RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

0052665

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9910L453
SDG# : H0584
SAF# : B99-078

W.O. # : 10985-001-001-9999-00
Date Received: 10-21-99

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 Nitrate Nitrite which was below the control limits which may be attributed to sample inhomogeneity.

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.

RECEIVED
FEB 28 2000
EDMC

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-22-99
Date

njp\i10-453

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 19 pages.

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

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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(M)

L-WI-034/B-06/99

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METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

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INORGANICS DATA SUMMARY REPORT 11/19/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L453

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WMY1	% Solids	94.2		%	0.01	1.0
		Chloride by IC	53.0		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	130		MG/KG	6.6	5.0
		Cyanide, Total	0.53	u	MG/KG	0.53	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	89.9		MG/KG	6.6	5.0
		Nitrate Nitrite	23.8		MG/KG	0.95	5.0
		Ammonia, as N	1.7		MG/KG	1.3	1.0
		pH	7.9		SOIL PH	0.01	1.0
		Sulfide	3.9		MG/KG	2.1	1.0
-002	B0WMY2	% Solids	80.0		%	0.01	1.0
		Chloride by IC	43.9		MG/KG	1.6	1.0
		Fluoride by IC	3.1	u	MG/KG	3.1	1.0
		Nitrite by IC	1.6	u	MG/KG	1.6	1.0
		Nitrate by IC	39		MG/KG	1.6	1.0
		Cyanide, Total	0.62	u	MG/KG	0.62	1.0
		Phosphate by IC	1.6	u	MG/KG	1.6	1.0
		Chromium VI	0.50	u	MG/KG	0.50	1.0
		Sulfate by IC	75.1		MG/KG	7.8	5.0
		Nitrate Nitrite	8.1		MG/KG	0.25	1.0
		Ammonia, as N	1.6	u	MG/KG	1.6	1.0
		pH	8.0		SOIL PH	0.01	1.0
		Sulfide	2.5	u	MG/KG	2.5	1.0
-003	B0WMY3	% Solids	57.6		%	0.01	1.0
		Chloride by IC	25.4		MG/KG	2.2	1.0
		Fluoride by IC	4.3	u	MG/KG	4.3	1.0
		Nitrite by IC	2.2	u	MG/KG	2.2	1.0
		Nitrate by IC	35		MG/KG	2.2	1.0
		Cyanide, Total	0.87	u	MG/KG	0.87	1.0
		Phosphate by IC	2.2	u	MG/KG	2.2	1.0
		Chromium VI	0.70	u	MG/KG	0.70	1.0
		Sulfate by IC	29.0		MG/KG	2.2	1.0
		Nitrate Nitrite	6.6		MG/KG	0.33	1.0
		Ammonia, as N	2.2	u	MG/KG	2.2	1.0
		pH	7.9		SOIL PH	0.01	1.0

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INORGANICS DATA SUMMARY REPORT 11/19/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L453

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0WMY3	Sulfide	3.5	u	MG/KG	3.5	1.0
-004	B0WMY4	% Solids	84.3		%	0.01	1.0
		Chloride by IC	16.9		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	2.3		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	0.48	u	MG/KG	0.48	1.0
		Sulfate by IC	12.5		MG/KG	1.5	1.0
		Nitrate Nitrite	0.45		MG/KG	0.22	1.0
		Ammonia, as N	1.5	u	MG/KG	1.5	1.0
		pH	7.9		SOIL PH	0.01	1.0
		Sulfide	4.7		MG/KG	2.4	1.0
-005	B0WMY6	% Solids	91.1		%	0.01	1.0
		Chloride by IC	20.1		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	31		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	27.1		MG/KG	1.4	1.0
		Nitrate Nitrite	6.4		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.2		SOIL PH	0.01	1.0
		Sulfide	3.7		MG/KG	2.2	1.0
-006	B0WMY7	% Solids	92.7		%	0.01	1.0
		Chloride by IC	2.4		MG/KG	1.3	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	1.9		MG/KG	1.3	1.0
		Cyanide, Total	0.54	u	MG/KG	0.54	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	2.9		MG/KG	1.3	1.0
		Nitrate Nitrite	0.28		MG/KG	0.21	1.0

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INORGANICS DATA SUMMARY REPORT 11/19/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L453

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	B0WMY7	Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.8		SOIL PH	0.01	1.0
		Sulfide	4.1		MG/KG	2.2	1.0
-007	B0WMY8	% Solids	96.8		%	0.01	1.0
		Chloride by IC	2.4		MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	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	2.3		MG/KG	1.3	1.0
		Nitrate Nitrite	0.30		MG/KG	0.19	1.0
		Ammonia, as N	1.2	u	MG/KG	1.2	1.0
		pH	8.8		SOIL PH	0.01	1.0
		Sulfide	3.8		MG/KG	2.1	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/19/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9910L453

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LIC097-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	99LIC098-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	99LVI078-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	99LAM043-MB1	Ammonia, as N	1.2	u	MG/KG	1.2	1.0
BLANK10	99LSD061-MB1	Sulfide	2.0	u	MG/KG	2.0	1.0

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INORGANICS ACCURACY REPORT 11/19/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L453

