-001	U	0.080 J
B:WN12	N910146-02			9145-002	U	U
B:WN13	N910146-03			9145-003	0.077 J	0.225 J
B:WN14	N910146-04			9145-004	U	U
B:WN16	N910146-05			9145-005	U	U
B:WN17	N910146-06			9145-006	U	U
B:WN18	N910146-07			9145-007	U	U
BLK (QC ID=31144)	N910146-09			9145-009	U	U
LCS (QC ID=31143)	N910146-08			9145-008	ok	ok
Duplicate (N910146-01)	N910146-10			9145-010	- U	k J
Nominal values and limits from method				Blks (pCi/g)	1.0	1.0
200 Area Source Chara. - 200 CW-1 OU						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX pCi/g	MDA	AMTQ g	PREP FAC	DILU-TION	YIELD %	REF %	COUNT min	FWHM keV	DRIFT keV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation Batch 0904 128 2σ prep error 5.0 % Reference Lab Notebook 0904 pg. 128																	
B:WN11	N910146-01			0.049	0.500				77		947			67	12/17/99	12/20	SS-071
B:WN12	N910146-02			0.043	0.500				69		947			67	12/17/99	12/20	SS-002
B:WN13	N910146-03			0.160	0.500				68		945			67	12/17/99	12/20	SS-003
B:WN14	N910146-04			0.119	0.500				70		945			67	12/17/99	12/20	SS-004
B:WN16	N910146-05			0.042	0.500				83		945			67	12/17/99	12/20	SS-005
B:WN17	N910146-06			0.041	0.500				86		945			67	12/17/99	12/20	SS-006
B:WN18	N910146-07			0.071	0.500				81		706			67	12/17/99	12/20	SS-045
BLK (QC ID=31144)	N910146-09			0.067	0.500				87		632				12/11/99	12/22	SS-077
LCS (QC ID=31143)	N910146-08			0.088	0.500				63		702				12/10/99	12/20	SS-045
Duplicate (N910146-01) (QC ID=31145)	N910146-10			0.064	0.500				74		609			68	12/17/99	12/21	SS-034
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 01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0558

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Test [illegible]	Client [illegible]
[illegible]	Contract [illegible]
Contact [illegible]	[illegible]

PROCEDURES	REFERENCE	PURPOSE
	[illegible]	Soil Preparation, rev 0
	[illegible]	Soil Dissolution, rev 0
	[illegible]	Plutonium Purification, rev 0
	[illegible]	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MEA	[illegible] ± [illegible]
FOR 10 SAMPLES	YIELD	[illegible] + [illegible]

METHOD SUMMARIES

Page 4

SUMMARY DATA SECTION

Page 29

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP NOTE

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6904-128							
P:WN11	N910146-01			9145-001	0.577 J	0.811 J	0.750 J
P:WN12	N910146-02			9145-002	0.743 J	0.612 J	0.492 J
P:WN13	N910146-03			9145-003	0.716 J	0.510 J	0.833 J
P:WN14	N910146-04			9145-004	0.783 J	0.417 J	0.475 J
P:WN16	N910146-05			9145-005	0.869 J	0.796 J	0.812 J
P:WN17	N910146-06			9145-006	0.[illegible]2 J	0.786 J	0.769 J
P:WN18	N910146-07			9145-007	0.847 J	0.798 J	0.815 J
PLK (QC ID=32544)	N910146-09			9145-009	U	U	U
LCS (QC ID=32543)	N910146-08			9145-008	No data U	ok	No data U
Duplicate (N910146-01)	N910146-10			9145-010	ok	ok J	ok J
Nominal values and limits from method				MDLs (pCi/g)	1.0	1.0	1.0
100 Area Source Chara.	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 6904-128 2σ prep error 5.0 % Reference Lab Notebook 6904 pg. 128																
P:WN11	N910146-01			0.14	0.250			76		790			65	12/18/99	12/18	SS-027
P:WN12	N910146-02			0.18	0.250			46		501			76	12/18/99	12/29	SS-027
P:WN13	N910146-03			0.14	0.250			76		790			65	12/18/99	12/18	SS-031
P:WN14	N910146-04			0.16	0.250			83		790			63	12/18/99	12/16	SS-032
P:WN16	N910146-05			0.17	0.250			80		790			65	12/18/99	12/18	SS-033
P:WN17	N910146-06			0.19	0.250			67		790			65	12/18/99	12/18	SS-034
P:WN18	N910146-07			0.16	0.250			71		790			65	12/18/99	12/18	SS-035
PLK (QC ID=32544)	N910146-09			0.19	0.250			83		789				12/11/99	12/17	SS-040
LCS (QC ID=32543)	N910146-08			0.15	0.250			81		790				12/11/99	12/17	SS-036
Duplicate (N910146-01) (QC ID =2545)	N910146-10			0.21	0.250			77		501			76	12/18/99	12/29	SS-029
Nominal values and limits from method				1.0	0.250			20-105		200			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form LVD-CMS
Version 3.06
Report date 01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Test TH Matrix [illegible]

[illegible]

[illegible]

Client Hanford

Contract [illegible]

Case no [illegible]

PROCEDURES	REFERENCE	TITLE
	FP-000	Data Entry and Document Preparation, rev 0
	FP-001	Q.C. Preparation, rev 0
	FP-003	Tracing, rev 0
	FP-008	Heavy Elements Electroplating, rev 0
	FP-070	Soil Dissolution, rev 0
	RP-961	Thorium Purification - Small Aliquot, rev 0

AVERAGES + 2 SD	MDA	0.17	±	[illegible]
FOR 10 SAMPLES	YIELD	79	±	16

METHOD SUMMARIES

Page 6

SUMMARY DATA SECTION

Page 31

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVP-CMS

Version 3.06

Report date 01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

Test SR Matrix [illegible]
[illegible] 7245
Contact [illegible]

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford
Contract [illegible]
Case no [illegible]

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 6904-128					
B0WN11	N910146-01			7245-001	U
B0WN12	N910146-02			7245-002	U
B0WN13	N910146-03			7245-003	0.231 J
B0WN14	N910146-04			7245-004	0.310 J
B0WN16	N910146-05			7245-005	0.185 J
B0WN17	N910146-06			7245-006	U
B0WN18	N910146-07			7245-007	U
BLK (QC ID=32544)	N910146-09			7245-009	U
LCS (QC ID=32543)	N910146-08			7245-008	ok
Duplicate (N910146-01)	N910146-10			7245-010	- U

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

200 Area Source Chara. 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 6904-128 2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 128																
B0WN11	N910146-01			0.18	1.00			71		400			58	12/11/99	12/11	GRB-220
B0WN12	N910146-02			0.14	1.00			89		400			58	12/11/99	12/11	GRB-222
B0WN13	N910146-03			0.16	1.00			85		150			62	12/11/99	12/15	GRB-210
B0WN14	N910146-04			0.16	1.00			88		150			61	12/11/99	12/14	GRB-211
B0WN16	N910146-05			0.13	1.00			92		200			62	12/11/99	12/15	GRB-203
B0WN17	N910146-06			0.17	1.00			80		200			61	12/11/99	12/14	GRB-202
B0WN18	N910146-07			0.15	1.00			86		400			58	12/11/99	12/11	GRB-228
BLK (QC ID=32544)	N910146-09			0.17	1.00			75		400				12/08/99	12/09	GRB-230
LCS (QC ID=32543)	N910146-08			0.27	1.00			74		400				12/08/99	12/09	GRB-229
Duplicate (N910146-01) (QC ID=32545)	N910146-10			0.16	1.00			89		400			58	12/11/99	12/11	GRB-231
Nominal values and limits from method				1.0	1.00					100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVT CMS
Version 3.06
Report date 01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Test [illegible] Matrix [illegible]
SDG [illegible]
Contact [illegible]

Client Hanford
Contract [illegible]
Case no [illegible]

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

AVERAGES ± 2 SD	MDA	0.17	±	0.077
FOR 10 SAMPLES	YIELD	83	±	15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP HG378

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Test TC Matrix SOILD
SDG 7145
Chemist William C. Marston

Client Hanford
Contract DE-AC06-96RL13200
Project SDG HG378

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6904 128						
P-WN16	N910146-05			7145-005	1.45	J
P-WN17	N910146-06			7145-006	1.54	J
P-WN18	N910146-07			7145-007	1.62	J
BLK (QC II-21544)	N910146-09			7145-009	1.63	J
LCS (QC II-21543)	N910146-08			7145-008	ok	
Duplicate (N910146-05)	N910146-11			7145-011	ok	J
Nominal values and limits from method				RDLs (pCi/g)	15	
200 Area Source Chara. - 200-CW-1 OU						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	FINAL-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT keV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904 128	2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 128															
P-WN16	N910146-05			0.22	1.02			71		400			68	11/30/99	12/21	GEB-220
P-WN17	N910146-06			0.29	1.00			59		400			68	11/30/99	12/21	GEB-223
P-WN18	N910146-07			0.28	1.00			57		400			68	11/30/99	12/21	GEB-224
BLK (QC II-21544)	N910146-09			0.24	1.02			68		400				12/11/99	12/21	GEB-230
LCS (QC II-21543)	N910146-08			0.29	1.02			56		400				12/11/99	12/21	GEB-228
Duplicate (N910146-05) (QC II-21546)	N910146-11			0.20	1.02			61		400			68	11/30/99	12/21	GEB-232
Nominal values and limits from method				15	1.02			20-105		50			180			

PROCEDURES	REFERENCE	TITLE
	PT 010	Soil Preparation, rev 0
	PT 020	Sample Prep For Technetium 99, rev 0
	PT 040	Technetium 99 Purification, rev 0

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 0.25 ± 0.128
YIELD 65 ± 20

Lab Id TMANC
Protocol Hanford
Version Ver 1.0
Form LVI CMS
Version 3.06
Report Date 01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP HC178

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Test GAM Matrix SOLID
SDG 1145
Analyst Melissa C. Mandlin

Client Hanford
Contract TEP-SBP-107815
Case no SDG HC178

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	FLANCHET	Cobalt 60	Cesium 137
Preparation batch 6904 128						
B-WN11	N910140-01			1145-001	U	40.5
B-WN12	N910140-02			1145-002	U	U
B-WN13	N910140-03			1145-003	U	6.86
B-WN14	N910140-04			1145-004	U	0.076 J
B-WN16	N910140-05			1145-005	U	0.149
B-WN17	N910140-06			1145-006	U	U
B-WN18	N910140-07			1145-007	U	U
BLK (QC ID=31744)	N910140-09			1145-009	U	U
LCS (QC ID=31743)	N910140-08			1145-008	ok	ok
Duplicate (N910140-11)	N910140-10			1145-010	- U	ok
Nominal values and limits from method				MDLs (pCi/g)	0.050	0.10
200 Area Source Chara. - 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	DAYS ANALYZED	ANAL-YSED	DETECTOR
Preparation batch 6904 128 2σ prep error 15.0 % Reference Lab Notebook 6904 pg. 128																
B-WN11	N910140-01			0.135	167					332			47	11/23/99	12/30	G2,G1,G0
B-WN12	N910140-02			0.133	166					206			48	11/23/99	12/01	G2,G1,G0
B-WN13	N910140-03			0.001	744					101			48	11/23/99	12/01	G2,G3,G0
B-WN14	N910140-04			0.015	602					101			48	11/23/99	12/01	MP,G5,G0
B-WN16	N910140-05			0.074	413					106			48	11/23/99	12/01	G2,G1,G0
B-WN17	N910140-06			0.131	677					273			49	11/23/99	12/02	G2,G1,G0
B-WN18	N910140-07			0.075	742					273			49	11/23/99	12/02	G2,G3,G0
BLK (QC ID=31744)	N910140-09			0.17	371					100				11/23/99	12/02	G1,G1,G0
LCS (QC ID=31743)	N910140-08			0.149	371					100				11/23/99	12/02	MP,G7,G0
Duplicate (N910140-11) (QC ID=31745)	N910140-10			0.23	367					100			49	11/23/99	12/02	G2,G3,G0
Nominal values and limits from method				0.050	171					100			180			

Lab Id TRANC
Protocol Hanford
Version Ver 1.0
Form DVD-GMS
Version 3.06
Report Date 01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

METHOD SUMMARY, cont.

GAMMA SCAN

GAMMA SPECTROSCOPY

Test GAM Matrix SOLID	Client Hanford
SDG [illegible]	Contract [illegible]
Contact Melissa C. [illegible]	Case no SDG H0578

PROCEDURES	REFERENCE	GAMMAHI
	[illegible]	Soil Preparation, rev 0
	[illegible]	Ge(Li) Preparation for Environmental Samples, rev 0

AVERAGES + 2 SD	MDA	0.11	± [illegible]
FOR 10 SAMPLES	YIELD		±

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H6578

Test [illegible] Matrix [illegible]
SDG [illegible]
Contact [illegible]

METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract [illegible]
Case no [illegible]

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation Batch 6904 128					
[illegible]WN11	N910146-01			7245-001	0.848 J
[illegible]WN12	N910146-02			7245-002	0.705 J
[illegible]WN13	N910146-03			7245-003	0.635 J
[illegible]WN14	N910146-04			7245-004	0.816 J
[illegible]WN16	N910146-05			7245-005	0.670 J
[illegible]WN17	N910146-06			7245-006	0.559 J
[illegible]WN18	N910146-07			7245-007	0.441 J
BLK (QC ID=[illegible])	N910146-14			7245-014	0 J
LCS (QC ID=[illegible])	N910146-13			7245-013	ok
Duplicate (N910146-01)	N910146-15			7245-015	ok J

Nominal values and limits from method RBLs (ug/g) 1.0
200 Area Source Chara. - 200 CW-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/g	ALIQ g	PREP PAC	DILU TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation Batch 6904 128	2σ prep error 9.0 %	Reference Lab Notebook 6904 pg. 128													m.m. 11/14/00	
[illegible]WN11	N910146-01			0.004	0.0500								28	11/11/99	11/08	KPA-001
[illegible]WN12	N910146-02			0.004	0.0500								25	11/05/99	11/08	KPA-001
[illegible]WN13	N910146-03			0.004	0.0500								25	11/05/99	11/08	KPA-001
[illegible]WN14	N910146-04			0.004	0.0500								25	11/05/99	11/08	KPA-001
[illegible]WN16	N910146-05			0.004	0.0500								25	11/05/99	11/08	KPA-001
[illegible]WN17	N910146-06			0.004	0.0500								25	11/05/99	11/08	KPA-001
[illegible]WN18	N910146-07			0.004	0.0500								25	11/05/99	11/08	KPA-001
BLK (QC ID=32289)	N910146-14			0	0.0500									11/05/99	11/08	KPA-001
LCS (QC ID=32288)	N910146-13			0.041	0.0500									11/05/99	11/08	KPA-001
Duplicate (N910146-01) (QC ID=32290)	N910146-15			0.004	0.0500								25	11/05/99	11/08	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 01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

Test [illegible] Matrix [illegible]	Client Hanford
[illegible]	Contract [illegible]
Contact [illegible]	[illegible]

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

PROCEDURES	REFERENCE	DELA
	[illegible] 060	Soil Preparation, rev 0
	[illegible] 070	Soil Dissolution, rev 0
	[illegible] 044	Preparation of Total Uranium by Kinetic Phosphorimetry, rev 1
	[illegible] 028	Total Uranium by Kinetic Phosphorimetry, rev 0

AVERAGES ± 2 SD	MDA	[illegible] ± [illegible]
FOR 10 SAMPLES	YIELD	±

METHOD SUMMARIES

Page 13

SUMMARY DATA SECTION

Page 38

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Test H Matrix SOLID
SDG 1145
Contact [illegible]

Client Hanford
Contract [illegible]
Use no [illegible]

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6904 128						
B0WN16	N910146-05			7245-005	U	
B0WN17	N910146-06			7245-006	U	
B0WN18	N910146-07			7245-007	U	
BLK (QC ID=32544)	N910146-09			7245-009	U	
LCS (QC ID=32543)	N910146-08			7245-008	ok	J
Duplicate (N910146-05)	N910146-11			7245-011	-	U
Spike (N910146-06)	N910146-12			7245-012	ok	J

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

200 Area Source Chara. - 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 128 2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 128																
B0WN16	N910146-05			0.090	20.4			100		120			65	12/17/99	12/18	LSC-005
B0WN17	N910146-06			0.086	20.7			100		120			65	12/17/99	12/18	LSC-005
B0WN18	N910146-07			0.089	20.7			100		120			65	12/17/99	12/18	LSC-005
BLK (QC ID=32544)	N910146-09			0.18	20.5			50		120				12/15/99	12/18	LSC-005
LCS (QC ID=32543)	N910146-08			0.17	20.5			50		120				12/15/99	12/18	LSC-005
Duplicate (N910146-05) (QC ID=32546)	N910146-11			0.088	20.6			100		120			65	12/17/99	12/18	LSC-005
Spike (N910146-06) (QC ID=32547)	N910146-12			0.091	20.2			100		110			65	12/15/99	12/18	LSC-005
Nominal values and limits from method				400	20.5					25			180			

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

AVERAGES ± 2 SD FOR 7 SAMPLES			
	MDA	0.11	± 0.084
	YIELD	86	± 49

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/07/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0578

Test NI-L Matrix [illegible]
SDG 7245
Contact [illegible]

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract [illegible]
Case no [illegible]

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6904-128						
B0WN16	N910146-05			7245-005	U	
B0WN17	N910146-06			7245-006	U	
B0WN18	N910146-07			7245-007	U	
BLK (QC ID=32544)	N910146-09			7245-009	7.98	J
LCS (QC ID=32543)	N910146-08			7245-008	ok	
Duplicate (N910146-05)	N910146-11			7245-011	-	U
Spike (N910146-05)	N910146-16			7245-016	ok	

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

200 Area Source Chara. - 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 6904-128	2σ prep error 10.0 %	Reference Lab Notebook 6904 pg. 128														
B0WN16	N910146-05			2.0	0.500			100		100			68	12/18/99	12/21	LSC-005
B0WN17	N910146-06			2.0	0.500			100		100			68	12/18/99	12/21	LSC-005
B0WN18	N910146-07			2.1	0.500			100		100			68	12/18/99	12/21	LSC-005
BLK (QC ID=32544)	N910146-09			2.0	0.500			100		100				12/16/99	12/21	LSC-005
LCS (QC ID=32543)	N910146-08			2.0	0.500			100		100				12/16/99	12/21	LSC-005
Duplicate (N910146-05) (QC ID=32546)	N910146-11			2.0	0.500			100		100			68	12/18/99	12/21	LSC-005
Spike (N910146-05) (QC ID=32718)	N910146-16			2.0	0.500			100		100			68	12/16/99	12/21	LSC-005
Nominal values and limits from method				30	0.500					10			180			

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

AVERAGES ± 2 SD FOR 7 SAMPLES			
	MDA	2.0	± 0.076
	YIELD	100	± 0

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/07/00

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-138

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 B pond		SAF No.: B99-078
Ice Chest No.: ERC 96 066	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/~~RECRA~~ D 7B 10-14-99	Offsite Property No.: A990300		Bill of Lading/Air Bill No.: 4235 7953 0500
			COA: B20CW1 671C

Price Code: 8N

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

CPM	Sample No.	Matrix *	Sample Date	Sample Time										
340	BOWN11	Soil	10-14-99	0815	X°						X°			
220	BOWN12	Soil	10-14-99	0834	X°						X°			
273	BOWN13	Soil	10-14-99	0849	X°						X°			
224	BOWN14	Soil	10-14-99	0858	X°						X°			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers / Doug Bowers	10-14-99/1105	Ref 1A	10-14-99/1105
Ref 1A	10-18-99/1015	Doug Bowers / Doug Bowers	10-18-99/1015
Doug Bowers / Doug Bowers	10-18-99/1015	Fed Ex	10-18-99
FedEx	10-19-99 10:00	TNU M. Goldenberg	10-19-99 10:00

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) 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

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

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

use Bow8C1 as T.A.

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	B99-078-139	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 B pond	SAF No.: B99-078	
Ice Chest No.: ERC 96 066	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: TMA/RECRA 080 10-14-99	Offsite Property No.: A990300	Bill of Lading/Air Bill No.: 4235 7953 0500	
		COA: B20CW1 671C	

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

cpm	Sample No.	Matrix *	Sample Date	Sample Time											
242	BOWN16	Soil	10-14-99	0907	X	X	X	X							X
260	BOWN17	Soil	10-14-99	0914	X	X	X	X							X
248	BOWN18	Soil	10-14-99	0924	X	X	X	X							X

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: Doug Bowers, Doug Bowers 10-14-99/1105	Received By: Ref 1A 10-14-99/1105	Date/Time
Relinquished By: Ref 1A 10-18-99/1015	Received By: Doug Bowers, Doug Bowers 10-18-99/1015	Date/Time
Relinquished By: Doug Bowers, Doug Bowers 10-18-99/1015	Received By: Fed Ex 10-18-99	Date/Time
Relinquished By: FedEx 10-19-99 10:00	Received By: TNV McGoldenberg 10-19-99 10:00	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) 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
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Aminonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

use Bow 8C1 as TA

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 10-19-99

CoC No. B99-078-138, 139

Container I.D. No. FFC 96-066 Requested TAT (Days) 45 P.O. Received Yes [ ] No [✓]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 7
7. Number of containers per sample: _____ (Or see CoC ✓)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [✓] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by M. Goldberg Date: 10-19-99 Time: 10:00

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# : 9910L420 and 9910L441
SDG# : H0578
SAF# : B99-078

W.O. # : 10985-001-001-9999-00
Date Received: 10-19,20-99

INORGANIC CASE NARRATIVE

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

2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.

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

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

5. The method blanks were within method criteria.

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

7. The matrix spike recoveries were within the 75-125% control limits with the exception of Sample B0WN11 for Nitrate Nitrite.

8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.

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

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-22-99
Date

njp\910 420,441

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 28 pages.