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WMY1	Chloride by IC	302	53.0	265	93.9	10.0
		Fluoride by IC	55.5	0.38	53.1	103.9	1.0
		Nitrite by IC	27	1.3 u	27	100.9	1.0
		Nitrate by IC	390	130	270	98.3	10
		Phosphate by IC	27.4	1.3 u	26.5	103.4	1.0
		Sulfate by IC	350	89.9	265	98.0	10.0
		Nitrate Nitrite	25.9	23.8	5.1	39.3*	5.0
-002	B0WMY2	Ammonia, as N	83.9	1.6 u	85.2	98.5	1.0
-005	B0WMY6	Cyanide, Total	5.5	0.55u	5.5	100.2	1.0
-007	B0WMY8	Soluble Chromium VI	4.2	0.41u	4.1	101.5	1.0
		Insoluble Chromium VI	1120	0.41u	1180	95.0	100
		Sulfide	301	3.8	351	84.5	1.0
BLANK10	99LIC097-MB1	Chloride by IC	23.8	1.2 u	25.0	95.1	1.0
		Fluoride by IC	52.4	2.5 u	50.0	104.8	1.0
		Nitrite by IC	24	1.2 u	25	96.8	1.0
		Nitrate by IC	24	1.2 u	25	97.3	1.0
		Phosphate by IC	25.6	1.2 u	25.0	102.3	1.0
		Sulfate by IC	23.9	1.2 u	25.0	95.6	1.0
BLANK10	99LIC098-MB1	Chloride by IC	23.5	1.2 u	25.0	94.0	1.0
		Fluoride by IC	48.7	2.5 u	50.0	97.3	1.0
		Nitrite by IC	24	1.2 u	25	96.1	1.0
		Nitrate by IC	24	1.2 u	25	94.6	1.0
		Phosphate by IC	25.3	1.2 u	25.0	101.2	1.0
		Sulfate by IC	23.9	1.2 u	25.0	95.5	1.0
BLANK10	99LVI078-MB1	Soluble Chromium VI	4.0	0.40u	4.0	100.4	1.0
		Insoluble Chromium VI	1120	0.40u	1160	96.3	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	99LAM043-MB1	Ammonia, as N	50.0	1.2 u	50.0	100	1.0
		Ammonia, as N MSD	48.0	1.2 u	50.0	96.0	1.0
BLANK10	99LSD061-MB1	Sulfide	9.3	2.0 u	10.0	93.0	1.0

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INORGANICS DUPLICATE SPIKE REPORT 11/19/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L453

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	99LAM043-MB1	Ammonia, as N	100	96.0	4.1

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INORGANICS PRECISION REPORT 11/19/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L453

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WMY1	% Solids	94.2	90.6	3.9	1.0
		Chloride by IC	53.0	49.5	6.8	1.0
		Fluoride by IC	2.7 u	2.7 u	NC	1.0
		Nitrite by IC	1.3 u	1.3 u	NC	1.0
		Nitrate by IC	130	130	3.0	5.0
		Phosphate by IC	1.3 u	1.3 u	NC	1.0
		Sulfate by IC	89.9	89.1	0.81	5.0
		Nitrate Nitrite	23.8	28.8	18.8	5.0
		pH	7.9	7.9	0.0	1.0
-002REP	B0WMY2	Ammonia, as N	1.6 u	1.5 u	NC	1.0
-005REP	B0WMY6	Cyanide, Total	0.55u	0.55u	NC	1.0
-007REP	B0WMY8	Chromium VI	0.41u	0.41u	NC	1.0
		Sulfide	3.8	2.1 u	NC	1.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/19/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L453

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

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 10/21/99 RFW LOT # :9910L453