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

02

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 11/15/99

CLIENT: TNU-HANFORD E99-078 RECRA LOT #: 9910L420

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	EOWN11	% Solids	84.5		%	0.01	1.0
		Chloride by IC	10.4		MG/KG	1.5	1.0
		Fluoride by IC	3.0	u	MG/KG	3.0	1.0
		Nitrite by IC	1.5	u	MG/KG	1.5	1.0
		Nitrate by IC	60		MG/KG	1.5	1.0
		Cyanide, Total	0.59	u	MG/KG	0.59	1.0
		Phosphate by IC	1.5	u	MG/KG	1.5	1.0
		Chromium VI	0.47	u	MG/KG	0.47	1.0
		Sulfate by IC	225		MG/KG	14.8	10.0
		Nitrate Nitrite	11.0		MG/KG	0.23	1.0
		Ammonia, as N	2.5		MG/KG	1.5	1.0
		pH	7.9		SOIL PH	0.01	1.0
		Sulfide	4.5		MG/KG	2.4	1.0
-002	EOWN12	% Solids	92.0		%	0.01	1.0
		Chloride by IC	6.2		MG/KG	1.4	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	1.4	u	MG/KG	1.4	1.0
		Nitrate by IC	23		MG/KG	1.4	1.0
		Cyanide, Total	0.54	u	MG/KG	0.54	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	54.5		MG/KG	1.4	1.0
		Nitrate Nitrite	5.0		MG/KG	0.21	1.0
		Ammonia, as N	1.4	u	MG/KG	1.4	1.0
		pH	8.0		SOIL PH	0.01	1.0
		Sulfide	4.0		MG/KG	2.2	1.0
-003	EOWN13	% Solids	93.8		%	0.01	1.0
		Chloride by IC	5.0		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	25		MG/KG	1.3	1.0
		Cyanide, Total	0.53	u	MG/KG	0.53	1.0
		Phosphate by IC	2.7		MG/KG	1.3	1.0
		Chromium VI	0.43	u	MG/KG	0.43	1.0
		Sulfate by IC	54.3		MG/KG	2.7	2.0
		Nitrate Nitrite	5.4		MG/KG	0.20	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.1		SOIL PH	0.01	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/15/99

CLIENT: TNU-HANFORD E99-078

RECRA LOT #: 99101420

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	E0WN13	Sulfide	2.1	u	MG/KG	2.1	1.0
-004	E0WN14	% Solids	91.8		%	0.01	1.0
		Chloride by IC	11.1		MG/KG	1.4	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	1.4	u	MG/KG	1.4	1.0
		Nitrate by IC	12		MG/KG	1.4	1.0
		Cyanide, Total	0.54	u	MG/KG	0.54	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	35.2		MG/KG	1.4	1.0
		Nitrate Nitrite	3.0		MG/KG	0.22	1.0
		Ammonia, as N	1.4	u	MG/KG	1.4	1.0
		pH	8.3		SOIL PH	0.01	1.0
		Sulfide	2.2	u	MG/KG	2.2	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/15/99

CLIENT: TNU-HANFORD E99-078 RECRA LOT #: 9910L420

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LXC093-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.2	u	MG/KG	1.2	1.0
		Nitrate by IC	1.2	u	MG/KG	1.2	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	99LXC094-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.2	u	MG/KG	1.2	1.0
		Nitrate by IC	1.2	u	MG/KG	1.2	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK1	99LC120-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	99LVI077-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	99LN3054-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	99LAM042-MB1	Ammonia, as N	1.2	u	MG/KG	1.2	1.0
BLANK10	99LSD060-MB1	Sulfide	2.0	u	MG/KG	2.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/15/99

CLIENT: TNU-HANFORD E99-078 RECRA LOT #: 9910L420

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	EOWN11	Chloride by IC	69.5	10.4	59.2	99.9	2.0
		Fluoride by IC	125	0.40	118	105.0	2.0
		Nitrite by IC	58	1.5 u	59	98.7	2.0
		Nitrate by IC	120	60	59	105.3	2.0
		Phosphate by IC	58.3	1.5 u	59.2	98.6	2.0
		Sulfate by IC	531	225	296	103.5	10.0
		Nitrate Nitrite	18.5	11.0	5.7	123.0	5.0
-002	EOWN12	Cyanide, Total	5.5	0.54u	5.4	101.1	1.0
		Ammonia, as N	72.4	1.4 u	71.6	101.0	1.0
-004	EOWN14	Soluble Chromium VI	4.5	0.08	4.4	101.2	1.0
		Insoluble Chromium VI	1060	0.08	1180	90.2	100
		Sulfide	379	0.0	412	92.0	1.0
BLANK10	99LXC093-MB1	Chloride by IC	24.4	1.2 u	25.0	97.8	1.0
		Fluoride by IC	53.1	2.5 u	50.0	106.2	1.0
		Nitrite by IC	25	1.2 u	25	100.2	1.0
		Nitrate by IC	24	1.2 u	25	97.3	1.0
		Phosphate by IC	24.6	1.2 u	25.0	98.4	1.0
		Sulfate by IC	24.0	1.2 u	25.0	96.0	1.0
BLANK10	99LXC094-MB1	Chloride by IC	23.1	1.2 u	25.0	92.6	1.0
		Fluoride by IC	52.6	2.5 u	50.0	105.1	1.0
		Nitrite by IC	25	1.2 u	25	99.3	1.0
		Nitrate by IC	24	1.2 u	25	95.4	1.0
		Phosphate by IC	24.7	1.2 u	25.0	98.7	1.0
		Sulfate by IC	23.7	1.2 u	25.0	94.8	1.0
BLANK10	99LVI077-MB1	Soluble Chromium VI	3.9	0.40u	4.0	98.2	1.0
		Insoluble Chromium VI	1160	0.40u	1160	99.4	100
BLANK10	99IN2094-MB1	Nitrate Nitrite	5.0	0.20u	5.0	99.6	1.0
		Nitrate Nitrite MSD	4.8	0.20u	5.0	97.0	1.0
BLANK10	99LAM042-MB1	Ammonia, as N	49.8	1.2 u	50.0	99.5	1.0
		Ammonia, as N MSD	50.4	1.2 u	50.0	100.8	1.0
BLANK10	99LSD060-MB1	Sulfide	9.3	2.0 u	10.0	93.0	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 11/15/99

CLIENT: TNU-HANFORD E99-078 RECRA LOT #: 9910L420

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	99LN3054-MB1	Nitrate Nitrite	99.6	97.0	2.6
BLANK10	99LAM042-MB1	Ammonia, as N	99.5	100.8	1.2

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/15/99

CLIENT: TNU-HANFORD E99-078 RECRA LOT #: 9910L420

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WN11	Chloride by IC	10.4	10.6	2.4	1.0
		Fluoride by IC	3.0 u	3.0 u	NC	1.0
		Nitrite by IC	1.5 u	1.5 u	NC	1.0
		Nitrate by IC	60	62	2.8	1.0
		Phosphate by IC	1.5 u	1.5 u	NC	1.0
		Sulfate by IC	225	225	0.13	10.0
		Nitrate Nitrite	11.0	10.7	2.9	1.0
-002REP	B0WN12	Cyanide, Total	0.54u	0.54u	NC	1.0
		Ammonia, as N	1.4 u	1.3 u	NC	1.0
-004REP	B0WN14	pH	8.3	8.3	0.2	1.0
		Sulfide	2.2 u	4.0	NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/15/99

CLIENT: TNU-HANFORD E99-078 RECRA LOT #: 9910L420

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99LC120-LC1	Cyanide, Total LCS	1.8	2.0	MG/KG	92.2
LCS2	99LC120-LC2	Cyanide, Total LCS	10	10	MG/KG	101.9

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/22/99

CLIENT: TNU-HANFORD E99-078 RECRA LOT #: 9910L441

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	E0WN16	% Solids	90.6		%	0.01	1.0
		Chloride by IC	12.4		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	17		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	59.5		MG/KG	2.8	2.0
		Nitrate Nitrite	3.2		MG/KG	0.21	1.0
		Ammonia, as N	1.4	u	MG/KG	1.4	1.0
		pH	8.4		SOIL PH	0.01	1.0
		Sulfide	8.3		MG/KG	2.2	1.0
-002	E0WN17	% Solids	93.6		%	0.01	1.0
		Chloride by IC	6.5		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	12		MG/KG	1.3	1.0
		Cyanide, Total	0.53	u	MG/KG	0.53	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.43	u	MG/KG	0.43	1.0
		Sulfate by IC	35.0		MG/KG	1.3	1.0
		Nitrate Nitrite	2.5		MG/KG	0.19	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.6		SOIL PH	0.01	1.0
		Sulfide	3.6		MG/KG	2.1	1.0
-003	E0WN18	% Solids	97.0		%	0.01	1.0
		Chloride by IC	1.3	u	MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	1.4		MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.41	u	MG/KG	0.41	1.0
		Sulfate by IC	3.4		MG/KG	1.3	1.0
		Nitrate Nitrite	0.28		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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L441

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	BOWN18	Sulfide	3.9	MG/KG	2.1	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/22/99

CLIENT: TNU-HANFORD E99-078 RECRA LOT #: 9910L441

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LXC093-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.2	u	MG/KG	1.2	1.0
		Nitrate by IC	1.2	u	MG/KG	1.2	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	99LXC094-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.2	u	MG/KG	1.2	1.0
		Nitrate by IC	1.2	u	MG/KG	1.2	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK1	99LC121-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	99LVI077-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	99LN3054-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	99LAM042-MB1	Ammonia, as N	1.2	u	MG/KG	1.2	1.0
BLANK10	99LSD060-MB1	Sulfide	2.0	u	MG/KG	2.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/22/99

CLIENT: TNU-HANFORD F99-078 RECRA LOT #: 9910L441

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	EOWN16	Chloride by IC	40.0	12.4	27.6	100.2	1.0
		Fluoride by IC	59.4	0.0	55.2	107.7	1.0
		Nitrite by IC	29	1.4 u	28	104.6	1.0
		Nitrate by IC	45	17	28	102.1	1.0
		Phosphate by IC	28.3	1.4 u	27.6	102.4	1.0
		Sulfate by IC	199	59.5	138	101.0	5.0
		Nitrate Nitrite	9.0	3.2	5.2	110.5	1.0
		Ammonia, as N	81.5	1.4 u	79.9	102.0	1.0
-003	EOWN18	Cyanide, Total	5.1	0.52u	5.2	98.2	1.0
		Soluble Chromium VI	4.2	0.41u	4.1	101.2	1.0
		Insoluble Chromium VI	1160	0.41u	1180	98.6	100
		Sulfide	353	0.0	368	91.0	1.0
BLANK10	99LXC092-MB1	Chloride by IC	24.4	1.2 u	25.0	97.8	1.0
		Fluoride by IC	53.1	2.5 u	50.0	106.2	1.0
		Nitrite by IC	25	1.2 u	25	100.2	1.0
		Nitrate by IC	24	1.2 u	25	97.3	1.0
		Phosphate by IC	24.6	1.2 u	25.0	98.4	1.0
		Sulfate by IC	24.0	1.2 u	25.0	96.0	1.0
BLANK10	99LXC094-MB1	Chloride by IC	23.1	1.2 u	25.0	92.6	1.0
		Fluoride by IC	52.6	2.5 u	50.0	105.1	1.0
		Nitrite by IC	25	1.2 u	25	99.3	1.0
		Nitrate by IC	24	1.2 u	25	95.4	1.0
		Phosphate by IC	24.7	1.2 u	25.0	98.7	1.0
		Sulfate by IC	23.7	1.2 u	25.0	94.8	1.0
BLANK10	99LV1077-MB1	Soluble Chromium VI	3.9	0.40u	4.0	98.2	1.0
		Insoluble Chromium VI	1160	0.40u	1160	99.4	100
BLANK10	99LN3054-MB1	Nitrate Nitrite	5.0	0.20u	5.0	99.6	1.0
		Nitrate Nitrite MSD	4.8	0.20u	5.0	97.0	1.0
BLANK10	99LAM042-MB1	Ammonia, as N	49.8	1.2 u	50.0	99.5	1.0
		Ammonia, as N MSD	50.4	1.2 u	50.0	100.8	1.0
BLANK10	99LSD060-MB1	Sulfide	9.3	2.0 u	10.0	93.0	1.0

Fecra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 11/22/99

CLIENT: TNU-HANFORD E99-078 FECRA LOT #: 9910L441

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	99LN3054-MB1	Nitrate Nitrite	99.6	97.0	2.6
BLANK10	99LAM042-MB1	Ammonia, as N	99.5	100.8	1.2

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/22/99

CLIENT: TNU-HANFORD E99-078 RECRA LOT #: 9910L441

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-003REP	BOWN16	Chloride by IC	12.4	13.8	10.8	1.0
		Fluoride by IC	2.8 u	2.8 u	NC	1.0
		Nitrite by IC	1.4 u	1.4 u	NC	1.0
		Nitrate by IC	17	19	12.4	1.0
		Phosphate by IC	1.4 u	1.4 u	NC	1.0
		Sulfate by IC	59.5	61.9	4.0	2.0
		Nitrate Nitrite	3.2	3.6	11.7	1.0
		Ammonia, as N	1.4 u	1.4 u	NC	1.0
-003REP	BOWN18	% Solids	97.0	96.7	0.25	1.0
		Cyanide, Total	0.52u	0.52u	NC	1.0
		Chromium VI	0.41u	0.41u	NC	1.0
		pH	8.9	8.9	0.2	1.0
		Sulfide	2.1 u	2.1 u	NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/22/99

CLIENT: TNU-HANFORD B59-078 RECRA LOT #: 99101441

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99LC121-LC1	Cyanide, Total LCS	1.9	2.0	MG/KG	93.6
LCS2	99LC121-LC2	Cyanide, Total LCS	9.9	10	MG/KG	99.3

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

DATE RECEIVED: 10/19/99 RFW LOT # :9910L420

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOWN11						
% SOLIDS	001	S	99L%S139	10/14/99	10/20/99	10/21/99
CHLORIDE BY IC	001	S	99LXC093	10/14/99	11/09/99	11/09/99
CHLORIDE BY IC	001 REP	S	99LXC094	10/14/99	11/10/99	11/10/99
CHLORIDE BY IC	001 MS	S	99LXC094	10/14/99	11/10/99	11/10/99
FLUORIDE BY IC	001	S	99LXC093	10/14/99	11/09/99	11/09/99
FLUORIDE BY IC	001 REP	S	99LXC094	10/14/99	11/10/99	11/10/99
FLUORIDE BY IC	001 MS	S	99LXC094	10/14/99	11/10/99	11/10/99
NITRITE BY IC	001	S	99LXC093	10/14/99	11/09/99	11/09/99
NITRITE BY IC	001 REP	S	99LXC094	10/14/99	11/10/99	11/10/99
NITRITE BY IC	001 MS	S	99LXC094	10/14/99	11/10/99	11/10/99
NITRATE BY IC	001	S	99LXC093	10/14/99	11/09/99	11/09/99
NITRATE BY IC	001 REP	S	99LXC094	10/14/99	11/10/99	11/10/99
NITRATE BY IC	001 MS	S	99LXC094	10/14/99	11/10/99	11/10/99
TOTAL CYANIDE	001	S	99LC120	10/14/99	10/25/99	10/25/99
PHOSPHATE BY IC	001	S	99LXC093	10/14/99	11/09/99	11/09/99
PHOSPHATE BY IC	001 REP	S	99LXC094	10/14/99	11/10/99	11/10/99
PHOSPHATE BY IC	001 MS	S	99LXC094	10/14/99	11/10/99	11/10/99
CHROMIUM VI	001	S	99LV1077	10/14/99	10/24/99	10/24/99
SULFATE BY IC	001	S	99LXC094	10/14/99	11/10/99	11/10/99
SULFATE BY IC	001 REP	S	99LXC094	10/14/99	11/10/99	11/10/99
SULFATE BY IC	001 MS	S	99LXC094	10/14/99	11/10/99	11/10/99
NITRATE NITRITE	001	S	99LN3054	10/14/99	11/09/99	11/11/99
NITRATE NITRITE	001 REP	S	99LN3054	10/14/99	11/09/99	11/11/99
NITRATE NITRITE	001 MS	S	99LN3054	10/14/99	11/09/99	11/11/99
AMMONIA	001	S	99LAM042	10/14/99	11/02/99	11/02/99
PH	001	S	99LPH114	10/14/99	10/21/99	10/21/99
SULFIDE	001	S	99LSD060	10/14/99	10/21/99	10/21/99
BOWN12						
% SOLIDS	002	S	99L%S139	10/14/99	10/20/99	10/21/99
CHLORIDE BY IC	002	S	99LXC093	10/14/99	11/09/99	11/09/99
FLUORIDE BY IC	002	S	99LXC093	10/14/99	11/09/99	11/09/99
NITRITE BY IC	002	S	99LXC093	10/14/99	11/09/99	11/09/99
NITRATE BY IC	002	S	99LXC093	10/14/99	11/09/99	11/09/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD E99-078

DATE RECEIVED: 10/19/99 RFW LOT # :9910L420

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL CYANIDE	002	S	99LC120	10/14/99	10/25/99	10/25/99
TOTAL CYANIDE	002 REP	S	99LC120	10/14/99	10/25/99	10/25/99
TOTAL CYANIDE	002 MS	S	99LC120	10/14/99	10/25/99	10/25/99
PHOSPHATE BY IC	002	S	99LXC093	10/14/99	11/09/99	11/09/99
CHROMIUM VI	002	S	99LVI077	10/14/99	10/24/99	10/24/99
SULFATE BY IC	002	S	99LXC093	10/14/99	11/09/99	11/09/99
NITRATE NITRITE	002	S	99LN3054	10/14/99	11/09/99	11/11/99
AMMONIA	002	S	99LAM042	10/14/99	11/02/99	11/02/99
AMMONIA	002 REP	S	99LAM042	10/14/99	11/02/99	11/02/99
AMMONIA	002 MS	S	99LAM042	10/14/99	11/02/99	11/02/99
PH	002	S	99LPH114	10/14/99	10/21/99	10/21/99
SULFIDE	002	S	99LSD060	10/14/99	10/21/99	10/21/99
BOWN13						
% SOLIDS	003	S	99L%S139	10/14/99	10/20/99	10/21/99
CHLORIDE BY IC	003	S	99LXC093	10/14/99	11/09/99	11/09/99
FLUORIDE BY IC	003	S	99LXC093	10/14/99	11/09/99	11/09/99
NITRITE BY IC	003	S	99LXC093	10/14/99	11/09/99	11/09/99
NITRATE BY IC	003	S	99LXC093	10/14/99	11/09/99	11/09/99
TOTAL CYANIDE	003	S	99LC120	10/14/99	10/25/99	10/25/99
PHOSPHATE BY IC	003	S	99LXC093	10/14/99	11/09/99	11/09/99
CHROMIUM VI	003	S	99LVI077	10/14/99	10/24/99	10/24/99
SULFATE BY IC	003	S	99LXC094	10/14/99	11/10/99	11/10/99
NITRATE NITRITE	003	S	99LN3054	10/14/99	11/09/99	11/11/99
AMMONIA	003	S	99LAM042	10/14/99	11/02/99	11/02/99
PH	003	S	99LPH114	10/14/99	10/21/99	10/21/99
SULFIDE	003	S	99LSD060	10/14/99	10/21/99	10/21/99
BOWN14						
% SOLIDS	004	S	99L%S139	10/14/99	10/20/99	10/21/99
CHLORIDE BY IC	004	S	99LXC093	10/14/99	11/09/99	11/09/99
FLUORIDE BY IC	004	S	99LXC093	10/14/99	11/09/99	11/09/99
NITRITE BY IC	004	S	99LXC093	10/14/99	11/09/99	11/09/99
NITRATE BY IC	004	S	99LXC093	10/14/99	11/09/99	11/09/99
TOTAL CYANIDE	004	S	99LC120	10/14/99	10/25/99	10/25/99
PHOSPHATE BY IC	004	S	99LXC093	10/14/99	11/09/99	11/09/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD E99-078

DATE RECEIVED: 10/19/99 RIW LOT # :9910L420

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	004	S	99LVI077	10/14/99	10/24/99	10/24/99
CHROMIUM VI	004 MS	S	99LVI077	10/14/99	10/24/99	10/24/99
CHROMIUM VI	004 MSD	S	99LVI077	10/14/99	10/24/99	10/24/99
SULFATE BY IC	004	S	99LXC093	10/14/99	11/09/99	11/09/99
NITRATE NITRITE	004	S	99LN3054	10/14/99	11/09/99	11/11/99
AMMONIA	004	S	99LAM042	10/14/99	11/02/99	11/02/99
PH	004	S	99LPH114	10/14/99	10/21/99	10/21/99
PH	004 REP	S	99LPH114	10/14/99	10/21/99	10/21/99
SULFIDE	004	S	99LSD060	10/14/99	10/21/99	10/21/99
SULFIDE	004 REP	S	99LSD060	10/14/99	10/21/99	10/21/99
SULFIDE	004 MS	S	99LSD060	10/14/99	10/21/99	10/21/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LXC093	N/A	11/09/99	11/09/99
CHLORIDE BY IC	MB1 BS	S	99LXC093	N/A	11/09/99	11/09/99
CHLORIDE BY IC	MB1	S	99LXC094	N/A	11/10/99	11/10/99
CHLORIDE BY IC	MB1 BS	S	99LXC094	N/A	11/10/99	11/10/99
FLUORIDE BY IC	MB1	S	99LXC093	N/A	11/09/99	11/09/99
FLUORIDE BY IC	MB1 BS	S	99LXC093	N/A	11/09/99	11/09/99
FLUORIDE BY IC	MB1	S	99LXC094	N/A	11/10/99	11/10/99
FLUORIDE BY IC	MB1 BS	S	99LXC094	N/A	11/10/99	11/10/99
NITRITE BY IC	MB1	S	99LXC093	N/A	11/09/99	11/09/99
NITRITE BY IC	MB1 BS	S	99LXC093	N/A	11/09/99	11/09/99
NITRATE BY IC	MB1	S	99LXC093	N/A	11/09/99	11/09/99
NITRATE BY IC	MB1 BS	S	99LXC093	N/A	11/09/99	11/09/99
NITRITE BY IC	MB1	S	99LXC094	N/A	11/10/99	11/10/99
NITRITE BY IC	MB1 BS	S	99LXC094	N/A	11/10/99	11/10/99
NITRATE BY IC	MB1	S	99LXC094	N/A	11/10/99	11/10/99
NITRATE BY IC	MB1 BS	S	99LXC094	N/A	11/10/99	11/10/99
TOTAL CYANIDE	LC1 L	S	99LC120	N/A	10/25/99	10/25/99
TOTAL CYANIDE	LC2 L	S	99LC120	N/A	10/25/99	10/25/99
TOTAL CYANIDE	MB1	S	99LC120	N/A	10/25/99	10/25/99
PHOSPHATE BY IC	MB1	S	99LXC093	N/A	11/09/99	11/09/99
PHOSPHATE BY IC	MB1 BS	S	99LXC093	N/A	11/09/99	11/09/99
PHOSPHATE BY IC	MB1	S	99LXC094	N/A	11/10/99	11/10/99
PHOSPHATE BY IC	MB1 BS	S	99LXC094	N/A	11/10/99	11/10/99
CHROMIUM VI	MB1	S	99LVI077	N/A	10/24/99	10/24/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD E99-078