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WMY1						
% SOLIDS	001	S	99LSS142	10/19/99	10/26/99	10/27/99
% SOLIDS	001 REP	S	99LSS142	10/19/99	10/26/99	10/27/99
CHLORIDE BY IC	001	S	99LIC097	10/19/99	11/16/99	11/16/99
CHLORIDE BY IC	001 REP	S	99LIC097	10/19/99	11/16/99	11/16/99
CHLORIDE BY IC	001 MS	S	99LIC098	10/19/99	11/17/99	11/17/99
FLUORIDE BY IC	001	S	99LIC097	10/19/99	11/16/99	11/16/99
FLUORIDE BY IC	001 REP	S	99LIC097	10/19/99	11/16/99	11/16/99
FLUORIDE BY IC	001 MS	S	99LIC098	10/19/99	11/17/99	11/17/99
NITRITE BY IC	001	S	99LIC097	10/19/99	11/16/99	11/16/99
NITRITE BY IC	001 REP	S	99LIC097	10/19/99	11/16/99	11/16/99
NITRITE BY IC	001 MS	S	99LIC098	10/19/99	11/17/99	11/17/99
NITRATE BY IC	001	S	99LIC098	10/19/99	11/17/99	11/17/99
NITRATE BY IC	001 REP	S	99LIC098	10/19/99	11/17/99	11/17/99
NITRATE BY IC	001 MS	S	99LIC098	10/19/99	11/17/99	11/17/99
TOTAL CYANIDE	001	S	99LC121	10/19/99	10/26/99	10/27/99
PHOSPHATE BY IC	001	S	99LIC097	10/19/99	11/16/99	11/16/99
PHOSPHATE BY IC	001 REP	S	99LIC097	10/19/99	11/16/99	11/16/99
PHOSPHATE BY IC	001 MS	S	99LIC098	10/19/99	11/17/99	11/17/99
CHROMIUM VI	001	S	99LVI078	10/19/99	10/27/99	10/27/99
SULFATE BY IC	001	S	99LIC098	10/19/99	11/17/99	11/17/99
SULFATE BY IC	001 REP	S	99LIC098	10/19/99	11/17/99	11/17/99
SULFATE BY IC	001 MS	S	99LIC098	10/19/99	11/17/99	11/17/99
NITRATE NITRITE	001	S	99LN3054	10/19/99	11/09/99	11/11/99
NITRATE NITRITE	001 REP	S	99LN3054	10/19/99	11/09/99	11/11/99
NITRATE NITRITE	001 MS	S	99LN3054	10/19/99	11/09/99	11/11/99
AMMONIA	001	S	99LAM043	10/19/99	11/08/99	11/08/99
PH	001	S	99LPH116	10/19/99	10/27/99	10/27/99
PH	001 REP	S	99LPH116	10/19/99	10/27/99	10/27/99
SULFIDE	001	S	99LSD061	10/19/99	10/24/99	10/24/99
B0WMY2						
% SOLIDS	002	S	99LSS142	10/19/99	10/26/99	10/27/99
CHLORIDE BY IC	002	S	99LIC097	10/19/99	11/16/99	11/16/99
FLUORIDE BY IC	002	S	99LIC097	10/19/99	11/16/99	11/16/99

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

DATE RECEIVED: 10/21/99 RFW LOT # :9910L453

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRITE BY IC	002	S	99LIC097	10/19/99	11/16/99	11/16/99
NITRATE BY IC	002	S	99LIC097	10/19/99	11/16/99	11/16/99
TOTAL CYANIDE	002	S	99LC121	10/19/99	10/26/99	10/27/99
PHOSPHATE BY IC	002	S	99LIC097	10/19/99	11/16/99	11/16/99
CHROMIUM VI	002	S	99LVI078	10/19/99	10/27/99	10/27/99
SULFATE BY IC	002	S	99LIC098	10/19/99	11/17/99	11/17/99
NITRATE NITRITE	002	S	99LN3054	10/19/99	11/09/99	11/11/99
AMMONIA	002	S	99LAM043	10/19/99	11/08/99	11/08/99
AMMONIA	002 REP	S	99LAM043	10/19/99	11/08/99	11/08/99
AMMONIA	002 MS	S	99LAM043	10/19/99	11/08/99	11/08/99
PH	002	S	99LPH116	10/19/99	10/27/99	10/27/99
SULFIDE	002	S	99LSD061	10/19/99	10/24/99	10/24/99
B0WMY3						
% SOLIDS	003	S	99LSS142	10/19/99	10/26/99	10/27/99
CHLORIDE BY IC	003	S	99LIC097	10/19/99	11/16/99	11/16/99
FLUORIDE BY IC	003	S	99LIC097	10/19/99	11/16/99	11/16/99
NITRITE BY IC	003	S	99LIC097	10/19/99	11/16/99	11/16/99
NITRATE BY IC	003	S	99LIC097	10/19/99	11/16/99	11/16/99
TOTAL CYANIDE	003	S	99LC121	10/19/99	10/26/99	10/27/99
PHOSPHATE BY IC	003	S	99LIC097	10/19/99	11/16/99	11/16/99
CHROMIUM VI	003	S	99LVI078	10/19/99	10/27/99	10/27/99
SULFATE BY IC	003	S	99LIC097	10/19/99	11/16/99	11/16/99
NITRATE NITRITE	003	S	99LN3054	10/19/99	11/09/99	11/11/99
AMMONIA	003	S	99LAM043	10/19/99	11/08/99	11/08/99
PH	003	S	99LPH116	10/19/99	10/27/99	10/27/99
SULFIDE	003	S	99LSD061	10/19/99	10/24/99	10/24/99
B0WMY4						
% SOLIDS	004	S	99LSS142	10/19/99	10/26/99	10/27/99
CHLORIDE BY IC	004	S	99LIC097	10/19/99	11/16/99	11/16/99
FLUORIDE BY IC	004	S	99LIC097	10/19/99	11/16/99	11/16/99
NITRITE BY IC	004	S	99LIC097	10/19/99	11/16/99	11/16/99
NITRATE BY IC	004	S	99LIC097	10/19/99	11/16/99	11/16/99
TOTAL CYANIDE	004	S	99LC121	10/19/99	10/26/99	10/27/99
PHOSPHATE BY IC	004	S	99LIC097	10/19/99	11/16/99	11/16/99

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

DATE RECEIVED: 10/21/99 RFW LOT # :9910L453

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	004	S	99LVI078	10/19/99	10/27/99	10/27/99
SULFATE BY IC	004	S	99LIC097	10/19/99	11/16/99	11/16/99
NITRATE NITRITE	004	S	99LN3054	10/19/99	11/09/99	11/11/99
AMMONIA	004	S	99LAM043	10/19/99	11/08/99	11/08/99
PH	004	S	99LPH116	10/19/99	10/27/99	10/27/99
SULFIDE	004	S	99LSD061	10/19/99	10/24/99	10/24/99
B0WMY6						
% SOLIDS	005	S	99LSS142	10/19/99	10/26/99	10/27/99
CHLORIDE BY IC	005	S	99LIC097	10/19/99	11/16/99	11/16/99
FLUORIDE BY IC	005	S	99LIC097	10/19/99	11/16/99	11/16/99
NITRITE BY IC	005	S	99LIC097	10/19/99	11/16/99	11/16/99
NITRATE BY IC	005	S	99LIC097	10/19/99	11/16/99	11/16/99
TOTAL CYANIDE	005	S	99LC121	10/19/99	10/26/99	10/27/99
TOTAL CYANIDE	005 REP	S	99LC121	10/19/99	10/26/99	10/27/99
TOTAL CYANIDE	005 MS	S	99LC121	10/19/99	10/26/99	10/27/99
PHOSPHATE BY IC	005	S	99LIC097	10/19/99	11/16/99	11/16/99
CHROMIUM VI	005	S	99LVI078	10/19/99	10/27/99	10/27/99
SULFATE BY IC	005	S	99LIC097	10/19/99	11/16/99	11/16/99
NITRATE NITRITE	005	S	99LN3054	10/19/99	11/09/99	11/11/99
AMMONIA	005	S	99LAM043	10/19/99	11/08/99	11/08/99
PH	005	S	99LPH116	10/19/99	10/27/99	10/27/99
SULFIDE	005	S	99LSD061	10/19/99	10/24/99	10/24/99
B0WMY7						
% SOLIDS	006	S	99LSS142	10/19/99	10/26/99	10/27/99
CHLORIDE BY IC	006	S	99LIC097	10/19/99	11/16/99	11/16/99
FLUORIDE BY IC	006	S	99LIC097	10/19/99	11/16/99	11/16/99
NITRITE BY IC	006	S	99LIC097	10/19/99	11/16/99	11/16/99
NITRATE BY IC	006	S	99LIC097	10/19/99	11/16/99	11/16/99
TOTAL CYANIDE	006	S	99LC121	10/19/99	10/26/99	10/27/99
PHOSPHATE BY IC	006	S	99LIC097	10/19/99	11/16/99	11/16/99
CHROMIUM VI	006	S	99LVI078	10/19/99	10/27/99	10/27/99
SULFATE BY IC	006	S	99LIC097	10/19/99	11/16/99	11/16/99
NITRATE NITRITE	006	S	99LN3054	10/19/99	11/09/99	11/11/99
AMMONIA	006	S	99LAM043	10/19/99	11/08/99	11/08/99

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

DATE RECEIVED: 10/21/99 RFW LOT # :9910L453

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PH	006	S	99LPH116	10/19/99	10/27/99	10/27/99
SULFIDE	006	S	99LSD061	10/19/99	10/24/99	10/24/99
B0WMY8						
% SOLIDS	007	S	99LSS142	10/19/99	10/26/99	10/27/99
CHLORIDE BY IC	007	S	99LIC097	10/19/99	11/16/99	11/16/99
FLUORIDE BY IC	007	S	99LIC097	10/19/99	11/16/99	11/16/99
NITRITE BY IC	007	S	99LIC097	10/19/99	11/16/99	11/16/99
NITRATE BY IC	007	S	99LIC097	10/19/99	11/16/99	11/16/99
TOTAL CYANIDE	007	S	99LC121	10/19/99	10/26/99	10/27/99
PHOSPHATE BY IC	007	S	99LIC097	10/19/99	11/16/99	11/16/99
CHROMIUM VI	007	S	99LVI078	10/19/99	10/27/99	10/27/99
CHROMIUM VI	007 REP	S	99LVI078	10/19/99	10/27/99	10/27/99
CHROMIUM VI	007 MS	S	99LVI078	10/19/99	10/27/99	10/27/99
CHROMIUM VI	007 MSD	S	99LVI078	10/19/99	10/27/99	10/27/99
SULFATE BY IC	007	S	99LIC097	10/19/99	11/16/99	11/16/99
NITRATE NITRITE	007	S	99LN3054	10/19/99	11/09/99	11/11/99
AMMONIA	007	S	99LAM043	10/19/99	11/08/99	11/08/99
PH	007	S	99LPH116	10/19/99	10/27/99	10/27/99
SULFIDE	007	S	99LSD061	10/19/99	10/24/99	10/24/99
SULFIDE	007 REP	S	99LSD061	10/19/99	10/24/99	10/24/99
SULFIDE	007 MS	S	99LSD061	10/19/99	10/24/99	10/24/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LIC097	N/A	11/16/99	11/16/99
CHLORIDE BY IC	MB1 BS	S	99LIC097	N/A	11/16/99	11/16/99
CHLORIDE BY IC	MB1	S	99LIC098	N/A	11/17/99	11/17/99
CHLORIDE BY IC	MB1 BS	S	99LIC098	N/A	11/17/99	11/17/99
FLUORIDE BY IC	MB1	S	99LIC097	N/A	11/16/99	11/16/99
FLUORIDE BY IC	MB1 BS	S	99LIC097	N/A	11/16/99	11/16/99
FLUORIDE BY IC	MB1	S	99LIC098	N/A	11/17/99	11/17/99
FLUORIDE BY IC	MB1 BS	S	99LIC098	N/A	11/17/99	11/17/99
NITRITE BY IC	MB1	S	99LIC097	N/A	11/16/99	11/16/99
NITRITE BY IC	MB1 BS	S	99LIC097	N/A	11/16/99	11/16/99
NITRATE BY IC	MB1	S	99LIC097	N/A	11/16/99	11/16/99
NITRATE BY IC	MB1 BS	S	99LIC097	N/A	11/16/99	11/16/99