DATE RECEIVED: 10/19/99 RFW LOT # :99IOL420

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	MB1 BS	S	99LVI077	N/A	10/24/99	10/24/99
CHROMIUM VI	MB1 BSD	S	99LVI077	N/A	10/24/99	10/24/99
SULFATE BY IC	MB1	S	99LXC094	N/A	11/10/99	11/10/99
SULFATE BY IC	MB1 BS	S	99LXC094	N/A	11/10/99	11/10/99
NITRATE NITRITE	MB1	S	99LN3054	N/A	11/09/99	11/11/99
NITRATE NITRITE	MB1 BS	S	99LN3054	N/A	11/09/99	11/11/99
NITRATE NITRITE	MB1 BSD	S	99LN3054	N/A	11/09/99	11/11/99
AMMONIA	MB1	S	99LAM042	N/A	11/02/99	11/02/99
AMMONIA	MB1 BS	S	99LAM042	N/A	11/02/99	11/02/99
AMMONIA	MB1 BSD	S	99LAM042	N/A	11/02/99	11/02/99
SULFIDE	MB1	S	99LSD060	N/A	10/21/99	10/21/99
SULFIDE	MB1 BS	S	99LSD060	N/A	10/21/99	10/21/99
SULFATE BY IC	MB1	S	99LXC093	N/A	11/09/99	11/09/99
SULFATE BY IC	MB1 BS	S	99LXC093	N/A	11/09/99	11/09/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD E99-078

DATE RECEIVED: 10/20/99 RFW LOT # :9910L441

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WN16						
% SOLIDS	001	S	99L%S140	10/14/99	10/21/99	10/22/99
CHLORIDE BY IC	001	S	99LXC093	10/14/99	11/09/99	11/09/99
CHLORIDE BY IC	001 REP	S	99LXC094	10/14/99	11/10/99	11/10/99
CHLORIDE BY IC	001 MS	S	99LXC094	10/14/99	11/10/99	11/10/99
FLUORIDE BY IC	001	S	99LXC093	10/14/99	11/09/99	11/09/99
FLUORIDE BY IC	001 REP	S	99LXC094	10/14/99	11/10/99	11/10/99
FLUORIDE BY IC	001 MS	S	99LXC094	10/14/99	11/10/99	11/10/99
NITRITE BY IC	001	S	99LXC093	10/14/99	11/09/99	11/09/99
NITRITE BY IC	001 REP	S	99LXC094	10/14/99	11/10/99	11/10/99
NITRITE BY IC	001 MS	S	99LXC094	10/14/99	11/10/99	11/10/99
NITRATE BY IC	001	S	99LXC093	10/14/99	11/09/99	11/09/99
NITRATE BY IC	001 REP	S	99LXC094	10/14/99	11/10/99	11/10/99
NITRATE BY IC	001 MS	S	99LXC094	10/14/99	11/10/99	11/10/99
TOTAL CYANIDE	001	S	99LC121	10/14/99	10/26/99	10/27/99
PHOSPHATE BY IC	001	S	99LXC093	10/14/99	11/09/99	11/09/99
PHOSPHATE BY IC	001 REP	S	99LXC094	10/14/99	11/10/99	11/10/99
PHOSPHATE BY IC	001 MS	S	99LXC094	10/14/99	11/10/99	11/10/99
CHROMIUM VI	001	S	99LVI077	10/14/99	10/24/99	10/24/99
SULFATE BY IC	001	S	99LXC094	10/14/99	11/10/99	11/10/99
SULFATE BY IC	001 REP	S	99LXC094	10/14/99	11/10/99	11/10/99
SULFATE BY IC	001 MS	S	99LXC094	10/14/99	11/10/99	11/10/99
NITRATE NITRITE	001	S	99LN3054	10/14/99	11/09/99	11/11/99
NITRATE NITRITE	001 REP	S	99LN3054	10/14/99	11/09/99	11/11/99
NITRATE NITRITE	001 MS	S	99LN3054	10/14/99	11/09/99	11/11/99
AMMONIA	001	S	99LAM042	10/14/99	11/02/99	11/02/99
AMMONIA	001 REP	S	99LAM042	10/14/99	11/02/99	11/02/99
AMMONIA	001 MS	S	99LAM042	10/14/99	11/02/99	11/02/99
PH	001	S	99LPH114	10/14/99	10/21/99	10/21/99
SULFIDE	001	S	99LSD060	10/14/99	10/21/99	10/21/99
B0WN17						
% SOLIDS	002	S	99L%S140	10/14/99	10/21/99	10/22/99
CHLORIDE BY IC	002	S	99LXC093	10/14/99	11/09/99	11/09/99
FLUORIDE BY IC	002	S	99LXC093	10/14/99	11/09/99	11/09/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD E99-078

DATE RECEIVED: 10/20/99 RFW LOT # :9910L441

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRITE BY IC	002	S	99LXC093	10/14/99	11/09/99	11/09/99
NITRATE BY IC	002	S	99LXC093	10/14/99	11/09/99	11/09/99
TOTAL CYANIDE	002	S	99LC121	10/14/99	10/26/99	10/27/99
PHOSPHATE BY IC	002	S	99LXC093	10/14/99	11/09/99	11/09/99
CHROMIUM VI	002	S	99LVI077	10/14/99	10/24/99	10/24/99
SULFATE BY IC	002	S	99LXC093	10/14/99	11/09/99	11/09/99
NITRATE NITRITE	002	S	99LN3054	10/14/99	11/09/99	11/11/99
AMMONIA	002	S	99LAM042	10/14/99	11/02/99	11/02/99
PH	002	S	99LPH114	10/14/99	10/21/99	10/21/99
SULFIDE	002	S	99LSD060	10/14/99	10/21/99	10/21/99
BOWN18						
% SOLIDS	003	S	99L%S140	10/14/99	10/21/99	10/22/99
% SOLIDS	003 REP	S	99L%S140	10/14/99	10/21/99	10/22/99
CHLORIDE BY IC	003	S	99LXC093	10/14/99	11/09/99	11/09/99
FLUORIDE BY IC	003	S	99LXC093	10/14/99	11/09/99	11/09/99
NITRITE BY IC	003	S	99LXC093	10/14/99	11/09/99	11/09/99
NITRATE BY IC	003	S	99LXC093	10/14/99	11/09/99	11/09/99
TOTAL CYANIDE	003	S	99LC121	10/14/99	10/26/99	10/27/99
TOTAL CYANIDE	003 REP	S	99LC121	10/14/99	10/26/99	10/27/99
TOTAL CYANIDE	003 MS	S	99LC121	10/14/99	10/26/99	10/27/99
PHOSPHATE BY IC	003	S	99LXC093	10/14/99	11/09/99	11/09/99
CHROMIUM VI	003	S	99LVI077	10/14/99	10/24/99	10/24/99
CHROMIUM VI	003 REP	S	99LVI077	10/14/99	10/24/99	10/24/99
CHROMIUM VI	003 MS	S	99LVI077	10/14/99	10/24/99	10/24/99
CHROMIUM VI	003 MSD	S	99LVI077	10/14/99	10/24/99	10/24/99
SULFATE BY IC	003	S	99LXC093	10/14/99	11/09/99	11/09/99
NITRATE NITRITE	003	S	99LN3054	10/14/99	11/09/99	11/11/99
AMMONIA	003	S	99LAM042	10/14/99	11/02/99	11/02/99
PH	003	S	99LPH114	10/14/99	10/21/99	10/21/99
PH	003 REP	S	99LPH114	10/14/99	10/21/99	10/21/99
SULFIDE	003	S	99LSD060	10/14/99	10/21/99	10/21/99
SULFIDE	003 REP	S	99LSD060	10/14/99	10/21/99	10/21/99
SULFIDE	003 MS	S	99LSD060	10/14/99	10/21/99	10/21/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LXC093	N/A	11/09/99	11/09/99

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

DATE RECEIVED: 10/20/99 RFW LOT # :9910L441

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	MB1 BS	S	99LXC093	N/A	11/09/99	11/09/99
CHLORIDE BY IC	MB1	S	99LXC094	N/A	11/10/99	11/10/99
CHLORIDE BY IC	MB1 BS	S	99LXC094	N/A	11/10/99	11/10/99
FLUORIDE BY IC	MB1	S	99LXC093	N/A	11/09/99	11/09/99
FLUORIDE BY IC	MB1 BS	S	99LXC093	N/A	11/09/99	11/09/99
FLUORIDE BY IC	MB1	S	99LXC094	N/A	11/10/99	11/10/99
FLUORIDE BY IC	MB1 BS	S	99LXC094	N/A	11/10/99	11/10/99
NITRITE BY IC	MB1	S	99LXC093	N/A	11/09/99	11/09/99
NITRITE BY IC	MB1 BS	S	99LXC093	N/A	11/09/99	11/09/99
NITRATE BY IC	MB1	S	99LXC093	N/A	11/09/99	11/09/99
NITRATE BY IC	MB1 BS	S	99LXC093	N/A	11/09/99	11/09/99
NITRITE BY IC	MB1	S	99LXC094	N/A	11/10/99	11/10/99
NITRITE BY IC	MB1 BS	S	99LXC094	N/A	11/10/99	11/10/99
NITRATE BY IC	MB1	S	99LXC094	N/A	11/10/99	11/10/99
NITRATE BY IC	MB1 BS	S	99LXC094	N/A	11/10/99	11/10/99
TOTAL CYANIDE	LC1 L	S	99LC121	N/A	10/26/99	10/27/99
TOTAL CYANIDE	LC2 L	S	99LC121	N/A	10/26/99	10/27/99
TOTAL CYANIDE	MB1	S	99LC121	N/A	10/26/99	10/27/99
PHOSPHATE BY IC	MB1	S	99LXC093	N/A	11/09/99	11/09/99
PHOSPHATE BY IC	MB1 BS	S	99LXC093	N/A	11/09/99	11/09/99
PHOSPHATE BY IC	MB1	S	99LXC094	N/A	11/10/99	11/10/99
PHOSPHATE BY IC	MB1 BS	S	99LXC094	N/A	11/10/99	11/10/99
CHROMIUM VI	MB1	S	99LVI077	N/A	10/24/99	10/24/99
CHROMIUM VI	MB1 BS	S	99LVI077	N/A	10/24/99	10/24/99
CHROMIUM VI	MB1 BSD	S	99LVI077	N/A	10/24/99	10/24/99
SULFATE BY IC	MB1	S	99LXC094	N/A	11/10/99	11/10/99
SULFATE BY IC	MB1 BS	S	99LXC094	N/A	11/10/99	11/10/99
NITRATE NITRITE	MB1	S	99LN3054	N/A	11/09/99	11/11/99
NITRATE NITRITE	MB1 BS	S	99LN3054	N/A	11/09/99	11/11/99
NITRATE NITRITE	MB1 BSD	S	99LN3054	N/A	11/09/99	11/11/99
AMMONIA	MB1	S	99LAM042	N/A	11/02/99	11/02/99
AMMONIA	MB1 BS	S	99LAM042	N/A	11/02/99	11/02/99
AMMONIA	MB1 BSD	S	99LAM042	N/A	11/02/99	11/02/99
SULFIDE	MB1	S	99LSD060	N/A	10/21/99	10/21/99
SULFIDE	MB1 BS	S	99LSD060	N/A	10/21/99	10/21/99
SULFATE BY IC	MB1	S	99LXC093	N/A	11/09/99	11/09/99
SULFATE BY IC	MB1 BS	S	99LXC093	N/A	11/09/99	11/09/99

RECRA LabNet Use Only
9910L420

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet 25

A11 **FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS** (8) metals

Client TNU HANFord B99-078
Est. Final Proj. Sampling Date
Project # 10985-001-001-9999-00
Project Contact/Phone #
RECRA Project Manager OJ
QC Spec Del Std TAT 30 day
Date Rec'd 10/19/99 Date Due 11/18/99
Account #

Refrigerator #		1 2
#/Type Container	Liquid	
	Solid	1AG 1AG — 1AG 1AG — 1AG
Volume	Liquid	
	Solid	250 500 — 250 500 — 1L
Preservatives		— — — —
ANALYSES REQUESTED		ORGANIC: VOA, BNA, Pest PCB, Herb; TPH PH; INORG: Metal, CN; IC Anions

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	MS	MSD	Matrix	Date Collected	Time Collected	C1224H	C1225H	CPCB	IPH	Met①	ICNTC	Ang①
001	BOWN11			S	10/14/99	0815	1	1	1	1	1	1	1
002	12			S	10/14/99	0834	1	1	1	1	1	1	1
003	13			S	10/14/99	0849	1	1	1	1	1	1	1
004	14			S	10/14/99	0858	1	1	1	1	1	1	1

11/3/99
SB and TL added to all metals samples per client

Special Instructions:
SAF # B99-078

COMPOSITE WASTE

DATE/REVISIONS:
1. Run Matrix QC
2. Met① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
3. Se, Ag, V, Zn, Hg, ICR6
4. Ang① = IN3N2, ICCL, ICFL, ICNO2, ICNO3
5. ICPO4, ICSO4, ISFD, INH3N
6.

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. 4.3 °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	10/19/99	0915

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7953 0521

Bechtel Hanford Inc.
9910C420

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-138

26

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 B pond		SAF No.: B99-078
Ice Chest No.: ERC - 96-039	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA~~/RECRA BJB 10-14-99	Offsite Property No.: A990301		Bill of Lading/Air Bill No.: 4235 7953 0521
			COA: B20CW1 67/C

Price Code: 8N

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

cpm	Sample No.	Matrix *	Sample Date	Sample Time										
140	BOWN11	Soil	10-14-99	0815		X	X	X	X	X				
220	BOWN12	Soil	10-14-99	0834		X	X	X	X	X				
273	BOWN13	Soil	10.14.99	0849		X	X	X	X	X				
224	BOWN14	Soil	10-14-99	0858		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers Date/Time: Doug Bowers 10-14-99/1105	Received By: Ref 1A Date/Time: 10-14-99/1105		
Relinquished By: Ref 1A Date/Time: 10-18-99/1015	Received By: Doug Bowers Date/Time: Doug Bowers 10-18-99/1015		
Relinquished By: Doug Bowers Date/Time: Doug Bowers 10-18-99/1015	Received By: Fed EX Date/Time:		
Relinquished By: Fed Ex Date/Time: 10/19/99 0915	Received By: [signature] Date/Time: 10-19-99 0915		

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) 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

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

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

use BOW8C1 as T-A.

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

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

Trend 4-3

RECRA LabNet Use Only

9910L441

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

Client: TMU Hanford BAY-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Orlette Johnson

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 10-20-99 Date Due: 11/19/99

Account #:

Refrigerator #		1 2	2
#/Type Container	Liquid		
	Solid	1AG 1AG	1AG 1AG 1AG
Volume	Liquid		
	Solid	250 500	500 250 1000
Preservatives		– –	– – –

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN, Rad, Inorg

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	VOA	BNA	Pest/PCB	Herb	Metal	CN	Rad	Inorg
001	BAW016			S	10-14-99	0907	✓	✓	X		✓	X	✓	✓
002	BAW017			1	1	0914	✓	✓	X		✓	X	✓	✓
003	BAW018					0924	✓	✓	X		✓	X	✓	✓

11/3/99
SB and TL added to all metals samples per client

Special Instructions:

Sef # BAY-078

COMPOSITE WASTE

DATE/REVISIONS:

Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
Anig (1) 3. INO3N2, ICCL, ICFL, ICSO4, ICNO2,
4. ICNO3, ICPO4, ISED, INH3N, ICR6
5.
6. Rem Matrix QC

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ AirBill # 4235795 30532
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

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

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

Cooler Temp. 5.0 °C

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

NOTES:

Relinquished by	Received by	Date	Time
FedEx	TMurray	102099	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-139	Page 1 of 1

28

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	SAF No.: B99-078	
Ice Chest No.: ERC 96-030	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: TMA/RECRA D70 10-14-99	Offsite Property No.: A990301	Bill of Lading/Air Bill No.: 4235 7953 0532	
		COA: B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

cpm	Sample No.	Matrix *	Sample Date	Sample Time										
42	BOWN16	Soil	10-14-99	0907					X	X	X	X	X	
260	BOWN17	Soil	10-14-99	0914					X	X	X	X	X	
248	BOWN18	Soil	10-14-99	0924					X	X	X	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug ~~Bowers~~ Bowers D/B 10-14-99 Doug Bowers	10-14-99/1105	Ref 1A	10-14-99/1105
Ref 1A	10-18-99/1015	Doug Bowers	10-18-99/1015
Doug Bowers Doug Bowers	10-18-99/1015	Fed Ex	
Fed Ex	10-20-99 0930	T Murray	10-20-99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) 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

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

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

use BOW8C1 AS TA

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# : 9910L420 & 441
SDG/SAF# : H0578/B99-078

W.O.# : 10985-001-001-9999-00
Date Received: 10-19-99 & 10-20-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 7 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. All cooler temperatures have been recorded on the Chain of Custody.

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

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

7. All preparation/method blanks (MB) were within method criteria {MB 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 Antimony was outside the 75-125% control limits for both sets of samples. 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 28 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 meaningful concentration levels, due to high concentrations of the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B0WN11	Antimony	100	96.7
B0WN16	Antimony	100	99.4

12. The duplicate analyses for 6 analytes for sample B0WN11 and 2 analytes for sample B0WN16 were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-15-99
Date

mld/m10-420, 441

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9910L441 + 420

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A __3010A __3015 __3020A ✓3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	✓6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓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:_____

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 11/15/99

CLIENT: TNU-HANFORD ES9-078

RECRA LOT #: 99101420

WORK ORDER: 10585-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	EOWN11	Silver, Total	0.31	MG/KG	0.09	1.0
		Arsenic, Total	6.5	MG/KG	0.31	1.0
		Barium, Total	71.9	MG/KG	0.02	1.0
		Beryllium, Total	0.44	MG/KG	0.03	1.0
		Cadmium, Total	1.4	MG/KG	0.05	1.0
		Chromium, Total	8.1	MG/KG	0.08	1.0
		Copper, Total	17.6	MG/KG	0.06	1.0
		Mercury, Total	0.16	MG/KG	0.02	1.0
		Nickel, Total	8.9	MG/KG	0.11	1.0
		Lead, Total	6.9	MG/KG	0.24	1.0
		Antimony, Total	0.24 u	MG/KG	0.24	1.0
		Selenium, Total	0.47 u	MG/KG	0.47	1.0
		Thallium, Total	0.51	MG/KG	0.49	1.0
		Vanadium, Total	47.9	MG/KG	0.07	1.0
		Zinc, Total	64.6	MG/KG	0.06	1.0
-002	EOWN12	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	4.2	MG/KG	0.27	1.0
		Barium, Total	112	MG/KG	0.02	1.0
		Beryllium, Total	0.68	MG/KG	0.03	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	6.4	MG/KG	0.07	1.0
		Copper, Total	16.9	MG/KG	0.05	1.0
		Mercury, Total	0.02	MG/KG	0.02	1.0
		Nickel, Total	7.9	MG/KG	0.10	1.0
		Lead, Total	3.8	MG/KG	0.21	1.0
		Antimony, Total	0.21 u	MG/KG	0.21	1.0
		Selenium, Total	0.42 u	MG/KG	0.42	1.0
		Thallium, Total	0.65	MG/KG	0.44	1.0
		Vanadium, Total	84.6	MG/KG	0.06	1.0
		Zinc, Total	49.3	MG/KG	0.05	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/15/99

CLIENT: TNU-HANFORD E99-078 RECRA LOT #: 9910L420

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	EOWN13	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	14.7	MG/KG	0.23	1.0
		Barium, Total	86.0	MG/KG	0.02	1.0
		Beryllium, Total	0.43	MG/KG	0.03	1.0
		Cadmium, Total	0.56	MG/KG	0.03	1.0
		Chromium, Total	5.1	MG/KG	0.06	1.0
		Copper, Total	14.0	MG/KG	0.04	1.0
		Mercury, Total	0.03	MG/KG	0.02	1.0
		Nickel, Total	6.5	MG/KG	0.09	1.0
		Lead, Total	4.1	MG/KG	0.18	1.0
		Antimony, Total	0.18 u	MG/KG	0.18	1.0
		Selenium, Total	0.35 u	MG/KG	0.35	1.0
		Thallium, Total	0.44	MG/KG	0.37	1.0
		Vanadium, Total	54.3	MG/KG	0.05	1.0
		Zinc, Total	45.6	MG/KG	0.04	1.0
-004	EOWN14	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	3.5	MG/KG	0.29	1.0
		Barium, Total	101	MG/KG	0.02	1.0
		Beryllium, Total	0.54	MG/KG	0.03	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	8.3	MG/KG	0.07	1.0
		Copper, Total	13.5	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.9	MG/KG	0.11	1.0
		Lead, Total	3.9	MG/KG	0.22	1.0
		Antimony, Total	0.22 u	MG/KG	0.22	1.0
		Selenium, Total	0.43 u	MG/KG	0.43	1.0
		Thallium, Total	0.45 u	MG/KG	0.45	1.0
		Vanadium, Total	65.3	MG/KG	0.06	1.0
		Zinc, Total	45.0	MG/KG	0.05	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/15/99

CLIENT: TNU-HANFORD E99-078

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

RECRA LOT #: 9910L441

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	BOWN16	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	3.3	MG/KG	0.25	1.0
		Barium, Total	108	MG/KG	0.02	1.0
		Beryllium, Total	0.36	MG/KG	0.03	1.0
		Cadmium, Total	0.06	MG/KG	0.04	1.0
		Chromium, Total	10.2	MG/KG	0.06	1.0
		Copper, Total	14.4	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	10.5	MG/KG	0.09	1.0
		Lead, Total	5.5	MG/KG	0.19	1.0
		Antimony, Total	0.19 u	MG/KG	0.19	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Thallium, Total	0.58	MG/KG	0.39	1.0
		Vanadium, Total	63.5	MG/KG	0.05	1.0
		Zinc, Total	46.3	MG/KG	0.05	1.0
-002	BOWN17	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	3.2	MG/KG	0.26	1.0
		Barium, Total	57.2	MG/KG	0.02	1.0
		Beryllium, Total	0.23	MG/KG	0.03	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	7.5	MG/KG	0.07	1.0
		Copper, Total	10.4	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.2	MG/KG	0.1	1.0
		Lead, Total	4.9	MG/KG	0.20	1.0
		Antimony, Total	0.20 u	MG/KG	0.20	1.0
		Selenium, Total	0.39 u	MG/KG	0.39	1.0
		Thallium, Total	0.45	MG/KG	0.41	1.0
		Vanadium, Total	33.1	MG/KG	0.06	1.0
		Zinc, Total	35.9	MG/KG	0.05	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/15/99