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

DATE RECEIVED: 10/21/99 RFW LOT # :9910L453

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRITE BY IC	MB1	S	99LIC098	N/A	11/17/99	11/17/99
NITRITE BY IC	MB1 BS	S	99LIC098	N/A	11/17/99	11/17/99
NITRATE BY IC	MB1	S	99LIC098	N/A	11/17/99	11/17/99
NITRATE BY IC	MB1 BS	S	99LIC098	N/A	11/17/99	11/17/99
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	99LIC097	N/A	11/16/99	11/16/99
PHOSPHATE BY IC	MB1 BS	S	99LIC097	N/A	11/16/99	11/16/99
PHOSPHATE BY IC	MB1	S	99LIC098	N/A	11/17/99	11/17/99
PHOSPHATE BY IC	MB1 BS	S	99LIC098	N/A	11/17/99	11/17/99
CHROMIUM VI	MB1	S	99LVI078	N/A	10/27/99	10/27/99
CHROMIUM VI	MB1 BS	S	99LVI078	N/A	10/27/99	10/27/99
CHROMIUM VI	MB1 BSD	S	99LVI078	N/A	10/27/99	10/27/99
SULFATE BY IC	MB1	S	99LIC098	N/A	11/17/99	11/17/99
SULFATE BY IC	MB1 BS	S	99LIC098	N/A	11/17/99	11/17/99
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	99LAM043	N/A	11/08/99	11/08/99
AMMONIA	MB1 BS	S	99LAM043	N/A	11/08/99	11/08/99
AMMONIA	MB1 BSD	S	99LAM043	N/A	11/08/99	11/08/99
SULFIDE	MB1	S	99LSD061	N/A	10/24/99	10/24/99
SULFIDE	MB1 BS	S	99LSD061	N/A	10/24/99	10/24/99
SULFATE BY IC	MB1	S	99LIC097	N/A	11/16/99	11/16/99
SULFATE BY IC	MB1 BS	S	99LIC097	N/A	11/16/99	11/16/99

RECRA LabNet Use Only
9910L453

Custody Transfer Record/Lab Work Request

Page 1 of 1

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

17

Client: Thu 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: 10-21-99 Date Due: 11/20/99
Account #:

Refrigerator #		1	2	2					2							
#/Type Container	Liquid															
	Solid	1AG	1AG						1AG		1AG	1AG				
Volume	Liquid															
	Solid	250	500						500		250	1000				
Preservatives		-	-						-		-	-				
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	PH	Inorg				
		RECRA LabNet Use Only														
		0624H 0GCSC	0625H 0DRO	0PCB					Met①	1CNTO	1PH	Ang①				
001	BOWMY1	✓	✓	X					✓	X	✓	✓				
002	BOWMY2	✓	✓	X					✓	X	✓	✓				
003	BOWMY3	✓	✓	X					✓	X	✓	✓				
004	BOWMY4	✓	✓	X					✓	X	✓	✓				
005	BOWMY6	✓	✓	X					✓	X	✓	✓				
006	BOWMY7	✓	✓	X					✓	X	✓	✓				
007	BOWMY8	✓	✓	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

Special Instructions:
Saf# B99-078
COMPOSITE WASTE

*423579530852 - 5.1°C
423579530863 - 4.7°C

DATE/REVISIONS:
Met① 1. = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
Ang① 3. = 1N3N2, 1CCL, 1CFL, 1CSO4, 1CNO2
4. 1CNO3, 1CPO4, 1SFD, 1NH3N, 1CR6
5.
6. Run Matrix QC

Relinquished by	Received by	Date	Time
Fed Ex	TMurray	10-21-99	0950

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

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-144	Page 1 of 1

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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 96-051	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA/RECRA~~ RTB 10-19-99 RECRA	Offsite Property No.: A990305		Bill of Lading/Air Bill No.: 42357953 0852
			COA: B20CW1 67/C