CLIENT: TNU-HANFORD E99-678

RECRA LOT #: 9910L441

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	E0WN18	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	2.1	MG/KG	0.22	1.0
		Barium, Total	57.8	MG/KG	0.02	1.0
		Beryllium, Total	0.17	MG/KG	0.02	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	6.5	MG/KG	0.06	1.0
		Copper, Total	9.9	MG/KG	0.04	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	7.2	MG/KG	0.08	1.0
		Lead, Total	3.2	MG/KG	0.17	1.0
		Antimony, Total	0.17 u	MG/KG	0.17	1.0
		Selenium, Total	0.57	MG/KG	0.34	1.0
		Thallium, Total	0.48	MG/KG	0.35	1.0
		Vanadium, Total	37.0	MG/KG	0.05	1.0
		Zinc, Total	32.3	MG/KG	0.04	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/15/99

CLIENT: TNU-HANFORD E99-078 RECRA LOT #: 9910L420

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	9910727-MB1	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	0.27 u	MG/KG	0.27	1.0
		Barium, Total	0.02 u	MG/KG	0.02	1.0
		Beryllium, Total	0.03 u	MG/KG	0.03	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.07 u	MG/KG	0.07	1.0
		Copper, Total	0.09	MG/KG	0.05	1.0
		Nickel, Total	0.10 u	MG/KG	0.10	1.0
		Lead, Total	0.21 u	MG/KG	0.21	1.0
		Antimony, Total	0.21 u	MG/KG	0.21	1.0
		Selenium, Total	0.41 u	MG/KG	0.41	1.0
		Thallium, Total	0.43 u	MG/KG	0.43	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.16	MG/KG	0.05	1.0
BLANK1	9900316-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/15/99

CLIENT: TNU-HANFORD E99-078 RECRA LOT #: 9910L441

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	9910740-MB1	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	0.27 u	MG/KG	0.27	1.0
		Barium, Total	0.05	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.07 u	MG/KG	0.07	1.0
		Copper, Total	0.05 u	MG/KG	0.05	1.0
		Nickel, Total	0.10 u	MG/KG	0.10	1.0
		Lead, Total	0.21 u	MG/KG	0.21	1.0
		Antimony, Total	0.21 u	MG/KG	0.21	1.0
		Selenium, Total	0.41 u	MG/KG	0.41	1.0
		Thallium, Total	0.43 u	MG/KG	0.43	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.05 u	MG/KG	0.05	1.0
BLANK1	99C0218-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Fecra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/15/99

CLIENT: TNU-HANFORD E99-078

RECRA LOT #: 9910L420

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
·CC1	EOWN11	Silver, Total	5.7	0.31	5.7	94.6	1.0
		Arsenic, Total	216	6.5	230	91.2	1.0
		Barium, Total	290	71.9	230	95.0	1.0
		Beryllium, Total	5.7	0.44	5.7	92.3	1.0
		Cadmium, Total	6.7	1.4	5.7	93.0	1.0
		Chromium, Total	30.8	8.1	23.0	98.7	1.0
		Copper, Total	44.3	17.6	28.7	93.0	1.0
		Mercury, Total	0.32	0.16	0.19	83.2	1.0
		Nickel, Total	59.7	8.9	57.4	88.5	1.0
		Lead, Total	59.9	6.9	57.4	92.3	1.0
		Antimony, Total	21.0	0.24u	57.4	36.6	1.0
		Selenium, Total	202	0.47u	230	87.9	1.0
		Thallium, Total	213	0.51	230	92.6	1.0
		Vanadium, Total	106	47.9	57.4	101.0	1.0
		Zinc, Total	121	64.6	57.4	99.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/15/99

CLIENT: TNU-HANFORD E99-078 RECRA LOT #: 9910I441

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	EOWN16	Silver, Total	4.2	0.07u	4.6	91.3	1.0
		Arsenic, Total	174	3.3	184	93.0	1.0
		Barium, Total	276	108	184	91.0	1.0
		Beryllium, Total	4.3	0.36	4.6	85.7	1.0
		Cadmium, Total	4.2	0.06	4.6	90.1	1.0
		Chromium, Total	28.1	10.2	18.4	97.3	1.0
		Copper, Total	36.2	14.4	23.0	94.8	1.0
		Mercury, Total	0.18	0.02u	0.18	98.3	1.0
		Nickel, Total	52.7	10.5	46.0	91.7	1.0
		Lead, Total	47.1	5.5	46.0	90.4	1.0
		Antimony, Total	19.3	0.19u	46.0	42.0	1.0
		Selenium, Total	165	0.37u	184	89.5	1.0
		Thallium, Total	167	0.98	184	90.1	1.0
		Vanadium, Total	113	63.5	46.0	108.5	1.0
		Zinc, Total	90.6	46.3	46.0	96.3	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/15/99

CLIENT: TNU-HANFORD E99-078 RECRA LOT #: 9910L420

WORK ORDER: 10965-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	PCWN11	Silver, Total	0.31	0.35	13.3	1.0
		Arsenic, Total	6.5	7.6	15.6	1.0
		Barium, Total	71.9	82.8	14.1	1.0
		Beryllium, Total	0.44	0.54	20.9	1.0
		Cadmium, Total	1.4	1.9	30.3	1.0
		Chromium, Total	8.1	10.3	23.9	1.0
		Copper, Total	17.6	19.2	8.7	1.0
		Mercury, Total	0.16	0.11	32.6	1.0
		Nickel, Total	8.9	10.7	18.4	1.0
		Lead, Total	6.9	9.1	27.5	1.0
		Antimony, Total	0.24u	0.24u	NC	1.0
		Selenium, Total	0.47u	0.47u	NC	1.0
		Thallium, Total	0.51	0.51	0.00	1.0
		Vanadium, Total	47.9	57.9	18.9	1.0
		Zinc, Total	64.6	84.6	26.8	1.0

Pecra LabNet - Lionville

INORGANICS PRECISION REPORT 11/15/99

CLIENT: TNU-HANFORD B59-078

RECRA LOT #: 9910L441

WORK ORDER: 10585-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	FOWN16	Silver, Total	0.07u	0.07u	NC	1.0
		Arsenic, Total	3.3	3.4	3.0	1.0
		Barium, Total	108	102	5.8	1.0
		Beryllium, Total	0.36	0.36	2.2	1.0
		Cadmium, Total	0.06	0.04	42.3	1.0
		Chromium, Total	10.2	9.8	4.0	1.0
		Copper, Total	14.4	13.5	6.5	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	10.5	10.2	2.9	1.0
		Lead, Total	5.5	4.7	15.7	1.0
		Antimony, Total	0.19u	0.18u	NC	1.0
		Selenium, Total	0.37u	0.38	~~NC~~ 200	1.0
		Thallium, Total	0.98	0.82	18.5	1.0
		Vanadium, Total	63.5	62.6	1.4	1.0
		Zinc, Total	46.3	46.0	0.65	1.0

Correction
RD 11/15/99

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/15/99

CLIENT: TNU-HANFORD E99-078 RECRA LOT #: 9910L420

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	9910727-LC1	Silver, LCS	48.2	50.0	MG/KG	96.4
		Arsenic, LCS	946	1000	MG/KG	94.6
		Barium, LCS	494	500	MG/KG	98.8
		Beryllium, LCS	24.0	25.0	MG/KG	96.0
		Cadmium, LCS	23.8	25.0	MG/KG	95.2
		Chromium, LCS	49.2	50.0	MG/KG	98.4
		Copper, LCS	124	125	MG/KG	98.9
		Nickel, LCS	190	200	MG/KG	95.0
		Lead, LCS	238	250	MG/KG	95.2
		Antimony, LCS	286	300	MG/KG	95.3
		Selenium, LCS	916	1000	MG/KG	91.6
		Thallium, LCS	976	1000	MG/KG	97.6
		Vanadium, LCS	252	250	MG/KG	100.7
		Zinc, LCS	94.1	100	MG/KG	94.1
LCS1	9900316-LC1	Mercury, LCS	1.0	1.0	MG/KG	100.9

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/15/99

CLIENT: TNU-HANFORD E99-078 RECRA LOT #: 9910L441

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99LC740-LC1	Silver, LCS	48.1	50.0	MG/KG	96.2
		Arsenic, LCS	960	1000	MG/KG	96.0
		Barium, LCS	488	500	MG/KG	97.6
		Beryllium, LCS	24.4	25.0	MG/KG	97.5
		Cadmium, LCS	24.4	25.0	MG/KG	97.6
		Chromium, LCS	49.8	50.0	MG/KG	99.6
		Copper, LCS	122	125	MG/KG	97.8
		Nickel, LCS	195	200	MG/KG	97.4
		Lead, LCS	244	250	MG/KG	97.4
		Antimony, LCS	288	300	MG/KG	96.0
		Selenium, LCS	931	1000	MG/KG	93.1
		Thallium, LCS	978	1000	MG/KG	97.8
		Vanadium, LCS	253	250	MG/KG	101.2
		Zinc, LCS	95.5	100	MG/KG	95.5
LCS1	99C0218-LC1	Mercury, LCS	1.0	1.0	MG/KG	104.3

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

DATE RECEIVED: 10/19/99 RFW LOT # :9910L420

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WN11						
SILVER, TOTAL	001	S	99L0727	10/14/99	10/26/99	10/27/99
SILVER, TOTAL	001 REP	S	99L0727	10/14/99	10/26/99	10/27/99
SILVER, TOTAL	001 MS	S	99L0727	10/14/99	10/26/99	10/27/99
ARSENIC, TOTAL	001	S	99L0727	10/14/99	10/26/99	10/27/99
ARSENIC, TOTAL	001 REP	S	99L0727	10/14/99	10/26/99	10/27/99
ARSENIC, TOTAL	001 MS	S	99L0727	10/14/99	10/26/99	10/27/99
BARIUM, TOTAL	001	S	99L0727	10/14/99	10/26/99	10/27/99
BARIUM, TOTAL	001 REP	S	99L0727	10/14/99	10/26/99	10/27/99
BARIUM, TOTAL	001 MS	S	99L0727	10/14/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	001	S	99L0727	10/14/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	001 REP	S	99L0727	10/14/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	001 MS	S	99L0727	10/14/99	10/26/99	10/27/99
CADMIUM, TOTAL	001	S	99L0727	10/14/99	10/26/99	10/27/99
CADMIUM, TOTAL	001 REP	S	99L0727	10/14/99	10/26/99	10/27/99
CADMIUM, TOTAL	001 MS	S	99L0727	10/14/99	10/26/99	10/27/99
CHROMIUM, TOTAL	001	S	99L0727	10/14/99	10/26/99	10/27/99
CHROMIUM, TOTAL	001 REP	S	99L0727	10/14/99	10/26/99	10/27/99
CHROMIUM, TOTAL	001 MS	S	99L0727	10/14/99	10/26/99	10/27/99
COPPER, TOTAL	001	S	99L0727	10/14/99	10/26/99	10/27/99
COPPER, TOTAL	001 REP	S	99L0727	10/14/99	10/26/99	10/27/99
COPPER, TOTAL	001 MS	S	99L0727	10/14/99	10/26/99	10/27/99
MERCURY, TOTAL	001	S	99C0316	10/14/99	10/28/99	10/29/99
MERCURY, TOTAL	001 REP	S	99C0316	10/14/99	10/28/99	10/29/99
MERCURY, TOTAL	001 MS	S	99C0316	10/14/99	10/28/99	10/29/99
NICKEL, TOTAL	001	S	99L0727	10/14/99	10/26/99	10/27/99
NICKEL, TOTAL	001 REP	S	99L0727	10/14/99	10/26/99	10/27/99
NICKEL, TOTAL	001 MS	S	99L0727	10/14/99	10/26/99	10/27/99
LEAD, TOTAL	001	S	99L0727	10/14/99	10/26/99	10/27/99
LEAD, TOTAL	001 REP	S	99L0727	10/14/99	10/26/99	10/27/99
LEAD, TOTAL	001 MS	S	99L0727	10/14/99	10/26/99	10/27/99
ANTIMONY, TOTAL	001	S	99L0727	10/14/99	10/26/99	10/27/99
ANTIMONY, TOTAL	001 REP	S	99L0727	10/14/99	10/26/99	10/27/99
ANTIMONY, TOTAL	001 MS	S	99L0727	10/14/99	10/26/99	10/27/99
SELENIUM, TOTAL	001	S	99L0727	10/14/99	10/26/99	10/27/99
SELENIUM, TOTAL	001 REP	S	99L0727	10/14/99	10/26/99	10/27/99

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

DATE RECEIVED: 10/19/99 RFW LOT # :9910L420

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001 MS	S	99L0727	10/14/99	10/26/99	10/27/99
THALLIUM, TOTAL	001	S	99L0727	10/14/99	10/26/99	10/27/99
THALLIUM, TOTAL	001 REP	S	99L0727	10/14/99	10/26/99	10/27/99
THALLIUM, TOTAL	001 MS	S	99L0727	10/14/99	10/26/99	10/27/99
VANADIUM, TOTAL	001	S	99L0727	10/14/99	10/26/99	10/27/99
VANADIUM, TOTAL	001 REP	S	99L0727	10/14/99	10/26/99	10/27/99
VANADIUM, TOTAL	001 MS	S	99L0727	10/14/99	10/26/99	10/27/99
ZINC, TOTAL	001	S	99L0727	10/14/99	10/26/99	10/27/99
ZINC, TOTAL	001 REP	S	99L0727	10/14/99	10/26/99	10/27/99
ZINC, TOTAL	001 MS	S	99L0727	10/14/99	10/26/99	10/27/99
BOWN12						
SILVER, TOTAL	002	S	99L0727	10/14/99	10/26/99	10/27/99
ARSENIC, TOTAL	002	S	99L0727	10/14/99	10/26/99	10/27/99
BARIUM, TOTAL	002	S	99L0727	10/14/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	002	S	99L0727	10/14/99	10/26/99	10/27/99
CADMIUM, TOTAL	002	S	99L0727	10/14/99	10/26/99	10/27/99
CHROMIUM, TOTAL	002	S	99L0727	10/14/99	10/26/99	10/27/99
COPPER, TOTAL	002	S	99L0727	10/14/99	10/26/99	10/27/99
MERCURY, TOTAL	002	S	99C0316	10/14/99	10/28/99	10/29/99
NICKEL, TOTAL	002	S	99L0727	10/14/99	10/26/99	10/27/99
LEAD, TOTAL	002	S	99L0727	10/14/99	10/26/99	10/27/99
ANTIMONY, TOTAL	002	S	99L0727	10/14/99	10/26/99	10/27/99
SELENIUM, TOTAL	002	S	99L0727	10/14/99	10/26/99	10/27/99
THALLIUM, TOTAL	002	S	99L0727	10/14/99	10/26/99	10/27/99
VANADIUM, TOTAL	002	S	99L0727	10/14/99	10/26/99	10/27/99
ZINC, TOTAL	002	S	99L0727	10/14/99	10/26/99	10/27/99
BOWN13						
SILVER, TOTAL	003	S	99L0727	10/14/99	10/26/99	10/27/99
ARSENIC, TOTAL	003	S	99L0727	10/14/99	10/26/99	10/27/99
BARIUM, TOTAL	003	S	99L0727	10/14/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	003	S	99L0727	10/14/99	10/26/99	10/27/99
CADMIUM, TOTAL	003	S	99L0727	10/14/99	10/26/99	10/27/99
CHROMIUM, TOTAL	003	S	99L0727	10/14/99	10/26/99	10/27/99
COPPER, TOTAL	003	S	99L0727	10/14/99	10/26/99	10/27/99

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

DATE RECEIVED: 10/19/99 RFW LOT # :9910L420

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	003	S	99C0316	10/14/99	10/28/99	10/29/99
NICKEL, TOTAL	003	S	99L0727	10/14/99	10/26/99	10/27/99
LEAD, TOTAL	003	S	99L0727	10/14/99	10/26/99	10/27/99
ANTIMONY, TOTAL	003	S	99L0727	10/14/99	10/26/99	10/27/99
SELENIUM, TOTAL	003	S	99L0727	10/14/99	10/26/99	10/27/99
THALLIUM, TOTAL	003	S	99L0727	10/14/99	10/26/99	10/27/99
VANADIUM, TOTAL	003	S	99L0727	10/14/99	10/26/99	10/27/99
ZINC, TOTAL	003	S	99L0727	10/14/99	10/26/99	10/27/99
BOWN14						
SILVER, TOTAL	004	S	99L0727	10/14/99	10/26/99	10/27/99
ARSENIC, TOTAL	004	S	99L0727	10/14/99	10/26/99	10/27/99
BARIUM, TOTAL	004	S	99L0727	10/14/99	10/26/99	10/27/99
BERYLLIUM, TOTAL	004	S	99L0727	10/14/99	10/26/99	10/27/99
CADMIUM, TOTAL	004	S	99L0727	10/14/99	10/26/99	10/27/99
CHROMIUM, TOTAL	004	S	99L0727	10/14/99	10/26/99	10/27/99
COPPER, TOTAL	004	S	99L0727	10/14/99	10/26/99	10/27/99
MERCURY, TOTAL	004	S	99C0316	10/14/99	10/28/99	10/29/99
NICKEL, TOTAL	004	S	99L0727	10/14/99	10/26/99	10/27/99
LEAD, TOTAL	004	S	99L0727	10/14/99	10/26/99	10/27/99
ANTIMONY, TOTAL	004	S	99L0727	10/14/99	10/26/99	10/27/99
SELENIUM, TOTAL	004	S	99L0727	10/14/99	10/26/99	10/27/99
THALLIUM, TOTAL	004	S	99L0727	10/14/99	10/26/99	10/27/99
VANADIUM, TOTAL	004	S	99L0727	10/14/99	10/26/99	10/27/99
ZINC, TOTAL	004	S	99L0727	10/14/99	10/26/99	10/27/99

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
SILVER, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
ARSENIC LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
ARSENIC, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
BARIUM LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
BARIUM, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
BERYLLIUM, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
CADMIUM LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99

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

DATE RECEIVED: 10/19/99 RFW LOT # :9910L420

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CADMIUM, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
CHROMIUM LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
CHROMIUM, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
COPPER LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
COPPER, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
MERCURY LABORATORY	LC1 BS	S	99C0316	N/A	10/28/99	10/29/99
MERCURY, TOTAL	MB1	S	99C0316	N/A	10/28/99	10/29/99
NICKEL LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
NICKEL, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
LEAD LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
LEAD, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
ANTIMONY LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
ANTIMONY, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
SELENIUM LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
SELENIUM, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
THALLIUM LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
THALLIUM, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
VANADIUM LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
VANADIUM, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99
ZINC LABORATORY	LC1 BS	S	99L0727	N/A	10/26/99	10/27/99
ZINC, TOTAL	MB1	S	99L0727	N/A	10/26/99	10/27/99

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

DATE RECEIVED: 10/20/99 RFW LOT # :9910L441

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WN16						
SILVER, TOTAL	001	S	99L0740	10/14/99	10/30/99	10/31/99
SILVER, TOTAL	001 REP	S	99L0740	10/14/99	10/30/99	10/31/99
SILVER, TOTAL	001 MS	S	99L0740	10/14/99	10/30/99	10/31/99
ARSENIC, TOTAL	001	S	99L0740	10/14/99	10/30/99	10/31/99
ARSENIC, TOTAL	001 REP	S	99L0740	10/14/99	10/30/99	10/31/99
ARSENIC, TOTAL	001 MS	S	99L0740	10/14/99	10/30/99	10/31/99
BARIUM, TOTAL	001	S	99L0740	10/14/99	10/30/99	10/31/99
BARIUM, TOTAL	001 REP	S	99L0740	10/14/99	10/30/99	10/31/99
BARIUM, TOTAL	001 MS	S	99L0740	10/14/99	10/30/99	10/31/99
BERYLLIUM, TOTAL	001	S	99L0740	10/14/99	10/30/99	11/01/99
BERYLLIUM, TOTAL	001 REP	S	99L0740	10/14/99	10/30/99	11/01/99
BERYLLIUM, TOTAL	001 MS	S	99L0740	10/14/99	10/30/99	11/01/99
CADMIUM, TOTAL	001	S	99L0740	10/14/99	10/30/99	10/31/99
CADMIUM, TOTAL	001 REP	S	99L0740	10/14/99	10/30/99	10/31/99
CADMIUM, TOTAL	001 MS	S	99L0740	10/14/99	10/30/99	10/31/99
CHROMIUM, TOTAL	001	S	99L0740	10/14/99	10/30/99	10/31/99
CHROMIUM, TOTAL	001 REP	S	99L0740	10/14/99	10/30/99	10/31/99
CHROMIUM, TOTAL	001 MS	S	99L0740	10/14/99	10/30/99	10/31/99
COPPER, TOTAL	001	S	99L0740	10/14/99	10/30/99	10/31/99
COPPER, TOTAL	001 REP	S	99L0740	10/14/99	10/30/99	10/31/99
COPPER, TOTAL	001 MS	S	99L0740	10/14/99	10/30/99	10/31/99
MERCURY, TOTAL	001	S	99C0318	10/14/99	10/28/99	10/29/99
MERCURY, TOTAL	001 REP	S	99C0318	10/14/99	10/28/99	10/29/99
MERCURY, TOTAL	001 MS	S	99C0318	10/14/99	10/28/99	10/29/99
NICKEL, TOTAL	001	S	99L0740	10/14/99	10/30/99	10/31/99
NICKEL, TOTAL	001 REP	S	99L0740	10/14/99	10/30/99	10/31/99
NICKEL, TOTAL	001 MS	S	99L0740	10/14/99	10/30/99	10/31/99
LEAD, TOTAL	001	S	99L0740	10/14/99	10/30/99	10/31/99
LEAD, TOTAL	001 REP	S	99L0740	10/14/99	10/30/99	10/31/99
LEAD, TOTAL	001 MS	S	99L0740	10/14/99	10/30/99	10/31/99
ANTIMONY, TOTAL	001	S	99L0740	10/14/99	10/30/99	10/31/99
ANTIMONY, TOTAL	001 REP	S	99L0740	10/14/99	10/30/99	10/31/99
ANTIMONY, TOTAL	001 MS	S	99L0740	10/14/99	10/30/99	10/31/99
SELENIUM, TOTAL	001	S	99L0740	10/14/99	10/30/99	10/31/99
SELENIUM, TOTAL	001 REP	S	99L0740	10/14/99	10/30/99	10/31/99

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

DATE RECEIVED: 10/20/99 RFW LOT # :9910L441

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001 MS	S	99L0740	10/14/99	10/30/99	10/31/99
THALLIUM, TOTAL	001	S	99L0740	10/14/99	10/30/99	10/31/99
THALLIUM, TOTAL	001 REP	S	99L0740	10/14/99	10/30/99	10/31/99
THALLIUM, TOTAL	001 MS	S	99L0740	10/14/99	10/30/99	10/31/99
VANADIUM, TOTAL	001	S	99L0740	10/14/99	10/30/99	10/31/99
VANADIUM, TOTAL	001 REP	S	99L0740	10/14/99	10/30/99	10/31/99
VANADIUM, TOTAL	001 MS	S	99L0740	10/14/99	10/30/99	10/31/99
ZINC, TOTAL	001	S	99L0740	10/14/99	10/30/99	10/31/99
ZINC, TOTAL	001 REP	S	99L0740	10/14/99	10/30/99	10/31/99
ZINC, TOTAL	001 MS	S	99L0740	10/14/99	10/30/99	10/31/99
BOWN17						
SILVER, TOTAL	002	S	99L0740	10/14/99	10/30/99	10/31/99
ARSENIC, TOTAL	002	S	99L0740	10/14/99	10/30/99	10/31/99
BARIUM, TOTAL	002	S	99L0740	10/14/99	10/30/99	10/31/99
BERYLLIUM, TOTAL	002	S	99L0740	10/14/99	10/30/99	11/01/99
CADMIUM, TOTAL	002	S	99L0740	10/14/99	10/30/99	10/31/99
CHROMIUM, TOTAL	002	S	99L0740	10/14/99	10/30/99	10/31/99
COPPER, TOTAL	002	S	99L0740	10/14/99	10/30/99	10/31/99
MERCURY, TOTAL	002	S	99C0318	10/14/99	10/28/99	10/29/99
NICKEL, TOTAL	002	S	99L0740	10/14/99	10/30/99	10/31/99
LEAD, TOTAL	002	S	99L0740	10/14/99	10/30/99	10/31/99
ANTIMONY, TOTAL	002	S	99L0740	10/14/99	10/30/99	10/31/99
SELENIUM, TOTAL	002	S	99L0740	10/14/99	10/30/99	10/31/99
THALLIUM, TOTAL	002	S	99L0740	10/14/99	10/30/99	10/31/99
VANADIUM, TOTAL	002	S	99L0740	10/14/99	10/30/99	10/31/99
ZINC, TOTAL	002	S	99L0740	10/14/99	10/30/99	10/31/99
BOWN18						
SILVER, TOTAL	003	S	99L0740	10/14/99	10/30/99	10/31/99
ARSENIC, TOTAL	003	S	99L0740	10/14/99	10/30/99	10/31/99
BARIUM, TOTAL	003	S	99L0740	10/14/99	10/30/99	10/31/99
BERYLLIUM, TOTAL	003	S	99L0740	10/14/99	10/30/99	11/01/99
CADMIUM, TOTAL	003	S	99L0740	10/14/99	10/30/99	10/31/99
CHROMIUM, TOTAL	003	S	99L0740	10/14/99	10/30/99	10/31/99
COPPER, TOTAL	003	S	99L0740	10/14/99	10/30/99	10/31/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD E99-078

DATE RECEIVED: 10/20/99 RFW LOT # :9910L441

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	003	S	99C0318	10/14/99	10/28/99	10/29/99
NICKEL, TOTAL	003	S	99L0740	10/14/99	10/30/99	10/31/99
LEAD, TOTAL	003	S	99L0740	10/14/99	10/30/99	10/31/99
ANTIMONY, TOTAL	003	S	99L0740	10/14/99	10/30/99	10/31/99
SELENIUM, TOTAL	003	S	99L0740	10/14/99	10/30/99	10/31/99
THALLIUM, TOTAL	003	S	99L0740	10/14/99	10/30/99	10/31/99
VANADIUM, TOTAL	003	S	99L0740	10/14/99	10/30/99	10/31/99
ZINC, TOTAL	003	S	99L0740	10/14/99	10/30/99	10/31/99

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0740	N/A	10/30/99	10/31/99
SILVER, TOTAL	MB1	S	99L0740	N/A	10/30/99	10/31/99
ARSENIC LABORATORY	LC1 BS	S	99L0740	N/A	10/30/99	10/31/99
ARSENIC, TOTAL	MB1	S	99L0740	N/A	10/30/99	10/31/99
BARIUM LABORATORY	LC1 BS	S	99L0740	N/A	10/30/99	10/31/99
BARIUM, TOTAL	MB1	S	99L0740	N/A	10/30/99	10/31/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0740	N/A	10/30/99	10/31/99
BERYLLIUM, TOTAL	MB1	S	99L0740	N/A	10/30/99	10/31/99
CADMIUM LABORATORY	LC1 BS	S	99L0740	N/A	10/30/99	10/31/99
CADMIUM, TOTAL	MB1	S	99L0740	N/A	10/30/99	10/31/99
CHROMIUM LABORATORY	LC1 BS	S	99L0740	N/A	10/30/99	10/31/99
CHROMIUM, TOTAL	MB1	S	99L0740	N/A	10/30/99	10/31/99
COPPER LABORATORY	LC1 BS	S	99L0740	N/A	10/30/99	10/31/99
COPPER, TOTAL	MB1	S	99L0740	N/A	10/30/99	10/31/99
MERCURY LABORATORY	LC1 BS	S	99C0318	N/A	10/28/99	10/29/99
MERCURY, TOTAL	MB1	S	99C0318	N/A	10/28/99	10/29/99
NICKEL LABORATORY	LC1 BS	S	99L0740	N/A	10/30/99	10/31/99
NICKEL, TOTAL	MB1	S	99L0740	N/A	10/30/99	10/31/99
LEAD LABORATORY	LC1 BS	S	99L0740	N/A	10/30/99	10/31/99
LEAD, TOTAL	MB1	S	99L0740	N/A	10/30/99	10/31/99
ANTIMONY LABORATORY	LC1 BS	S	99L0740	N/A	10/30/99	10/31/99
ANTIMONY, TOTAL	MB1	S	99L0740	N/A	10/30/99	10/31/99
SELENIUM LABORATORY	LC1 BS	S	99L0740	N/A	10/30/99	10/31/99
SELENIUM, TOTAL	MB1	S	99L0740.	N/A	10/30/99	10/31/99
THALLIUM LABORATORY	LC1 BS	S	99L0740	N/A	10/30/99	10/31/99
THALLIUM, TOTAL	MB1	S	99L0740	N/A	10/30/99	10/31/99
VANADIUM LABORATORY	LC1 BS	S	99L0740	N/A	10/30/99	10/31/99

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

DATE RECEIVED: 10/20/99 RFW LOT # :9910L441

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	MB1	S	99L0740	N/A	10/30/99	10/31/99
ZINC LABORATORY	LC1 BS	S	99L0740	N/A	10/30/99	10/31/99
ZINC, TOTAL	MB1	S	99L0740	N/A	10/30/99	10/31/99

RECRA LabNet Use Only

9910L420

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

Client TNU HANFORD B99-078

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC Spec Del std TAT 30 day

Date Rec'd 10/19/99 Date Due 11/18/99

Account #

Refrigerator #		1	2																
#/Type Container	Liquid																		
	Solid	1AG	1AG								1AG				1AG				1AG
Volume	Liquid																		
	Solid	250	500								250				500				1U
Preservatives		—									—				—				—
ANALYSES REQUESTED	ORGANIC	VOA	BNA	~~Pest~~ PCB	~~Herb~~						TPH	PH			INORG Metal	CN			IC Anions

RECRA LabNet Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8024H	8015C	8025H	8DRO	8PCB		1PH	Met①	ICNTO	Ang①		
S - Soil	001	BOWN11			S	10/14/99	0815	1	1		1			1	1	1		1	
SE - Sediment	002	12					0834	1	1		1			1	1	1		1	
SO - Solid	003	13					0849	1	1		1			1	1	1		1	
SL - Sludge	004	14					0858	1	1		1			1	1	1		1	
W - Water																			
O - Oil																			
A - Air																			
DS - Drum Solids																			
DL - Drum Liquids																			
L - EP/TCLP Leachate																			
WI - Wipe																			
X - Other																			
F - Fish																			

11/3/99
SB and TL added to all metals samples per client

Special Instructions:

saf # B99-078

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
Met① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
3. Se, Ag, V, Zn, Hg, ICR6
Ang① = IN3N2, ICCL, ICFL, ICNO2, ICNO3
5. ICPO4, ICSO4, ISFD, INH3N
6.

RECRA LabNet Use Only

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

COC Tape was: 1) Present on Outer Package ✓ or N
2) Unbroken on Outer Package ✓ or N
3) Present on Sample ✓ or N
4) Unbroken on Sample ✓ or N
COC Record Present Upon Sample Rec't ✓ or N
Cooler Temp. 4.3 °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	10/19/99	0915

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

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

4235 7953 0521

Bechtel Hanford Inc. 9910C420

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-138 Page 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 B pond		SAF No.: B99-078
Ice Chest No.: ERC - 96-039	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA~~/RECRA DJB 10-14-99	Offsite Property No.: A990301		Bill of Lading/Air Bill No.: 4235 7953 0521
			COA: B20CW1 67/C

Price Code: 8N

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

Cpm	Sample No.	Matrix *	Sample Date	Sample Time										
340	BOWN11	Soil	10-14-99	0815		X	X	X	X	X				
220	BOWN12	Soil	10-14-99	0834		X	X	X	X	X				
273	BOWN13	Soil	10-14-99	0849		X	X	X	X	X				
224	BOWN14	Soil	10-14-99	0858		X	X	X	X	X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers / Doug Bowers	10-14-99/1105	Ref 1A	10-14-99/1105
Ref 1A	10-18-99/1015	Doug Bowers / Doug Bowers	10-18-99/1015
Doug Bowers / Doug Bowers	10-18-99/1015	Fed EX	
Fed Ex	10/19/99 0915	[signature]	10-19-99 0915

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) 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

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

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

use BOW8C1 as T-A.

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

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

Temp 4.3

020

RECRA LabNet Use Only

9910L441

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

Client: TMU Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Orlette Johnson

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 10-20-99 Date Due: 11/19/99

Account #:

Refrigerator #		2	2
#/Type Container	Liquid		
	Solid	1PG, 1PG	1PG, 1PG, 1PG
Volume	Liquid		
	Solid	250, 500	500, 250, 1000
Preservatives		– –	– – –

ANALYSES REQUESTED →

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	ORGANIC VOA	BNA	Pest/PCB	Herb	INORG Metal	CN	Rad	Rad
							8260 24H	8270 SC	8250 24H	8080	Metal	10NTU	1PH	Gross Alpha
001	Baunia			S	10-14-99	0907	✓	✓	X		✓	X	✓	✓
002	Baun17			⊥	⊥	0914	✓	✓	X		✓	X	✓	✓
003	Baun18					0924	✓	✓	X		✓	X	✓	✓

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

11/3/99
SB and TL added to all metals samples per client

Special Instructions:
Saf # B99-078

COMPOSITE WASTE

DATE/REVISIONS:
1. Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
3. Ang (1) = 1N3N2, 1CCL, 1CFL, 1CSO4, 1CNO2,
4. 1CNO3, 1CPO4, 1SFD, 1NH3N, 1CR6
5.
6. Rem Matrix QC

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered
Airbill # 4235795 30532
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was: 1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 5.0 °C

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

Relinquished by	Received by	Date	Time
FedEx	TMurray	102099	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

0271

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-139 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 B pond		**SAF No.** B99-078
Ice Chest No. ERC 96-030	**Field Logbook No.** EL-1511		**Method of Shipment** FED EX
Shipped To TMA/RECRA B70 10-14-99	**Offsite Property No.** A990301		**Bill of Lading/Air Bill No.** 4235 7953 0532
			COA B20CW1 67/C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

	Sample No.	Matrix *	Sample Date	Sample Time										
cpm														
.42	BOWN16	Soil	10-14-99	0907					X	X	X	X	X	
260	BOWN17	30:1	10-14-99	0914					X	X	X	X	X	
248	BOWN18	30:1	10-14-99	0924					X	X	X	X	X	

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers ~~Bow~~ B 10-14-99	10-14-99/1105	R.F. JA	10-14-99/1105
R.F. JA	10-18-99/1015	Doug Bowers	10-18-99/1015
Doug Bowers	10-18-99/1015	Fed Ex	
Fed Ex	10-20-99 0930	T Murray	10-20-99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) 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
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}, Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

use BOW8C1 AS TA

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION — Received By — Title — Date/Time

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

023

RECRA LabNet

a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client: FNU-HANFORD B99-078
RFW#: 9910L420/9910L441
SDG/SAF#: H0578 B99-078

W.O.#: 10985-001-001-9999-00
Date Received: 10-19,20-99

PCB

The set of samples consisted of seven (7) soil samples collected on 10-14-99.

The samples and their associated QC samples were extracted on 10-21,26-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 11-12,13,18,19-99. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

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

1. All cooler temperatures have been recorded on the chain-of-custodies.
2. All required holding times for extraction and analysis have been met.
3. The samples and their associated QC samples received a sulfuric acid and sulfur cleanup.
4. All method blanks were below the reporting limits for all target compounds.
5. Ten (10) of thirty (30) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
6. All blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

12-01-99
Date

pcb1 group data pest 102 426 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 12 pages.

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 Philadelphia **Sample Discrepancy Report (SDR)** SDR #: 99GC214

Initiator: B Pastor RFW Batch: 99IOL365, 392, 419, 420 Parameter: OPCB
Date: 11/17/99 Samples: Matrix: Soil
Client: TWU - Hanford Method: SW846 MCAWW/CLP/ Prep Batch: 99LE1283

1. Reason for SDR

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

b. General Discrepancy

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

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

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

The following samples had high surrogates

99IOL365 -

	TCX	PCB
002	125	141
003	158	176
004	142	162
005	130	143

99IOL392 -

	TCX	PCB
001 MS	160	174
001 MSD	145	157
002	120	136
003	135	152
006	175	191
007	168	181

99IOL420 -

	TCX	PCB
001 MS	170	180
002	128	138
004	122	135

Blank 99LE1283 was also high at 148% + 155%

2. Known or Probable Causes(s) QC limit = TCX = 118%
PCB = 122%

All spike recoveries were ok. All samples with PCB's were ok for surrogates.

3. Discussion and Proposed Action Other Description:

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

4. Project Manager Instructions...signature/date: [signature] 11/19/99

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 11-19-99 Other Explanation:

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

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

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

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 11/18/99 15:51

RFW Batch Number: 9910L420 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1

	Cust ID:	B0WN11	B0WN11	B0WN11	B0WN12	B0WN13	B0WN14
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	100 %	170 * %	118 %	128 * %	112 %	122 * %
	Decachlorobiphenyl	118 %	180 * %	131 * %	138 * %	127 * %	135 * %
Aroclor-1016		39 U	39 U	39 U	36 U	36 U	36 U
Aroclor-1221		79 U	79 U	79 U	72 U	71 U	73 U
Aroclor-1232		39 U	39 U	39 U	36 U	36 U	36 U
Aroclor-1242		39 U	39 U	39 U	36 U	36 U	36 U
Aroclor-1248		39 U	39 U	39 U	36 U	36 U	36 U
Aroclor-1254		39 U	83 %	72 %	36 U	36 U	36 U
Aroclor-1260		36 J	52	43	36 U	36 U	36 U

	Cust ID:	PBLKXM	PBLKXM BS
Sample Information	RFW#:	99LE1283-MB1	99LE1283-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	140 * %	102 %
	Decachlorobiphenyl	155 * %	112 %
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	86 %
Aroclor-1260		33 U	33 U

AW 11-19-99

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

PCBs by GC

Report Date: 11/24/99 15:06

RFW Batch Number: **9910L441** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1

006

Cust ID:	B0WN16	B0WN16	B0WN16	B0WN17	B0WN18	PBLKYH
Sample Information RFW#:	001	001 MS	001 MSD	002	003	99LE1303-MB1
Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene	95 %	75 %	85 %	88 %	100 %	92 %
Decachlorobiphenyl	113 %	90 %	106 %	94 %	112 %	101 %
Aroclor-1016	37 U	37 U	37 U	35 U	34 U	33 U
Aroclor-1221	73 U	73 U	73 U	70 U	69 U	67 U
Aroclor-1232	37 U	37 U	37 U	35 U	34 U	33 U
Aroclor-1242	37 U	37 U	37 U	35 U	34 U	33 U
Aroclor-1248	37 U	37 U	37 U	35 U	34 U	33 U
Aroclor-1254	37 U	89 %	94 %	35 U	34 U	33 U
Aroclor-1260	37 U	37 U	37 U	35 U	34 U	33 U

Cust ID:	PBLKYH BS
Sample Information RFW#:	99LE1303-MB1
Matrix:	SOIL
D.F.:	1.00
Units:	UG/KG
Surrogate: Tetrachloro-m-xylene	95 %
Decachlorobiphenyl	100 %
Aroclor-1016	33 U
Aroclor-1221	67 U
Aroclor-1232	33 U
Aroclor-1242	33 U
Aroclor-1248	33 U
Aroclor-1254	82 %
Aroclor-1260	33 U

gw 11-26-99

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: 10/19/99 RFW LOT # :99100420

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOWN11	001	S	99LE1283	10/14/99	10/21/99	11/12/99
BOWN11	001 MS	S	99LE1283	10/14/99	10/21/99	11/12/99
BOWN11	001 MSD	S	99LE1283	10/14/99	10/21/99	11/12/99
BOWN12	002	S	99LE1283	10/14/99	10/21/99	11/12/99
BOWN13	003	S	99LE1283	10/14/99	10/21/99	11/12/99
BOWN14	004	S	99LE1283	10/14/99	10/21/99	11/13/99
LAB QC:						
PBLKXM	MB1	S	99LE1283	N/A	10/21/99	11/12/99
PBLKXM	MB1 BS	S	99LE1283	N/A	10/21/99	11/12/99

gw 11-19-99

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

DATE RECEIVED: 10/20/99 RFW LOT # :9910L441

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOWN16	001	S	99LE1303	10/14/99	10/26/99	11/18/99
BOWN16	001 MS	S	99LE1303	10/14/99	10/26/99	11/19/99
BOWN16	001 MSD	S	99LE1303	10/14/99	10/26/99	11/19/99
BOWN17	002	S	99LE1303	10/14/99	10/26/99	11/18/99
BOWN18	003	S	99LE1303	10/14/99	10/26/99	11/18/99

LAB QC:

PBLKYH	MB1	S	99LE1303	N/A	10/26/99	11/18/99
PBLKYH	MB1 BS	S	99LE1303	N/A	10/26/99	11/18/99

gw 11-26-99

RECRA LabNet Use Only

9910L420

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(4) metals

Client TNU HANFORD B99-078

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OS

QC Spec Del Std TAT 30 day

Date Rec'd 10/19/99 Date Due 11/18/99

Account #

Refrigerator #		1	2																				
#/Type Container	Liquid																						
	Solid	1AG	1AG							1AG						1AG						1AG	
Volume	Liquid																					1	
	Solid	250	500							250						500						1LT	
Preservatives		—								—						—						—	
ANALYSES REQUESTED		ORGANIC														INORG							
		VOA	BNA	~~Pest~~ PCB	~~Herb~~					TPH	PH					Metal	CN					IC Anions	

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	RECRA LabNet Use Only: OC24H	OC25C	OC25H	OPCB			IPH			Metc	ICNTC		Angc				
001	BOWN 11			S	10/14/99	0815	1	1	1				1			1	1		1				
002	12					0834	1	1	1				1			1	1		1				
003	13					0849	1	1	1				1			1	1		1				
004	14					0858	1	1	1				1			1	1		1				

11/3/99
SB and TL added to all metals samples per client

Special Instructions:
Surf # B99-078

COMPOSITE WASTE

DATE/REVISIONS:
1. Run matrix QC
Met ① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
3. Se, Ag, V, Zn, Hg, ICR6
Ang ① = IN3N2, ICCL, ICFL, ICNO2, ICNO3
5. ICPO4, ICSO4, ISFD, INH3N
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill Surface
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. 4.3 °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	10/19/99	0915

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

4235 7953 0521

Bechtel Hanford Inc.
9910C420

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-138

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		SAF No.: B99-078
Ice Chest No.: ERC - 96-039	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA~~/RECRA BJB/10-14-99	Offsite Property No.: A990301		Bill of Lading/Air Bill No.: 4235 7953 0521
			COA: B20CW167C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

cpm	Sample No.	Matrix *	Sample Date	Sample Time										
340	BOWN11	Soil	10-14-99	0815		X	X	X	X	X				
220	BOWN12	Soil	10-14-99	0834		X	X	X	X	X				
273	BOWN13	Soil	10-14-99	0849		X	X	X	X	X				
224	BOWN14	Soil	10-14-99	0858		X	X	X	X	X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	10-14-99/1105	Ref 1A	10-14-99/1105
Ref 1A	10-18-99/1015	Doug Bowers	10-18-99/1015
Doug Bowers	10-18-99/1015	Fed Ex	
Fed Ex	10/19/99 0915	[illegible]	10-19-99 0915

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) 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
(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155), Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium, Isotopic Thorium (Thorium-232); Ameticium-241

use BOW8C1 as T-A.