Price Code: 8N

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS											
	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			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	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										
BOWMY1	Soil	10-19-99	0842		X	X	X	X	X				
BOWMY2	Soil	10-19-99	0858		X	X	X	X	X				
BOWMY3	Soil	10-19-99	0903		X	X	X	X	X				
BOWMY4	Soil	10-19-99	0911		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 10-19-99/1130	Received By: Ref IB	Date/Time: 10-19-99/1130
Relinquished By: REF IB	Date/Time: 10.20.99/0830	Received By: Rikki Thoren / R. Thoren	Date/Time: 10/20/99/0830
Relinquished By: Rikki Thoren / R Thoren	Date/Time: 10.20.99/1430	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10.21.99 0950	Received By: T Murray	Date/Time: 10.21.99 0950

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

Collector unavailable to Relinquish chain use BOW 8C1 as shipping criteria

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	B99-078-145	Page 1 of 1

19

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 96-036	Field Logbook No. EL-1511		Method of Shipment FED EX	
Shipped To ~~TMA/RECRA~~ 10-19-99 RECRA	Offsite Property No. A99-0305		Bill of Lading/Air Bill No. 42357953 Ø863	
			COA B20CW1 67IC	

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										
273	BOWMY6	Soil	10-19-99	0919					X	X	X	X	X	
204	BOWMY7	Soil	10-19-99	0934					X	X	X	X	X	
232	BOWMY8	Soil	10-19-99	0952					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers	Date/Time 10-19-99/1130	Received By Ref 3B	Date/Time 10-19-99/1130
Relinquished By REF 3B	Date/Time 10-20-99/0830	Received By Rikki Thoren R. Thoren	Date/Time 10-20-99/0830
Relinquished By Rikki Thoren R. Thoren	Date/Time 10/20/99/1430	Received By Fed EX	Date/Time
Relinquished By Fed EX	Date/Time 10-21-99 0950	Received By T Murray	Date/Time 10-21-99 0950

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

Collector unavailable to relinquish chain use BOW8C1 as Shipping criteria

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# : 9910L453
SDG/SAF# : H0584/B99-078

W.O.# : 10985-001-001-9999-00
Date Received: 10-21-99

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) with the exception of 2 CCVs for Cadmium at 112.8% and 116.7%. Samples B0WMY1 and B0WMY8 were rerun for Cadmium and all of the QC was within the control limits. The remaining samples were reported from the original analysis run as the results were non-detect. There is no significant high bias to the results.

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

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

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

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

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

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 20 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
B0WMY1	Antimony	100	100.1

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

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

Pat E

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-17-99
Date

mld/m10-453

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9910L453

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:_____

L-WI-033/M-11/99

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 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L453

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WMY1	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	4.2	MG/KG	0.22	1.0
		Barium, Total	53.8	MG/KG	0.02	1.0
		Beryllium, Total	0.18	MG/KG	0.02	1.0
		Cadmium, Total	0.19	MG/KG	0.03	1.0
		Chromium, Total	7.7	MG/KG	0.06	1.0
		Copper, Total	14.7	MG/KG	0.04	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	10.3	MG/KG	0.08	1.0
		Lead, Total	4.1	MG/KG	0.17	1.0
		Antimony, Total	0.17 u	MG/KG	0.17	1.0
		Selenium, Total	0.78	MG/KG	0.34	1.0
		Thallium, Total	0.92	MG/KG	0.35	1.0
		Vanadium, Total	51.9	MG/KG	0.05	1.0
		Zinc, Total	83.3	MG/KG	0.04	1.0
-002	B0WMY2	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	7.3	MG/KG	0.28	1.0
		Barium, Total	89.0	MG/KG	0.02	1.0
		Beryllium, Total	0.34	MG/KG	0.03	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	8.0	MG/KG	0.07	1.0
		Copper, Total	15.2	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	9.7	MG/KG	0.10	1.0
		Lead, Total	7.4	MG/KG	0.22	1.0
		Antimony, Total	0.22 u	MG/KG	0.22	1.0
		Selenium, Total	0.97	MG/KG	0.42	1.0
		Thallium, Total	1.2	MG/KG	0.44	1.0
		Vanadium, Total	74.1	MG/KG	0.06	1.0
		Zinc, Total	61.5	MG/KG	0.05	1.0

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INORGANICS DATA SUMMARY REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L453

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0WMY3	Silver, Total	0.12 u	MG/KG	0.12	1.0
		Arsenic, Total	5.1	MG/KG	0.42	1.0
		Barium, Total	119	MG/KG	0.03	1.0
		Beryllium, Total	0.41	MG/KG	0.05	1.0
		Cadmium, Total	0.06 u	MG/KG	0.06	1.0
		Chromium, Total	13.5	MG/KG	0.11	1.0
		Copper, Total	17.3	MG/KG	0.08	1.0
		Mercury, Total	0.03 u	MG/KG	0.03	1.0
		Nickel, Total	16.0	MG/KG	0.16	1.0
		Lead, Total	5.7	MG/KG	0.33	1.0
		Antimony, Total	0.33 u	MG/KG	0.33	1.0
		Selenium, Total	0.95	MG/KG	0.64	1.0
		Thallium, Total	1.2	MG/KG	0.67	1.0
		Vanadium, Total	92.1	MG/KG	0.09	1.0
		Zinc, Total	68.6	MG/KG	0.08	1.0
-004	B0WMY4	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	3.2	MG/KG	0.28	1.0
		Barium, Total	61.2	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	8.6	MG/KG	0.07	1.0
		Copper, Total	11.8	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	7.5	MG/KG	0.10	1.0
		Lead, Total	3.5	MG/KG	0.22	1.0
		Antimony, Total	0.22 u	MG/KG	0.22	1.0
		Selenium, Total	0.95	MG/KG	0.43	1.0
		Thallium, Total	0.82	MG/KG	0.45	1.0
		Vanadium, Total	54.2	MG/KG	0.06	1.0
		Zinc, Total	44.3	MG/KG	0.05	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L453