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
9910L441

Custody Transfer Record/Lab Work Request

Page 1 of 1

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

RECRA LabNet

011

Client: TMU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: Orlette Johnson
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 10-20-99 Date Due: 11/19/99
Account #:

Refrigerator #		1	2				2				
#/Type Container	Liquid										
	Solid	1AG	1AG				1AG		1AG	1AG	
Volume	Liquid										
	Solid	250	500				500		250	1000	
Preservatives		–	–				–		–	–	
ANALYSES REQUESTED		ORGANIC: VOA	BNA	Pest/PCB	Herb		INORG: Metal	CN	PH	Inorg	

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H 0625C	0625H 0DRO	0PCB		Met (1)	1CNTO	1PH	Ang (1)
001	Bown16			S	10-14-99	0907	✓	✓	X		✓	X	✓	✓
002	Bown17			⊥	⊥	0914	✓	✓	X		✓	X	✓	✓
003	Bown18					0924	✓	✓	X		✓	X	✓	✓

11/3/99
SB and TL added to all metals samples per client

Special Instructions:
Saf # B99-078

COMPOSITE WASTE

DATE/REVISIONS:
Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
Ang (1) = 3. 1N3N2, 1CCL, 1CFL, 1CSO4, 1CNO2,
4. 1CNO3, 1CPO4, 1SFD, 1NH3N, 1CR6
5.
6. Rein Matrix QC

Relinquished by	Received by	Date	Time
Fed Ex	T Murray	10-20-99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # 4235795 30532
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec'd (Y) or N
Cooler Temp. 5.0 °C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-139	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 B pond	SAF No.: B99-078	
Ice Chest No.: ERC 96-030	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: TMA/RECRA B70 10-14-99	Offsite Property No.: A990301	Bill of Lading/Air Bill No.: 4235 7953 0532	
		COA: B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

cpm	Sample No.	Matrix *	Sample Date	Sample Time										
242	BOWN16	Soil	10-14-99	0907					X	X	X	X	X	
260	BOWN17	Soil	10-14-99	0914					X	X	X	X	X	
248	BOWN18	Soil	10-14-99	0924					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	Doug Bowers	10-14-99 1105	Received By	10-14-99 1105
Relinquished By	Doug Bowers	10-18-99 1015	Received By	10-18-99 1015
Relinquished By	Doug Bowers	10-18-99 1015	Received By	Fed Ex
Relinquished By	Fed Ex	10-20-99 0930	Received By	T Murray 10-20-99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) 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
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium, Isotopic Thorium {Thorium-232}; Americium-241

use BOW8C1 AS TA

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

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

RECRA LabNet

a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B99-078
RFW #: 9910L420/9910L441
SDG/SAF#: H0578.B99-078

W.O. #: #: 10985-001-001 9999-00
Date Received: 10-19,20-99

GC SCAN

The set of samples consisted of seven (7) soil samples collected on 10-14-99.

The samples and their associated QC samples were prepared on 10-25-99 and analyzed by methodology based on EPA Method 8015B for Ethanol and 1-Propanol on 10-29,30-99.

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 outside advisory control limits of 50%-150%. A copy of the Sample Discrepancy Report (SDR) has been enclosed in the data package.

7. All matrix spike recoveries were outside advisory control limits of 50%-150%. The extracts were originally analyzed on a different GC system on 10-26-99 with recoveries of 150% and 157% for the MS and MSD, respectively. The data from this original analysis were rejected because there was a laboratory contaminant which interfered with the measurement of Ethanol. It should be noted that the samples were spiked with a non-target analyte (Methanol) which was not affected the way 1-Propanol was during the time between the first and second analyses. Overall, the high recoveries did not impact the data since target analytes were not detected in any samples. A copy of the Sample Discrepancy Report (SDR) has been enclosed in the data package.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-17-99
Date

c:\share\le\gescan\10-441.doc

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

GLOSSARY OF 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 Labs/Fairfield/Philadelphia Sample Discrepancy Report (SDR) SDR #: 99LC056

99/0L420 001-004 99/0L441-001-003

Initiator: C. Schnell RFW Batch: 99/0L453 001-007 Parameter: OGCSC
Date: 11/2/99 Samples: 99/0L475 001-003 Matrix: Soil
Client: TNU-Hanford Method: SW846/MCAWW/CLP/ Prep Batch: _____

1. Reason for SDR

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

b. General Discrepancy

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

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

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

1- propanol recoveries low in matrix spikes.

2. Known or Probable Causes(s)

Sample extracts were originally analyzed on the day of preparation with acceptable 1-propanol recovery but the data was rejected due to the presence of a laboratory contaminant which interfered with another target analyte (Ethanol). Re-analysis one week later yielded reduced 1propanol recoveries.

3. Discussion and Proposed Action

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

Other Description: Options:

1. Report 1-propanol from the first GC run on 10/26,27/99 and Ethanol from second GC run on 10/30/99, with the constraint that LIMS can handle only one analysis date. Narrate analysis dates.
2. Re-extract and reanalyze.
3. Report all from 2nd run and narrate 1-propanol results from first run

4. Project Manager Instructions...signature/date: [signature] 11/2/99

✓ Concur with Proposed Action option 3
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 11/11/99 Other Explanation:

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

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

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

L-WI-006/E-03/99

Pace Laboratories Sample Discrepancy Report (SDR) SDR #: 99LC057

Initiator: C Schnell
Date: 11/2/99
Client: TNU Hanford

RFW Batch: 99LC365 99LC392
Samples: 99LC420 99LC421 99LC441
Method: SW846/MCAWW/CLP/

Parameter: OE LSC
Matrix: Soil
Prep Batch: 99LC162

1. Reason for SDR

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

b. General Discrepancy

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

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

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

BS recovery high (167%)

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

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

Other Description:
- all MS recoveries OK (four sets), or high..
- Positives not detected

[signature] 11/8/99

4. Project Manager Instructions...signature/date: [signature] 11/8/99

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 11/11/99

Other Explanation:

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

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

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

L-WI-006/E-03/99

Recra LabNet - Lionville Laboratory

Report Date: 11/03/99 14:27

RFW Batch Number: 9910L420 Client: TNU-HANFORD B99-078 Work Order: 10985-001-001-9999-00 Page: 1

	Cust ID:	B0WN11	B0WN11	B0WN11	B0WN12	B0WN13	B0WN14
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	28 * %	29 * %	5.0 U	5.0 U	5.0 U
Ethanol		5.5 U	6.0 U	5.5 U	5.0 U	5.0 U	5.0 U

	Cust ID:	BLK	BLK BS
Sample Information	RFW#:	99LLC162-MB1	99LLC162-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	mg/kg	mg/kg
n-Propyl Alcohol		5.0 U	162 * %
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.

11/16/99

Recra LabNet - Lionville Laboratory

GC SCAN

Report Date: 11/02/99 18:00

RFW Batch Number: **9910L441** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

	Cust ID:	B0WN16	B0WN16	B0WN16	B0WN17	B0WN18	BLK
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	99LLC162-MB1
	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	84 %	13 * %	5.0 U	5.0 U	5.0 U
Ethanol		5.5 U	5.5 U	5.5 U	5.0 U	5.0 U	5.0 U

	Cust ID:	BLK BS
Sample Information	RFW#:	99LLC162-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	mg/kg
n-Propyl Alcohol		162 * %
Ethanol		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.

11/18/99

Recra LabNet - Lionville Laboratory
GCSC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD F99-078

DATE RECEIVED: 10/19/99 RFW LOT # :99101420

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOWN11	001	S	99LLC162	10/14/99	10/25/99	10/30/99
BOWN11	001 MS	S	99LLC162	10/14/99	10/25/99	10/30/99
BOWN11	001 MSD	S	99LLC162	10/14/99	10/25/99	10/30/99
BOWN12	002	S	99LLC162	10/14/99	10/25/99	10/30/99
BOWN13	003	S	99LLC162	10/14/99	10/25/99	10/30/99
BOWN14	004	S	99LLC162	10/14/99	10/25/99	10/30/99

LAB QC:

BLK	MB1	S	99LLC162	N/A	10/25/99	10/29/99
BLK	MB1 BS	S	99LLC162	N/A	10/25/99	10/29/99

11/16/99

~~006~~
007 11/19/99

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

DATE RECEIVED: 10/20/99 RFW LOT # :9910L441

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOWN16	001	S	99LLC162	10/14/99	10/25/99	10/30/99
BOWN16	001 MS	S	99LLC162	10/14/99	10/25/99	10/30/99
BOWN16	001 MSD	S	99LLC162	10/14/99	10/25/99	10/30/99
BOWN17	002	S	99LLC162	10/14/99	10/25/99	10/30/99
BOWN18	003	S	99LLC162	10/14/99	10/25/99	10/30/99

LAB QC:

BLK	MB1	S	99LLC162	N/A	10/25/99	10/29/99
BLK	MB1 BS	S	99LLC162	N/A	10/25/99	10/29/99

006
008

RECRA LabNet Use Only

9910L420

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU HANFORD B99-078

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC Spec Del std TAT 30 day

Date Rec'd 10/19/99 Date Due 11/18/99

Account #

Refrigerator #		1	2	—																			
#/Type Container	Liquid																						
	Solid	1AG	1AG	—					1AG					1AG					1AG				
Volume	Liquid																						
	Solid	250	500	—					250					500					1LT				
Preservatives		—		—					—					—					—				
ANALYSES REQUESTED		ORGANIC												INORG									
		VOA	BNA	~~Pest~~ PCB	~~Herb~~				TPH	PH				~~Total~~ Metal	CN				IC Anions				
		RECRA LabNet Use Only																					
		CU24H	CU5SC	CU25H	CDRO	CPCB				IPH				Met①	CN70				Ang①				

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	PCB	CDRO	IPH	Met①	CN70	Ang①
001	BOWN11			S	10/14/99	0815	1	1	1		1	1	1	1
002	12					0834	1	1	1		1	1	1	1
003	13					0849	1	1	1		1	1	1	1
004	14					0858	1	1	1		1	1	1	1

Special instructions:

Self # B99-078

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
Met① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
3. Se, Ag, V, Zn, Hg, ICR6
Ang① = IN3N2, ICCL, ICFL, ICNO2, ICNO3
5. ICPO4, ICSO4, ISFD, INH3N
6.

RECRA LabNet Use Only

Samples were 1) Shipped ✓ or Hand Delivered
Airbill Superburn
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. 4.3 °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	10/19/99	0915

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

4235 7953 0521

Bechtel Hanford Inc. 9910C420

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-138 | 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 B pond		SAF No.: B99-078
Ice Chest No.: ERC - 96-039	Field Logbook No.: EL-15.1		Method of Shipment: FED EX
Shipped To: ~~TMA~~/RECRA DJB 10-14-99	Offsite Property No.: A990301		Bill of Lading/Air Bill No.: 4235 7953 0521
			COA: B20CW1 67/C

Price Code: 8N

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

cpm	Sample No.	Matrix *	Sample Date	Sample Time										
340	BOWN11	Soil	10-14-99	0815		X	X	X	X	X				
220	BOWN12	Soil	10-14-99	0834		X	X	X	X	X				
273	BOWN13	Soil	10-14-99	0849		X	X	X	X	X				
224	BOWN14	Soil	10-14-99	0858		X	X	X	X	X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers Doug Bowers	10-14-99/1105	Ref 1A	10-14-99/1105
Ref 1A	10-18-99/1015	Doug Bowers Doug Bowers	10-18-99/1015
Doug Bowers Doug Bowers	10-18-99/1015	Fed EX	
Fed Ex	10/15/99 0915	[signature]	10-19-99 0915

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) 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

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

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

use BOW8C1 as T-A

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

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

Tech 4-3

RECRA LabNet Use Only

9910L441

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMU Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: Orlette Johnson

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 10-20-99 Date Due: 11/19/99

Account #:

Refrigerator #		1	2					2					
#/Type Container	Liquid												
	Solid	1PG	1PG					1PG		1PG	1PG		
Volume	Liquid												
	Solid	250	500					500		250	1000		
Preservatives		–	–					–		–	–		

ANALYSES REQUESTED →

ORGANIC							INORG			
VOA	BNA	Pest/PCB	Herb				Metal	CN	F	Inorg

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	8260 24H	8270 SC	8270 25H	8270 DRO	8082 PCB			Met (1)	ICAUTO	IPH	Inorg (1)			
001	Bawn16			S	10-14-99	0907	✓	✓	X					✓	X	✓	✓			
002	Bawn17			⊥	⊥	0914	✓	✓	X					✓	X	✓	✓			
003	Bawn18					0924	✓	✓	X					✓	X	✓	✓			

Special Instructions:

Sef # B99-078

COMPOSITE WASTE

DATE/REVISIONS:

Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
Anig (1) 3. IN3N2, ICCL, ICFL, ICSO4, ICNO2,
4. ICNO3, ICPO4, ISFD, INH3N, ICR6
5.
6. Rem matrix QC

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 4235795 50652
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

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

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

Cooler Temp. 5.0 °C

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

NOTES:

Relinquished by	Received by	Date	Time
FedEx	TMurray	10-20-99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-139 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 B pond	SAF No.: B99-078	
Ice Chest No.: ERC 96-030	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: TMA/RECRA D70 10-14-99	Offsite Property No.: A990301	Bill of Lading/Air Bill No.: 4235 7953 0532	
		COA: B20CW1 671C	

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

Sample No.	Matrix *	Sample Date	Sample Time										
BOWN16	Soil	10-14-99	0907					X	X	X	X	X	
BOWN17	Soil	10-14-99	0914					X	X	X	X	X	
BOWN18	Soil	10-14-99	0924					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers 10-14-99	Date/Time	Received By: Bowers 10-14-99	Date/Time: 1105
Relinquished By: Bowers 10-14-99	Date/Time: 1015	Received By: Doug Bowers	Date/Time: 10-18-99/1015
Relinquished By: Doug Bowers	Date/Time: 10-18-99/1015	Received By: Fed Ex	Date/Time
Relinquished By: Fed Ex	Date/Time: 10-20-99 0930	Received By: T Murray	Date/Time: 10-20-99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) 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

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

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

Use BOW8C1 AS TA

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# : 9910L420/9910L441
SDG/SAF#: H0578 B99-078

W.O #: 10985-001-001-9999-00
Date Received: 10-19,20-99

DIESEL RANGE ORGANICS

The set of samples consisted of seven (7) soil samples collected on 10-14-99.

The samples and their associated QC samples were prepared on 10-21-99 and analyzed by methodology based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 10-16,27,28-99. 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

11-22-99
Date

R:\SHARE\LC\GCSCAN\10-420d.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: 11/04/99 18:34

RFW Batch Number: 9910L420 Client: TNU-HANFORD B99-078 Work Order: 10985-001-001-9999-00 Page: 1

003

	Cust ID:	B0WN11	B0WN11	B0WN11	B0WN12	B0WN13	B0WN14
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	89 %	87 %	93 %	78 %	89 %	86 %
Diesel Range Organics		4.6 U	71 %	67 %	4.3 U	4.2 U	4.2 U

	Cust ID:	BLK	BLK BS
Sample Information	RFW#:	99LE1279-MB1	99LE1279-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	mg/kg	mg/kg
Surrogate:	p-Terphenyl	93 %	105 %
Diesel Range Organics		4.0 U	95 %

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.

11/8/99

Recra LabNet - Lionville Laboratory

DIESEL RANGE ORGANICS BY GC

Report Date: 11/18/99 08:50

RFW Batch Number: **9910L441** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

603

	Cust ID:	B0WN16	B0WN16	B0WN16	B0WN17	B0WN18	BLK
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	99LE1294-MB1
	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	76 %	87 %	83 %	77 %	79 %	74 %
Diesel Range Organics		4.4 U	106 %	96 %	4.3 U	4.1 U	4.0 U

	Cust ID:	BLK BS
Sample Information	RFW#:	99LE1294-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	mg/kg
Surrogate:	p-Terphenyl	77 %
Diesel Range Organics		96 %

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.

11/18/99

Pacific Northwest - Richland Laboratory
LRO ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD 199-078

DATE RECEIVED: 10/19/99 RFW LOT # :99101420

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOWN11	001	S	99LE1279	10/14/99	10/21/99	10/28/99
BOWN11	001 MS	S	99LE1279	10/14/99	10/21/99	10/28/99
BOWN11	001 MSD	S	99LE1279	10/14/99	10/21/99	10/28/99
BOWN12	002	S	99LE1279	10/14/99	10/21/99	10/28/99
BOWN13	003	S	99LE1279	10/14/99	10/21/99	10/28/99
BOWN14	004	S	99LE1279	10/14/99	10/21/99	10/28/99

LAB QC:

BLK	MB1	S	99LE1279	N/A	10/21/99	10/27/99
BLK	MB1 BS	S	99LE1279	N/A	10/21/99	10/27/99

Recra LabNet - Lionville Laboratory
TRO ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD 899-078

DATE RECEIVED: 10/20/99 RFW LOT # :9910L441

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOWN16	001	S	99LE1294	10/14/99	10/25/99	11/16/99
BOWN16	001 MS	S	99LE1294	10/14/99	10/25/99	11/16/99
BOWN16	001 MSD	S	99LE1294	10/14/99	10/25/99	11/16/99
BOWN17	002	S	99LE1294	10/14/99	10/25/99	11/16/99
BOWN18	003	S	99LE1294	10/14/99	10/25/99	11/16/99

LAB QC:

BLK	MB1	S	99LE1294	N/A	10/25/99	11/16/99
BLK	MB1 BS	S	99LE1294	N/A	10/25/99	11/16/99

004A

RECRA LabNet Use Only

9910L420

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

Client TNU HANFORD B99-078

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC Spec Del Std TAT 30 day

Date Rec'd 10/19/99 Date Due 11/18/99

Account #

Refrigerator #		1	2					
#/Type Container	Liquid							
	Solid	1AG	1AG		1AG	1AG		1AG
Volume	Liquid							1
	Solid	250	500		250	500		1LT
Preservatives		—			—	—		—

ANALYSES REQUESTED → ORGANIC: VOA, BNA, ~~Pest~~ PCB, ~~Herb~~, TPH, PH; INORG: ~~IS~~ Metal, CN; IC Anions

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	0024H 0025C	0025H 0DRO	0PCB	1PH	Met①	1CNTO	Ang①
001	BOWN 11			S	10-14-99	0815	1	1	1	1	1	1	1
002	12					0834	1	1	1	1	1	1	1
003	13					0849	1	1	1	1	1	1	1
004	14					0858	1	1	1	1	1	1	1

11/3/99
SB and TL added to all metals samples per client

Special Instructions:

saf # B99-078

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
Met① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
3. Se, Ag, V, Zn, Hg, 1CR6
Ang① = 1N3N2, 1CCL, 1CFL, 1CNO2, 1CNO3
5. 1CPO4, 1CSO4, 1SFD, 1NH3N
6.

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. 4.3 °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	10/19/99	0915

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

4235 7953 0521

Bechtel Hanford Inc. 9910C420

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-138

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 B pond		SAF No.: B99-078
Ice Chest No.: ERC - 96-039	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA DJB 10-14-99	Offsite Property No.: A990301		Bill of Lading/Air Bill No.: 4235 7953 0521
			COA: B20CW1 67/C

Price Code: 8N

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

Cpm	Sample No.	Matrix *	Sample Date	Sample Time										
340	BOWN11	Soil	10-14-99	0815		X	X	X	X	X				
220	BOWN12	Soil	10-14-99	0834		X	X	X	X	X				
273	BOWN13	Soil	10-14-99	0849		X	X	X	X	X				
224	BOWN14	Soil	10-14-99	0858		X	X	X	X	X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	10-14-99/1105	Ref 1A	10-14-99/1105
Ref 1A	10-18-99/1015	Doug Bowers	10-18-99/1015
Doug Bowers	10-18-99/1015	Fed EX	
Fed Ex	10/19/99 0915	[signature]	10-19-99 0915

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) 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

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

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

use BOW8C1 as T-A.

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

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

RECRA LabNet

a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9910L420 & 9910L441
SDG/SAF #: H0578/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 10-19,20-99

SEMIVOLATILE

Seven (7) soil samples were collected on 10-14-99.

The samples and their associated QC samples were extracted on 10-25-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 10-28-99.

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

DEC 1999

for St D Welsh
J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-18-99
Date

som\gcrup data\bna\tnu0s420.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 26 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: 11/12/99 18:3

RFW Batch Number: **9910L420** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0WN11		B0WN12		B0WN13		B0WN14		B0WN14		B0WN14	
Sample Information	RFW#:	001		002		003		004		004 MS		004 MSD	
	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	88	%	78	%	83	%	79	%	76	%	80	%
	2-Fluorobiphenyl	86	%	91	%	96	%	90	%	86	%	76	%
	Terphenyl-d14	96	%	82	%	96	%	111	%	84	%	86	%
	Phenol-d5	68	%	69	%	66	%	68	%	64	%	57	%
	2-Fluorophenol	64	%	67	%	74	%	73	%	70	%	66	%
	2,4,6-Tribromophenol	88	%	80	%	76	%	78	%	87	%	80	%
Phenol		390	U	360	U	360	U	360	U	64	%	56	%
bis(2-Chloroethyl)ether		390	U	360	U	360	U	360	U	360	U	360	U
2-Chlorophenol		390	U	360	U	360	U	360	U	73	%	67	%
1,3-Dichlorobenzene		390	U	360	U	360	U	360	U	360	U	360	U
1,4-Dichlorobenzene		390	U	360	U	360	U	360	U	77	%	60	%
1,2-Dichlorobenzene		390	U	360	U	360	U	360	U	360	U	360	U
2-Methylphenol		390	U	360	U	360	U	360	U	360	U	360	U
2,2'-oxybis(1-Chloropropane)		390	U	360	U	360	U	360	U	360	U	360	U
4-Methylphenol		390	U	360	U	360	U	360	U	360	U	360	U
N-Nitroso-di-n-propylamine		390	U	360	U	360	U	360	U	74	%	64	%
Hexachloroethane		390	U	360	U	360	U	360	U	360	U	360	U
Nitrobenzene		390	U	360	U	360	U	360	U	360	U	360	U
Isophorone		390	U	360	U	360	U	360	U	360	U	360	U
2-Nitrophenol		390	U	360	U	360	U	360	U	360	U	360	U
2,4-Dimethylphenol		390	U	360	U	360	U	360	U	360	U	360	U
bis(2-Chloroethoxy)methane		390	U	360	U	360	U	360	U	360	U	360	U
2,4-Dichlorophenol		390	U	360	U	360	U	360	U	360	U	360	U
1,2,4-Trichlorobenzene		390	U	360	U	360	U	360	U	94	%	98	%
Naphthalene		390	U	360	U	360	U	360	U	360	U	360	U
4-Chloroaniline		390	U	360	U	360	U	360	U	360	U	360	U
Hexachlorobutadiene		390	U	360	U	360	U	360	U	360	U	360	U
4-Chloro-3-methylphenol		390	U	360	U	360	U	360	U	68	%	53	%
2-Methylnaphthalene		390	U	360	U	360	U	360	U	360	U	360	U
Hexachlorocyclopentadiene		390	U	360	U	360	U	360	U	360	U	360	U
2,4,6-Trichlorophenol		390	U	360	U	360	U	360	U	360	U	360	U
2,4,5-Trichlorophenol		980	U	900	U	890	U	900	U	900	U	900	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9910L420 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1b

Cust ID:	B0WN11		B0WN12		B0WN13		B0WN14		B0WN14		B0WN14	
RFW#:	001		002		003		004		004 MS		004 MSD	
2-Chloronaphthalene	390	U	360	U	360	U	360	U	360	U	360	U
2-Nitroaniline	980	U	900	U	890	U	900	U	900	U	900	U
Dimethylphthalate	390	U	360	U	360	U	360	U	360	U	360	U
Acenaphthylene	390	U	360	U	360	U	360	U	360	U	360	U
2,6-Dinitrotoluene	390	U	360	U	360	U	360	U	360	U	360	U
3-Nitroaniline	980	U	900	U	890	U	900	U	900	U	900	U
Acenaphthene	390	U	360	U	360	U	360	U	83	%	86	%
2,4-Dinitrophenol	980	U	900	U	890	U	900	U	900	U	900	U
4-Nitrophenol	980	U	900	U	890	U	900	U	71	%	65	%
Dibenzofuran	390	U	360	U	360	U	360	U	360	U	360	U
2,4-Dinitrotoluene	390	U	360	U	360	U	360	U	74	%	70	%
Diethylphthalate	390	U	360	U	360	U	360	U	360	U	360	U
4-Chlorophenyl-phenylether	390	U	360	U	360	U	360	U	360	U	360	U
Fluorene	390	U	360	U	360	U	360	U	360	U	360	U
4-Nitroaniline	980	U	900	U	890	U	900	U	900	U	900	U
4,6-Dinitro-2-methylphenol	980	U	900	U	890	U	900	U	900	U	900	U
N-Nitrosodiphenylamine (1)	390	U	360	U	360	U	360	U	360	U	360	U
4-Bromophenyl-phenylether	390	U	360	U	360	U	360	U	360	U	360	U
Hexachlorobenzene	390	U	360	U	360	U	360	U	360	U	360	U
Pentachlorophenol	980	U	900	U	890	U	900	U	88	%	82	%
Phenanthrene	390	U	360	U	360	U	360	U	360	U	360	U
Anthracene	390	U	360	U	360	U	360	U	360	U	360	U
Carbazole	390	U	360	U	360	U	360	U	360	U	360	U
Di-n-Butylphthalate	390	U	360	U	360	U	21	J	47	J	69	J
Fluoranthene	390	U	360	U	360	U	360	U	360	U	360	U
Pyrene	390	U	360	U	360	U	360	U	86	%	86	%
Butylbenzylphthalate	390	U	360	U	360	U	360	U	360	U	360	U
3,3'-Dichlorobenzidine	390	U	360	U	360	U	360	U	360	U	360	U
Benzo(a)anthracene	390	U	360	U	360	U	360	U	360	U	360	U
Chrysene	390	U	360	U	360	U	360	U	360	U	360	U
bis(2-Ethylhexyl)phthalate	390	U	360	U	360	U	360	U	360	U	360	U
Di-n-octyl phthalate	390	U	360	U	360	U	360	U	360	U	360	U
Benzo(b)fluoranthene	390	U	360	U	360	U	360	U	360	U	360	U
Benzo(k)fluoranthene	390	U	360	U	360	U	360	U	360	U	360	U
Benzo(a)pyrene	390	U	360	U	360	U	360	U	360	U	360	U
Indeno(1,2,3-cd)pyrene	390	U	360	U	360	U	360	U	360	U	360	U
Dibenz(a,h)anthracene	390	U	360	U	360	U	360	U	360	U	360	U
Benzo(g,h,i)perylene	390	U	360	U	360	U	360	U	360	U	360	U

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

	Cust ID:	SBLKFE		SBLKFE BS	
Sample Information	RFW#:	99LE1296-MB1		99LE1296-MB1	
	Matrix:	SOIL		SOIL	
	D.F.:	1.00		1.00	
	Units:	UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	79	%	82	%
	2 Fluorobiphenyl	85	%	82	%
	Terphenyl-d14	100	%	85	%
	Phenol-d5	63	%	72	%
	2-Fluorophenol	67	%	75	%
	2,4,6-Tribromophenol	85	%	89	%
Phenol		330	U	73	%
bis(2-Chloroethyl)ether		330	U	330	U
2-Chlorophenol		330	U	76	%
1,3-Dichlorobenzene		330	U	330	U
1,4-Dichlorobenzene		330	U	76	%
1,2-Dichlorobenzene		330	U	330	U
2-Methylphenol		330	U	330	U
2,2'-oxybis(1-Chloropropane)		330	U	330	U
4-Methylphenol		330	U	330	U
N-Nitroso-di-n-propylamine		330	U	83	%
Hexachloroethane		330	U	330	U
Nitrobenzene		330	U	330	U
Isophorone		330	U	330	U
2 Nitrophenol		330	U	330	U
2,4-Dimethylphenol		330	U	330	U
bis(2-Chloroethoxy)methane		330	U	330	U
2,4-Dichlorophenol		330	U	330	U
1,2,4-Trichlorobenzene		330	U	84	%
Naphthalene		330	U	330	U
4-Chloroaniline		330	U	330	U
Hexachlorobutadiene		330	U	330	U
4-Chloro-3-methylphenol		330	U	76	%
2-Methylnaphthalene		330	U	330	U
Hexachlorocyclopentadiene		330	U	330	U
2,4,6-Trichlorophenol		330	U	330	U
2,4,5-Trichlorophenol		840	U	840	U

*= Outside of EPA CLP QC limits.

Lab ID: SBLKFE SBLKFE BS

RFW#: 99LE1296-MB1 99LE1296-MB1

2-Chloronaphthalene	330	U	330	U
2-Nitroaniline	840	U	840	U
Dimethylphthalate	330	U	330	U
Acenaphthylene	330	U	330	U
2,6-Dinitrotoluene	330	U	330	U
3-Nitroaniline	840	U	840	U
Acenaphthene	330	U	83	%
2,4-Dinitrophenol	840	U	840	U
4-Nitrophenol	840	U	64	%
Dibenzofuran	330	U	330	U
2,4-Dinitrotoluene	330	U	78	%
Diethylphthalate	330	U	330	U
4-Chlorophenyl-phenylether	330	U	330	U
Fluorene	330	U	330	U
4-Nitroaniline	840	U	840	U
4,6-Dinitro-2-methylphenol	840	U	840	U
N-Nitrosodiphenylamine (1)	330	U	330	U
4-Bromophenyl-phenylether	330	U	330	U
Hexachlorobenzene	330	U	330	U
Pentachlorophenol	840	U	80	%
Phenanthrene	330	U	330	U
Anthracene	330	U	330	U
Carbazole	330	U	330	U
Di-n-butylphthalate	330	U	330	U
Fluoranthene	330	U	330	U
Pyrene	330	U	80	%
Butylbenzylphthalate	330	U	330	U
3,3'-Dichlorobenzidine	330	U	330	U
Benzo(a)anthracene	330	U	330	U
Chrysene	330	U	330	U
Bis(2-ethylhexyl)phthalate	330	U	330	U
Di-n-octyl phthalate	330	U	330	U
Benzo(b)fluoranthene	330	U	330	U
Benzo(k)fluoranthene	330	U	330	U
Benzo(a)pyrene	330	U	330	U
Indeno(1,2,3-cd)pyrene	330	U	330	U
Dibenz(a,h)anthracene	330	U	330	U
Benzo(g,h,i)perylene	330	U	330	U

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

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, BNL List

Report Date: 11/17/99 14:5

RFW Batch Number: 9910L441 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1a

	Cust ID:	B0WN16	B0WN17	B0WN18	B0WN18	B0WN18	SBLKFE
Sample Information	RFW#:	001	002	003	003 MS	003 MSD	99LE1296-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Nitrobenzene-d5	87 %	88 %	88 %	88 %	88 %	79 %
	2 Fluorobiphenyl	99 %	97 %	99 %	89 %	97 %	85 %
	Terphenyl-d14	92 %	87 %	93 %	81 %	89 %	100 %
	Phenol-d5	68 %	70 %	68 %	65 %	63 %	63 %
	2-Fluorophenol	74 %	73 %	74 %	66 %	71 %	67 %
	2,4,6-Tribromophenol	64 %	69 %	61 %	73 %	76 %	85 %
Phenol		370 U	360 U	340 U	52 %	61 %	330 U
bis(2-Chloroethyl)ether		370 U	360 U	340 U	340 U	340 U	330 U
2-Chlorophenol		370 U	360 U	340 U	65 %	69 %	330 U
1,3-Dichlorobenzene		370 U	360 U	340 U	340 U	340 U	330 U
1,4-Dichlorobenzene		370 U	360 U	340 U	77 %	82 %	330 U
1,2-Dichlorobenzene		370 U	360 U	340 U	340 U	340 U	330 U
2-Methylphenol		370 U	360 U	340 U	340 U	340 U	330 U
2,2'-oxybis(1-Chloropropane)		370 U	360 U	340 U	340 U	340 U	330 U
4-Methylphenol		370 U	360 U	340 U	340 U	340 U	330 U
N-Nitroso-di-n-propylamine		370 U	360 U	340 U	64 %	74 %	330 U
Hexachloroethane		370 U	360 U	340 U	340 U	340 U	330 U
Nitrobenzene		370 U	360 U	340 U	340 U	340 U	330 U
Isophorone		370 U	360 U	340 U	340 U	340 U	330 U
2-Nitrophenol		370 U	360 U	340 U	340 U	340 U	330 U
2,4-Dimethylphenol		370 U	360 U	340 U	340 U	340 U	330 U
bis(2-Chloroethoxy)methane		370 U	360 U	340 U	340 U	340 U	330 U
2,4-Dichlorophenol		370 U	360 U	340 U	340 U	340 U	330 U
1,2,4-Trichlorobenzene		370 U	360 U	340 U	89 %	94 %	330 U
Naphthalene		370 U	360 U	340 U	340 U	340 U	330 U
4-Chloroaniline		370 U	360 U	340 U	340 U	340 U	330 U
Hexachlorobutadiene		370 U	360 U	340 U	340 U	340 U	330 U
4-Chloro-3-methylphenol		370 U	360 U	340 U	61 %	62 %	330 U
2-Methylnaphthalene		370 U	360 U	340 U	340 U	340 U	330 U
Hexachlorocyclopentadiene		370 U	360 U	340 U	340 U	340 U	330 U
2,4,6-Trichlorophenol		370 U	360 U	340 U	340 U	340 U	330 U
2,4,5-Trichlorophenol		900 U	890 U	860 U	860 U	860 U	840 U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9910L441 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1b

Lab ID:	B0WN16		B0WN17		B0WN18		B0WN18		B0WN18		SBLKFE	
RFW#:	001		002		003		003 MS		003 MSD		99LE1296-MB1	
2-Chloronaphthalene	370	U	360	U	340	U	340	U	340	U	330	U
2-Nitroaniline	920	U	890	U	860	U	860	U	860	U	840	U
Dimethylphthalate	370	U	360	U	340	U	340	U	340	U	330	U
Acenaphthylene	370	U	360	U	340	U	340	U	340	U	330	U
2,6-Dinitrotoluene	370	U	360	U	340	U	340	U	340	U	330	U
3-Nitroaniline	920	U	890	U	860	U	860	U	860	U	840	U
Acenaphthene	370	U	360	U	340	U	62	%	50	%	330	U
2,4-Dinitrophenol	920	U	890	U	860	U	860	U	860	U	840	U
4-Nitrophenol	920	U	890	U	860	U	71	%	74	%	840	U
Dibenzofuran	370	U	360	U	340	U	340	U	340	U	330	U
2,4-Dinitrotoluene	370	U	360	U	340	U	67	%	72	%	330	U
Diethylphthalate	370	U	360	U	340	U	340	U	340	U	330	U
4-Chlorophenyl-phenylether	370	U	360	U	340	U	340	U	340	U	330	U
Fluorene	370	U	360	U	340	U	340	U	340	U	330	U
4-Nitroaniline	920	U	890	U	860	U	860	U	860	U	840	U
4,6-Dinitro-2-methylphenol	920	U	890	U	860	U	860	U	860	U	840	U
N-Nitrosodiphenylamine (1)	370	U	360	U	340	U	340	U	340	U	330	U
4-Bromophenyl phenylether	370	U	360	U	340	U	340	U	340	U	330	U
Hexachlorobenzene	370	U	360	U	340	U	340	U	340	U	330	U
Pentachlorophenol	920	U	890	U	860	U	69	%	73	%	840	U
Phenanthrene	370	U	360	U	340	U	340	U	340	U	330	U
Anthracene	370	U	360	U	340	U	340	U	340	U	330	U
Carbazole	370	U	360	U	340	U	340	U	340	U	330	U
Di-n-butylphthalate	90	J	110	J	340	U	340	U	340	U	330	U
Fluoranthene	370	U	360	U	340	U	340	U	340	U	330	U
Pyrene	370	U	360	U	340	U	79	%	88	%	330	U
Butylbenzylphthalate	370	U	360	U	340	U	340	U	340	U	330	U
3,3'-Dichlorobenzidine	370	U	360	U	340	U	340	U	340	U	330	U
Benzo(a)anthracene	370	U	360	U	340	U	340	U	340	U	330	U
Chrysene	370	U	360	U	340	U	340	U	340	U	330	U
bis(2-Ethylhexyl)phthalate	370	U	63	J	340	U	340	U	340	U	330	U
Di-n-octyl phthalate	370	U	360	U	340	U	340	U	340	U	330	U
Benzo(b)fluoranthene	370	U	360	U	340	U	340	U	340	U	330	U
Benzo(k)fluoranthene	370	U	360	U	340	U	340	U	340	U	330	U
Benzo(a)pyrene	370	U	360	U	340	U	340	U	340	U	330	U
Indeno(1,2,3-cd)pyrene	370	U	360	U	340	U	340	U	340	U	330	U
Dibenz(a,h)anthracene	370	U	360	U	340	U	340	U	340	U	330	U
Benzo(g,h,i)perylene	370	U	360	U	340	U	340	U	340	U	330	U

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

Cust ID: SBLKFE BS

Sample Information	RFW#:	99LE1296-MB1
	Matrix:	SOIL
	D.F.:	1.00
	Units:	UG/KG

Surrogate Recovery	Nitrobenzene-d5	82	%
	2-Fluorobiphenyl	82	%
	Terphenyl-d14	85	%
	Phenol-d5	72	%
	2-Fluorophenol	75	%
	2,4,6-Tribromophenol	89	%

Phenol	73	%
bis(2-Chloroethyl)ether	330	U
2-Chlorophenol	76	%
1,3-Dichlorobenzene	330	U
1,4-Dichlorobenzene	76	%
1,2-Dichlorobenzene	330	U
2-Methylphenol	330	U
2,2'-oxybis(1-Chloropropane)	330	U
4-Methylphenol	330	U
N-Nitroso-di-n-propylamine	83	%
Hexachloroethane	330	U
Nitrobenzene	330	U
Isophorone	330	U
2-Nitrophenol	330	U
2,4-Dimethylphenol	330	U
bis(2-Chloroethoxy)methane	330	U
2,4-Dichlorophenol	330	U
1,2,4-Trichlorobenzene	84	%
Naphthalene	330	U
4-Chloroaniline	330	U
Hexachlorobutadiene	330	U
4-Chloro-3-methylphenol	78	%
2-Methylnaphthalene	330	U
Hexachlorocyclopentadiene	330	U
2,4,6-Trichlorophenol	330	U
2,4,5-Trichlorophenol	840	U

*= Outside of EPA CLP QC limits.

Lab ID: SBLKFE BS

RFW#: 99LE1296-MB1

2-Chloronaphthalene	330	U
2-Nitroaniline	840	U
Dimethylphthalate	330	U
Acenaphthylene	330	U
2,6-Dinitrotoluene	330	U
3-Nitroaniline	840	U
Acenaphthene	83	%
2,4-Dinitrophenol	840	U
4-Nitrophenol	84	%
Dibenzofuran	330	U
2,4-Dinitrotoluene	78	%
Diethylphthalate	330	U
4-Chlorophenyl-phenylether	330	U
Fluorene	330	U
4-Nitroaniline	840	U
4,6-Dinitro-2-methylphenol	840	U
N-Nitrosodiphenylamine (1)	330	U
4-Bromophenyl-phenylether	330	U
Hexachlorobenzene	330	U
Pentachlorophenol	87	%
Phenanthrene	330	U
Anthracene	330	U
Carbazole	330	U
Di-n-butylphthalate	330	U
Fluoranthene	330	U
Pyrene	60	%
Butylbenzylphthalate	330	U
3,3'-Dichlorobenzidine	330	U
Benzo(a)anthracene	330	U
Chrysene	330	U
bis(2-ethylhexyl)phthalate	330	U
Di-n-octyl phthalate	330	U
Benzo(b)fluoranthene	330	U
Benzo(k)fluoranthene	330	U
Benzo(a)pyrene	330	U
Indeno(1,2,3-cd)pyrene	330	U
Dibenz(a,h)anthracene	330	U
Benzo(g,h,i)perylene	330	U

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

1F

SEMI-VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

FCWN11

Lab Name: [illegible] Work Order: [illegible]

Client: [illegible]

Matrix: (soil/water) SOIL

Lab Sample ID: [illegible]

Sample wt/vol: 30.0 (g/ml) G

Lab File ID: [illegible]

Level: (low/med) LOW

Date Received: [illegible]

% Moisture: 16 Decanted: (Y/N) __

Date Extracted: [illegible]

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: [illegible]

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	10.44	[illegible]	J

TP
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BOWN12

Lab Name: Ecora.LabNet Work Order: 10985001001

Client: TNU-HANFORD P99 078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L420-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: E102806

Level: (low/med) LOW Date Received: 10/19/99

% Moisture: 8 decanted: (Y/N) Date Extracted: 10/25/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/28/99

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.				

IF

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BOWN13

Lab Name: Recra.LabNet Work Order: 10989001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 991-1420-003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D101807

Level: (low/med) LOW Date Received: 10/19/99

% Moisture: 6 decanted: (Y/N)__ Date Extracted: 10/21/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/28/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

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

Number TICs found: 0

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

IF
[illegible] ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BOWN14

Lab Name: Recra LabNet Work Order: 10985001001

Client: [illegible]

Matrix: (soil/water) SOIL Lab Sample ID: 99101420-004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: [illegible]

Level: (low/med) LOW Date Received: 10/19/99

% Moisture: 8 decanted: (Y/N)__ Date Extracted: 10/25/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/28/99

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.				

IF

[illegible] ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKBE

Lab Name: [illegible] Work Order: 10985001001

Client: INU HANFORD B99-078

Matrix: (soil/water) SOIL

Lab Sample ID: [illegible]

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: [illegible]

Level: (low/med) LOW

Date Received: 10/25/99

% Moisture: ____ decanted: (Y/N) __

Date Extracted: 10/[illegible]/99

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 10/28/99

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.				

IF
EMPTY LAYER ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BCWN16

Lab Name: Recra.LabNet Work Order: 10985001001

Client: DNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 99101441-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D102811

Level: (low/med) LOW Date Received: 10/20/99

% Moisture: 9 decanted: (Y/N) Date Extracted: 10/25/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/28/99

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	22.62	300	J

IF

[illegible] ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WN17

Lab Name: Regra.LabNet Work Order: [illegible]

Client: [illegible]

Matrix: (soil/water) SOIL Lab Sample ID: [illegible]

Sample wt/vol: 30.0 (g/mL) G Lab File ID: [illegible]

Level: (low/med) LOW Date Received: [illegible]

% Moisture: 6 decanted: (Y/N) __ Date Extracted: [illegible]

Concentrated Extract Volume: [illegible](uL) Date Analyzed: [illegible]

Injection Volume: [illegible](uL) Dilution Factor: [illegible]

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

Number TICs found: 2

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

AS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	22.62	[illegible]	J
2.	UNKNOWN	24.18	[illegible]	J

1P

[illegible] ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

[illegible]

B0WN18

Lab Name: [illegible] Work Order: [illegible]

Client: [illegible]

Matrix: (soil/water) SOIL Lab Sample ID: [illegible]

Sample wt/vol: 30.0 (g/mL) G Lab File ID: [illegible]

Level: (low/med) LOW Date Received: 10/20/99

% Moisture: 3 decanted: (Y/N) Date Extracted: 10/25/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/28/99

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

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

IF

[illegible] ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKFE

Lab Name: [illegible] Work Order: 10985001001

Client: [illegible]

Matrix: (soil/water) SOIL Lab Sample ID: [illegible]

Sample wt/vol: 30.0 (g/mL) G Lab File ID: [illegible]

Level: (low/med) LOW Date Received: 10/25/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 10/25/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/28/99

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.				

Severn TrentNet - Knoxville Laboratory
PNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD E99-078

DATE RECEIVED: 10/19/99 RFW LOT # :9910L420

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PGWN11	001	S	99LE1296	10/14/99	10/25/99	10/28/99
PGWN12	002	S	99LF1296	10/14/99	10/25/99	10/28/99
PGWN13	003	S	99LE1296	10/14/99	10/25/99	10/28/99
PGWN14	004	S	99LF1296	10/14/99	10/25/99	10/28/99
PGWN14	004 MS	S	99LF1296	10/14/99	10/25/99	10/28/99
PGWN14	004 MSD	S	99LF1296	10/14/99	10/25/99	10/28/99

LAB QC:

MBLKE	MB1	S	99LE1296	N/A	10/25/99	10/28/99
LBLKE	MB1 LS	S	99LF1296	N/A	10/25/99	10/28/99

Recra LabNet - Lionville Laboratory
RNA ANALYTICAL DATA PACKAGE FOR
TNC-HANFORD B99-078

DATE RECEIVED: 10/20/99 RPW LOT # :99101441

CLIENT ID	RPW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WN16	001	S	99LE1296	10/14/99	10/25/99	10/28/99
B0WN17	002	S	99LE1296	10/14/99	10/25/99	10/28/99
B0WN18	003	S	99LE1296	10/14/99	10/25/99	10/28/99
B0WN18	003 MS	S	99LE1296	10/14/99	10/25/99	10/28/99
B0WN18	003 MSD	S	99LE1296	10/14/99	10/25/99	10/28/99

LAB QC:

SPIKE	MB1	S	99LE1296	N/A	10/25/99	10/28/99
SPIKE	MB1 BS	S	99LE1296	N/A	10/25/99	10/28/99

RECRA LabNet Use Only

9910L420

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(4) metals

Client TNU HANFORD B99-078

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC spec Del std TAT 30 day

Date Rec'd 10/19/99 Date Due 11/18/99

Account #

Refrigerator #		1	2														
#/Type Container	Liquid																
	Solid	1AG	1AG						1AG			1AG				1AG	
Volume	Liquid																
	Solid	250	500						250			500				1LT	
Preservatives		—							—			—				—	
ANALYSES REQUESTED	ORGANIC	VOA	BNA	~~Pest~~ PCB	~~Herb~~	TPH	PH			INORG	ICP Metal	CN				IC Anions	

RECRA LabNet Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	CE24H	CEPSC	CE25H	CDRO	CPCB	TPH	MetC	RNTC	AnIC
S - Soil	001	BOWN11			S	10/14/99	0815	1	1			1	1	1	1	1
SE - Sediment	002	12					0834	1	1			1	1	1	1	1
SO - Solid	003	13					0849	1	1			1	1	1	1	1
SL - Sludge	004	14					0858	1	1			1	1	1	1	1
W - Water																
O - Oil																
A - Air																
DS - Drum Solids																
DL - Drum Liquids																
L - EP/TCLP Leachate																
WI - Wipe																
X - Other																
F - Fish																

11/3/99
SB and TL added to all metals samples per client

Special Instructions:

Ref # B99-078

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
MetC = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
3. Se, Ag, V, Zn, Hg, ICR6
AnIC = IN3N2, ICCL, ICFL, ICNO2, ICNO3
5. ICPO4, ICSO4, ISFD, INH3N
6.