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B0WMY6	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	3.2	MG/KG	0.29	1.0
		Barium, Total	83.2	MG/KG	0.02	1.0
		Beryllium, Total	0.27	MG/KG	0.03	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	14.4	MG/KG	0.07	1.0
		Copper, Total	11.8	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	16.2	MG/KG	0.11	1.0
		Lead, Total	4.5	MG/KG	0.22	1.0
		Antimony, Total	0.22 u	MG/KG	0.22	1.0
		Selenium, Total	0.76	MG/KG	0.44	1.0
		Thallium, Total	0.76	MG/KG	0.46	1.0
		Vanadium, Total	44.8	MG/KG	0.06	1.0
		Zinc, Total	39.6	MG/KG	0.05	1.0
-006	B0WMY7	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	1.6	MG/KG	0.26	1.0
		Barium, Total	46.9	MG/KG	0.02	1.0
		Beryllium, Total	0.19	MG/KG	0.03	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	8.1	MG/KG	0.07	1.0
		Copper, Total	9.2	MG/KG	0.05	1.0
		Mercury, Total	0.04	MG/KG	0.02	1.0
		Nickel, Total	8.1	MG/KG	0.09	1.0
		Lead, Total	3.0	MG/KG	0.20	1.0
		Antimony, Total	0.20 u	MG/KG	0.20	1.0
		Selenium, Total	0.54	MG/KG	0.39	1.0
		Thallium, Total	0.43	MG/KG	0.41	1.0
		Vanadium, Total	34.4	MG/KG	0.06	1.0
		Zinc, Total	30.0	MG/KG	0.05	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L453

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B0WMY8	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	1.7	MG/KG	0.26	1.0
		Barium, Total	45.5	MG/KG	0.02	1.0
		Beryllium, Total	0.18	MG/KG	0.03	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	7.6	MG/KG	0.07	1.0
		Copper, Total	8.2	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	9.0	MG/KG	0.1	1.0
		Lead, Total	2.2	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	0.64	MG/KG	0.41	1.0
		Vanadium, Total	37.0	MG/KG	0.06	1.0
		Zinc, Total	27.8	MG/KG	0.05	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L453

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0740-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	0.03 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	0.05 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	99C0318-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L453

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WMY1	Silver, Total	3.6	0.07u	4.0	90.0	1.0
		Arsenic, Total	160	4.2	162	96.2	1.0
		Barium, Total	211	53.8	162	97.0	1.0
		Beryllium, Total	3.6	0.18	4.0	85.4	1.0
		Cadmium, Total	3.8	0.19	4.0	90.3	1.0
		Chromium, Total	23.3	7.7	16.2	96.3	1.0
		Copper, Total	32.1	14.7	20.2	86.1	1.0
		Mercury, Total	0.19	0.02u	0.17	113.4	1.0
		Nickel, Total	46.6	10.3	40.5	89.6	1.0
		Lead, Total	43.3	4.1	40.5	96.8	1.0
		Antimony, Total	19.6	0.17u	40.5	48.4	1.0
		Selenium, Total	148	0.78	162	90.9	1.0
		Thallium, Total	151	0.92	162	92.6	1.0
		Vanadium, Total	94.8	51.9	40.5	105.9	1.0
		Zinc, Total	119	83.3	40.5	88.4	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L453

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WMY1	Silver, Total	0.07u	0.06u	NC	1.0
		Arsenic, Total	4.2	5.1	19.4	1.0
		Barium, Total	53.8	65.7	19.9	1.0
		Beryllium, Total	0.18	0.23	20.9	1.0
		Cadmium, Total	0.19	0.34	58.7	1.0
		Chromium, Total	7.7	5.8	28.1	1.0
		Copper, Total	14.7	16.3	10.3	1.0
		Mercury, Total	0.02u	0.03	NC	1.0
		Nickel, Total	10.3	7.4	32.8	1.0
		Lead, Total	4.1	6.1	39.2	1.0
		Antimony, Total	0.17u	0.17u	NC	1.0
		Selenium, Total	0.78	0.78	0.17	1.0
		Thallium, Total	0.92	1.4	40.9	1.0
		Vanadium, Total	51.9	59.6	13.8	1.0
		Zinc, Total	83.3	92.6	10.6	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/16/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L453

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0740-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	99C0318-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: 10/21/99 RFW LOT # :9910L453