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. 4.3 °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	10/19/99	0915

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

4235 7953 0521

Bechtel Hanford Inc.
99106420

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-138

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 B pond		SAF No.: B99-078
Ice Chest No.: ERC - 96-039	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA~~/RECRA B2B 10-14-99	Offsite Property No.: A990301		Bill of Lading/Air Bill No.: 4235 7953 0521
			COA: B20CW1 67/C

Price Code: 8N

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

Cpm	Sample No.	Matrix *	Sample Date	Sample Time										
340	BOWN11	Soil	10-14-99	0815		X	X	X	X	X				
220	BOWN12	Soil	10-14-99	0834		X	X	X	X	X				
273	BOWN13	Soil	10-14-99	0849		X	X	X	X	X				
224	BOWN14	Soil	10-14-99	0858		X	X	X	X	X				

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	10-14-99/1105	Ref 1A	10-14-99/1105
Ref 1A	10-18-99/1015	Doug Bowers	10-18-99/1015
Doug Bowers	10-18-99/1015	Fed Ex	
Fed Ex	10/19/99 0915	[signature]	10-19-99 0915

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) 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
(2) NO2/NO3 - 353.1, IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030, Ammonia - 350.3, Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155), Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

use BOW8C1 as T-A.

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
9910L441

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

Client: TPU Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: Orlette Johnson
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 10-20-99 Date Due: 11/19/99
Account #:

Refrigerator #		2	2
#/Type Container	Liquid		
	Solid	1PG 1PG	1PG 1PG, 1PG
Volume	Liquid		
	Solid	250 500	500 250 1000
Preservatives		– –	– – –

ANALYSES REQUESTED →

ORGANIC				INORG			
VOA	BNA	Pest/PCB	Herb	Metal	CN	Fe	Inorg

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	8270	8260	8270	8081	Met (1)	1CN-TO	1 PH	Inorg (1)
001	BW0N16			S	10-19-99	0907	✓	✓	X		✓	X	✓	✓
002	BW0N17			⊥	⊥	0914	✓	✓	X		✓	X	✓	✓
003	BW0N18					0924	✓	✓	X		✓	X	✓	✓

11/3/99
SB and TL added to all metals samples per client

Special Instructions:
Sef # B99-078

COMPOSITE WASTE

DATE/REVISIONS:
Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
Anig (1) 3. 1N3N2, 1CCL, 1CFL, 1SO4, 1CNO2,
4. 1CNO3, 1CPO4, 1SFD, 1NH3N, 1CR6
5.
6. Run Matrix QC

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
AirBill # 4235795 50532
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 5.0 °C

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

Relinquished by	Received by	Date	Time
FedEx	TMurray	10-20-99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-139

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	SAF No.: B99-078	
Ice Chest No.: ERC 96-030	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: TMA/RECRA D70 10-14-99	Offsite Property No.: A990301	Bill of Lading/Air Bill No.: 4235 7953 0532	
		COA: B20CW1 671C	

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

cpm	Sample No.	Matrix *	Sample Date	Sample Time										
142	BOWN16	Soil	10-14-99	0907					X	X	X	X	X	
260	BOWN17	Soil	10-14-99	0914					X	X	X	X	X	
248	BOWN18	Soil	10-14-99	0924					X	X	X	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers (Bowers D/B 10-14-99)	10-14-99/1105	Ref 1A	10-14-99/1105
Ref 1A	10-18-99/1015	Doug Bowers	10-18-99/1015
Doug Bowers	10-18-99/1015	Fed Ex	
Fed Ex	10-20-99 0930	T Murray	10-20-99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) 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

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

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

use BOW8C1 AS TA

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

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

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

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW # : 9910L420, 9910L441
SDG/SAF #: H0578/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 10-19,20-99

GC/MS VOLATILE

Seven (7) soil samples were collected on 10-14-99.

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 10-28, 29-99 and 11-10-99.

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

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

2. The required holding time for analysis was not met for the reanalysis of B0WN18 and the matrix spike analyses of sample B0WN11. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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

4. Five (5) of forty-five (45) surrogate recoveries were outside EPA QC limits. Sample B0WN18 was reanalyzed on 10-29-99 and reported. The surrogate recoveries of 1,2-Dichloroethane-d4 were biased high for samples B0WN16 and B0WN17; however, no target compounds were detected at a significant level; consequently, samples were not reanalyzed.

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/or Acetone at levels less than 2x the CRQL. The method blanks 99LVX116-MB1 and 99LVX916-MB1 also contained the target compounds 2-Butanone and 2-Hexanone at levels less than the CRQL. The method blank 99LVN356-MB1 also contained the target compound Bromomethane at a level less than the CRQL.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

12-03-99
Date

som\group\data\voa\tna0s420&441.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.

mmz\10-94\gloss.voa

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.voa

Recra LabNet Philadelphia **Sample Discrepancy Report (SDR)** SDR #: 99VT203

Initiator: Dzuczak RFW Batch: 9910L441, 420 Parameter: 0624
Date: 11/4/99 Samples: 003, MS/MSD Matrix: Soil
Client: TNU Method: SW846/MCAWW/CLP/ Prep Batch: —

1. Reason for SDR

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

b. General Discrepancy

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

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

c. QC Problem (Include all relevant specific results; attach data if necessary) ① Sample 9910L441-003 was Run 1 day out of hold. (Matrix QC) was never Run on this batch. We can do analyses now or perhaps these could be SDG'd with another batch. Please advise ② MS/MSD never analyzed for batch 420 - should we do now out of hold.?

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

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

Other Description:

Both batches 441 + 420 are client SDG's run one set of QC (out of hold) on either batch

4. Project Manager Instructions...signature/date: [signature] 11/4/99

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 11/8/99 Other Explanation:

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

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

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

L-WI-006/E-03/99

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 11/27/99 18:4

RFW Batch Number: **9910L420** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0WN11		B0WN11		B0WN11		B0WN12		B0WN13		B0WN14	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		004	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.962		1.00		1.00		1.00		0.962		0.980	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	114	%	103	%	102	%	104	%	103	%	103	%
	Bromofluorobenzene	100	%	86	%	89	%	103	%	103	%	102	%
	1,2-Dichloroethane-d4	116	%	90	%	95	%	115	%	108	%	114	%
Chloromethane		11	U	12	U	12	U	11	U	10	U	11	U
Bromomethane		11	U	12	U	12	U	11	U	10	U	11	U
Vinyl Chloride		11	U	12	U	12	U	11	U	10	U	11	U
Chloroethane		11	U	12	U	12	U	11	U	10	U	11	U
Methylene Chloride		24	B	12	B	9	B	19	B	17	B	16	B
Acetone		15	B	3	J	4	J	12	B	13	B	10	JB
Carbon Disulfide		6	U	6	U	6	U	6	U	5	U	6	U
1,1-Dichloroethene		6	U	103	%	99	%	6	U	5	U	6	U
1,1-Dichloroethane		6	U	6	U	6	U	6	U	5	U	6	U
1,2-Dichloroethene (total)		6	U	6	U	6	U	6	U	5	U	6	U
Chloroform		6	U	6	U	6	U	6	U	5	U	6	U
1,2-Dichloroethane		6	U	6	U	6	U	6	U	5	U	6	U
2-Butanone		11	U	12	U	12	U	11	U	10	U	11	U
1,1,1-Trichloroethane		6	U	6	U	6	U	6	U	5	U	6	U
Carbon Tetrachloride		6	U	6	U	6	U	6	U	5	U	6	U
Bromodichloromethane		6	U	6	U	6	U	6	U	5	U	6	U
1,2-Dichloropropane		6	U	6	U	6	U	6	U	5	U	6	U
cis-1,3-Dichloropropene		6	U	6	U	6	U	6	U	5	U	6	U
Trichloroethene		6	U	90	%	95	%	6	U	5	U	6	U
Dibromochloromethane		6	U	6	U	6	U	6	U	5	U	6	U
1,1,2-Trichloroethane		6	U	6	U	6	U	6	U	5	U	6	U
Benzene		6	U	94	%	101	%	6	U	5	U	6	U
Trans 1,3-Dichloropropene		6	U	6	U	6	U	6	U	5	U	6	U
Bromoform		6	U	6	U	6	U	6	U	5	U	6	U
4-Methyl-2-pentanone		11	U	12	U	12	U	11	U	10	U	11	U
2-Hexanone		11	U	12	U	12	U	11	U	10	U	11	U
Tetrachloroethene		2	J	1	J	6	U	6	U	5	U	6	U
1,1,2,2-Tetrachloroethane		6	U	6	U	6	U	6	U	5	U	6	U
Toluene		6	U	93	%	99	%	6	U	5	U	6	U

** Outside of EPA CLP QC limits.

RFW Batch Number: 9910L420 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1b

Cust ID:	B0WN11	B0WN11	B0WN11	B0WN12	B0WN13	B0WN14
RFW#:	001	001 MS	001 MSD	002	003	004
Chlorobenzene	6 U	86 %	94 %	6 U	5 U	6 U
Ethylbenzene	6 U	6 U	6 U	6 U	5 U	6 U
Styrene	6 U	6 U	6 U	6 U	5 U	6 U
Xylene (total)	6 U	6 U	6 U	6 U	5 U	6 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 11/27/99 18:4

RFW Batch Number: **9910L420** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

	Cust ID:	**VBLKXS**		**VBLKAD**		**VBLKAD BS**	
Sample Information	RFW#:	**99LVX116-MB1**		**99LVH539-MB1**		**99LVH539-MB1**	
	Matrix:	SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	107	%	98	%	99	%
	Bromofluorobenzene	109	%	95	%	98	%
	1,2-Dichloroethane-d4	116	%	95	%	101	%
Chloromethane		10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U
Methylene Chloride		7		13		15	B
Acetone		9	J	10	U	10	U
Carbon Disulfide		5	U	5	U	5	U
1,1-Dichloroethene		5	U	5	U	93	%
1,1-Dichloroethane		5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U
Chloroform		5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U
2-Butanone		3	J	10	U	10	U
1,1,1-Trichloroethane		5	U	5	U	5	U
Carbon Tetrachloride		5	U	5	U	5	U
Bromodichloromethane		5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U
Trichloroethene		5	U	5	U	95	%
Dibromochloromethane		5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U
Benzene		5	U	5	U	101	%
Trans-1,3-Dichloropropene		5	U	5	U	5	U
Bromoform		5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U
2-Hexanone		2	J	10	U	10	U
Tetrachloroethene		5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U
Toluene		5	U	5	U	93	%

*= Outside of EPA CLP QC limits.

Lab ID:	VBLKXS	VBLKAD	VBLKAD BS
RFW#:	99LVX116-MB1	99LVH539-MB1	99LVH539-MB1
Chlorobenzene	5 U	5 U	94 %
Ethylbenzene	5 U	5 U	5 U
Styrene	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 12/02/99 10:04

RFW Batch Number: **9910L441** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0WN16	B0WN17	B0WN18	B0WN18	VBLKZB	VBLKYZ
Sample Information	RFW#:	001	002	003	003	99LVX916-MB1	99LVN356-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	0.943	1.02	0.962	1.02	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG REPREP	UG/KG	UG/KG
Surrogate recovery	Toluene-d8	114 %	108 %	113 %	79 * %	107 %	104 %
	Bromofluorobenzene	114 %	109 %	99 %	68 * %	109 %	92 %
	1,2-Dichloroethane-d4	128 * %	124 * %	128 * %	91 %	116 %	120 %
Chloromethane		10 U	11 U	10 U	11 U	10 U	10 U
Bromomethane		10 U	11 U	10 U	11 U	10 U	3 J
Vinyl Chloride		10 U	11 U	10 U	11 U	10 U	10 U
Chloroethane		10 U	11 U	10 U	11 U	10 U	10 U
Methylene Chloride		16 B	16 B	5 B	12 B	7	4 J
Acetone		14 B	5 JB	10 U	3 JB	9 J	2 J
Carbon Disulfide		5 U	6 U	5 U	6 U	5 U	5 U
1,1-Dichloroethene		5 U	6 U	5 U	6 U	5 U	5 U
1,1-Dichloroethane		5 U	6 U	5 U	6 U	5 U	5 U
1,2-Dichloroethene (total)		5 U	6 U	5 U	6 U	5 U	5 U
Chloroform		5 U	6 U	5 U	6 U	5 U	5 U
1,2-Dichloroethane		5 U	6 U	5 U	6 U	5 U	5 U
2-Butanone		10 U	11 U	10 U	11 U	3 J	10 U
1,1,1-Trichloroethane		5 U	6 U	5 U	6 U	5 U	5 U
Carbon Tetrachloride		5 U	6 U	5 U	6 U	5 U	5 U
Bromodichloromethane		5 U	6 U	5 U	6 U	5 U	5 U
1,2-Dichloropropane		5 U	6 U	5 U	6 U	5 U	5 U
cis-1,3 Dichloropropene		5 U	6 U	5 U	6 U	5 U	5 U
Trichloroethene		5 U	6 U	5 U	6 U	5 U	5 U
Dibromochloromethane		5 U	6 U	5 U	6 U	5 U	5 U
1,1,2 Trichloroethane		5 U	6 U	5 U	6 U	5 U	5 U
Benzene		5 U	6 U	5 U	6 U	5 U	5 U
Trans-1,3-Dichloropropene		5 U	6 U	5 U	6 U	5 U	5 U
Bromoform		5 U	6 U	5 U	6 U	5 U	5 U
4-Methyl-2-pentanone		10 U	11 U	10 U	11 U	10 U	10 U
2-Hexanone		10 U	11 U	10 U	11 U	2 J	10 U
Tetrachloroethene		5 U	6 U	5 U	6 U	5 U	5 U
1,1,2,2-Tetrachloroethane		5 U	6 U	5 U	6 U	5 U	5 U
Toluene		5 U	6 U	5 U	6 U	5 U	5 U

*= Outside of EPA CLP QC limits.

12-02-99

RFW Batch Number: 9910L441 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1b

Lab ID:	B0WN16	B0WN17	B0WN18	B0WN18	VBLKZB	VBLKYZ
RFW#:	001	002	003	003 REPREP	99LVX916-MB1	99LVN356-MB1
Chlorobenzene	5 U	6 U	5 U	6 U	5 U	5 U
Ethylbenzene	5 U	6 U	5 U	6 U	5 U	5 U
Styrene	5 U	6 U	5 U	6 U	5 U	5 U
Xylene (total)	5 U	6 U	5 U	6 U	5 U	5 U

*= Outside of EPA CLP QC limits.

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

DATE RECEIVED: 10/19/99 RFW LOT # :9910L420

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOWN11	001	S	99LVX116	10/14/99	N/A	10/28/99
BOWN11	001 MS	S	99LVH539	10/14/99	N/A	11/10/99
BOWN11	001 MSD	S	99LVH539	10/14/99	N/A	11/10/99
BOWN12	002	S	99LVX116	10/14/99	N/A	10/28/99
BOWN13	003	S	99LVX116	10/14/99	N/A	10/28/99
BOWN14	004	S	99LVX116	10/14/99	N/A	10/28/99

LAB QC:

VBLKXS	MB1	S	99LVX116	N/A	N/A	10/28/99
VBLKAD	MB1	S	99LVH539	N/A	N/A	11/10/99
VBLKAD	MB1 BS	S	99LVH539	N/A	N/A	11/10/99

JW 11-29-99

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

DATE RECEIVED: 10/20/99 RFW LOT # :9910L441

CLIENT ID	RFW #		MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
F0WN16	001		S	99LVX916	10/14/99	N/A	10/28/99
F0WN17	002		S	99LVX916	10/14/99	N/A	10/28/99
F0WN18	003		S	99LVN356	10/14/99	N/A	10/29/99
F0WN18	003	R1	S	99LVN356	10/14/99	N/A	10/29/99

LAB QC:

VELKZB	MB1		S	99LVX916	N/A	N/A	10/28/99
VELKYZ	MB1		S	99LVN356	N/A	N/A	10/29/99

12.03.99

RECRA LabNet Use Only

9910L420

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

Client TNU-HANFORD B99-078

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC spec Del std TAT 30 days

Date Rec'd 10/19/99 Date Due 11/18/99

Account #

Refrigerator #		1	2														
#/Type Container	Liquid																
	Solid	1AG	1AG						1AG			1AG					
Volume	Liquid																
	Solid	250	500						250			500				1LT	
Preservatives		—							—			—				—	
ANALYSES REQUESTED	ORGANIC	VOA	BNA	~~Pest~~ PCB	~~Herb~~	TPH	PH			INORG	Metal	CN		IC Anions			

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	RECRA LabNet Use Only: 8021H	8015C	8022H	CDRO	CPCB		IPH		Metals	ICNTC		Anions		
S - Soil	001	BOWN 11			S	10/14/99	0815	1	1	1				1		1	1		1		
SE - Sediment	002	12					0834	1	1	1				1		1	1		1		
SO - Solid	003	13					0849	1	1	1				1		1	1		1		
SL - Sludge	004	14					0858	1	1	1				1		1	1		1		
W - Water																					
O - Oil																					
A - Air																					
DS - Drum Solids																					
DL - Drum Liquids																					
L - EP/TCLP Leachate																					
WI - Wipe																					
X - Other																					
F - Fish																					

11/3/99
SB and TL added to all metals samples per client

Special Instructions:

Sref # B99-078

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
Met ① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
3. Se, Ag, V, Zn, Hg, ICR6
Ang ① = IN3N2, ICCL, ICFL, ICNO2, ICNO3
5. ICPO4, ICSO4, ISFD, INH3N
6.

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. 4.3 °C

Relinquished by	Received by	Date	Time
[signature]	[signature]	10/19/99	0915

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

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

4235 7953 0521

Bechtel Hanford Inc.
99106420

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-138 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 B pond		SAF No.: B99-078
Ice Chest No.: ERC - 96-039	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA~~/RECRA DJB 10-14-99	Offsite Property No.: A990301		Bill of Lading/Air Bill No.: 4235 7953 0521
			COA: B20CW1 67/C

Price Code: 8N

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

Cpm	Sample No.	Matrix *	Sample Date	Sample Time										
340	BOWN11	Soil	10-14-99	0815		X	X	X	X	X				
220	BOWN12	Soil	10-14-99	0834		X	X	X	X	X				
273	BOWN13	Soil	10-14-99	0849		X	X	X	X	X				
224	BOWN14	Soil	10-14-99	0858		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 10-14-99/1105	Received By: Ref 1A	Date/Time: 10-14-99/1105
Relinquished By: Ref 1A	Date/Time: 10-18-99/1015	Received By: Doug Bowers	Date/Time: Doug Bowers 10-18-99/1015
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 10-18-99/1015	Received By: Fed EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10/19/99 0915	Received By: [signature]	Date/Time: 10-19-99 0915

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) 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

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

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

use BOW8C1 as T-A.

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

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

Tank 4-3

RECRA LabNet Use Only

9910L441

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

A11

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

Client: TNU Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: Orlette Johnson
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 10-20-99 Date Due: 11/19/99
Account #:

Refrigerator #		2	2	
#/Type Container	Liquid			
	Solid	1AG 1AG	1AG	1AG 1AG
Volume	Liquid			
	Solid	250 500	500	250 1000
Preservatives		– –	–	– –

ANALYSES REQUESTED: ORGANIC (VOA, BNA, Pest/PCB, Herb); INORG (Metal, CN); ICl; Inorg

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	MS	MSD	Matrix	Date Collected	Time Collected	CZ24H	CZ15C	CZ25H	CDRO	CP48	Met①	ICNTO	IPH	Ang①
001	B0WN16			S	10-14-99	0907	✓	✓	X			✓	X	✓	✓
002	B0WN17			↓	↓	0914	✓	✓	X			✓	X	✓	✓
003	B0WN18					0924	✓	✓	X			✓	X	✓	✓

11/3/99
SB and TL added to all metals samples per client

Special Instructions:
SAF # B99-078

COMPOSITE WASTE

DATE/REVISIONS:
1. Met① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
3. Ang① = IN3N2, ICCL, ICFL, ICSO4, ICNO2,
4. ICNO3, ICPO4, ISFD, INH3N, ICR6
5.
6. Rein Matrix QC

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 423579530632
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 5.0 °C

Relinquished by	Received by	Date	Time
FedEx	TMurray	102099	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-139 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 B pond	SAF No.: B99-078	
Ice Chest No.: ERC 96-030	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: TMA/RECRA D70 10-14-99	Offsite Property No.: A990301	Bill of Lading/Air Bill No.: 4235 7953 0532	
		COA: B20CW1 671C	

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

pm	Sample No	Matrix *	Sample Date	Sample Time										
42	BOWN16	Soil	10-14-99	0907					X	X	X	X	X	
260	BOWN17	Soil	10-14-99	0914					X	X	X	X	X	
248	BOWN18	Soil	10-14-99	0924					X	X	X	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug ~~Bowers~~ Bowers B/B 10-14-99 Doug Bowers	10-14-99/1105	Ref 1A	10-14-99/1105
Ref 1A	10-18-99/1015	Doug Bowers	10-18-99/1015
Doug Bowers Doug Bowers	10-18-99/1015	Fed Ex	
Fed Ex	10-20-99 0930	T Murray	10-20-99 0930

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) 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

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

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

use BOW8C1 AS TA

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

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