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WMY1						
SILVER, TOTAL	001	S	99L0740	10/19/99	10/30/99	10/31/99
SILVER, TOTAL	001 REP	S	99L0740	10/19/99	10/30/99	10/31/99
SILVER, TOTAL	001 MS	S	99L0740	10/19/99	10/30/99	10/31/99
ARSENIC, TOTAL	001	S	99L0740	10/19/99	10/30/99	10/31/99
ARSENIC, TOTAL	001 REP	S	99L0740	10/19/99	10/30/99	10/31/99
ARSENIC, TOTAL	001 MS	S	99L0740	10/19/99	10/30/99	10/31/99
BARIUM, TOTAL	001	S	99L0740	10/19/99	10/30/99	10/31/99
BARIUM, TOTAL	001 REP	S	99L0740	10/19/99	10/30/99	10/31/99
BARIUM, TOTAL	001 MS	S	99L0740	10/19/99	10/30/99	10/31/99
BERYLLIUM, TOTAL	001	S	99L0740	10/19/99	10/30/99	11/01/99
BERYLLIUM, TOTAL	001 REP	S	99L0740	10/19/99	10/30/99	11/01/99
BERYLLIUM, TOTAL	001 MS	S	99L0740	10/19/99	10/30/99	11/01/99
CADMIUM, TOTAL	001	S	99L0740	10/19/99	10/30/99	11/01/99
CADMIUM, TOTAL	001 REP	S	99L0740	10/19/99	10/30/99	11/01/99
CADMIUM, TOTAL	001 MS	S	99L0740	10/19/99	10/30/99	11/01/99
CHROMIUM, TOTAL	001	S	99L0740	10/19/99	10/30/99	10/31/99
CHROMIUM, TOTAL	001 REP	S	99L0740	10/19/99	10/30/99	10/31/99
CHROMIUM, TOTAL	001 MS	S	99L0740	10/19/99	10/30/99	10/31/99
COPPER, TOTAL	001	S	99L0740	10/19/99	10/30/99	10/31/99
COPPER, TOTAL	001 REP	S	99L0740	10/19/99	10/30/99	10/31/99
COPPER, TOTAL	001 MS	S	99L0740	10/19/99	10/30/99	10/31/99
MERCURY, TOTAL	001	S	99C0318	10/19/99	10/28/99	10/29/99
MERCURY, TOTAL	001 REP	S	99C0318	10/19/99	10/28/99	10/29/99
MERCURY, TOTAL	001 MS	S	99C0318	10/19/99	10/28/99	10/29/99
NICKEL, TOTAL	001	S	99L0740	10/19/99	10/30/99	10/31/99
NICKEL, TOTAL	001 REP	S	99L0740	10/19/99	10/30/99	10/31/99
NICKEL, TOTAL	001 MS	S	99L0740	10/19/99	10/30/99	10/31/99
LEAD, TOTAL	001	S	99L0740	10/19/99	10/30/99	10/31/99
LEAD, TOTAL	001 REP	S	99L0740	10/19/99	10/30/99	10/31/99
LEAD, TOTAL	001 MS	S	99L0740	10/19/99	10/30/99	10/31/99
ANTIMONY, TOTAL	001	S	99L0740	10/19/99	10/30/99	10/31/99
ANTIMONY, TOTAL	001 REP	S	99L0740	10/19/99	10/30/99	10/31/99
ANTIMONY, TOTAL	001 MS	S	99L0740	10/19/99	10/30/99	10/31/99
SELENIUM, TOTAL	001	S	99L0740	10/19/99	10/30/99	10/31/99
SELENIUM, TOTAL	001 REP	S	99L0740	10/19/99	10/30/99	10/31/99

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

DATE RECEIVED: 10/21/99 RFW LOT # :9910L453

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001 MS	S	99L0740	10/19/99	10/30/99	10/31/99
THALLIUM, TOTAL	001	S	99L0740	10/19/99	10/30/99	10/31/99
THALLIUM, TOTAL	001 REP	S	99L0740	10/19/99	10/30/99	10/31/99
THALLIUM, TOTAL	001 MS	S	99L0740	10/19/99	10/30/99	10/31/99
VANADIUM, TOTAL	001	S	99L0740	10/19/99	10/30/99	10/31/99
VANADIUM, TOTAL	001 REP	S	99L0740	10/19/99	10/30/99	10/31/99
VANADIUM, TOTAL	001 MS	S	99L0740	10/19/99	10/30/99	10/31/99
ZINC, TOTAL	001	S	99L0740	10/19/99	10/30/99	10/31/99
ZINC, TOTAL	001 REP	S	99L0740	10/19/99	10/30/99	10/31/99
ZINC, TOTAL	001 MS	S	99L0740	10/19/99	10/30/99	10/31/99
B0WMY2						
SILVER, TOTAL	002	S	99L0740	10/19/99	10/30/99	10/31/99
ARSENIC, TOTAL	002	S	99L0740	10/19/99	10/30/99	10/31/99
BARIUM, TOTAL	002	S	99L0740	10/19/99	10/30/99	10/31/99
BERYLLIUM, TOTAL	002	S	99L0740	10/19/99	10/30/99	11/01/99
CADMIUM, TOTAL	002	S	99L0740	10/19/99	10/30/99	10/31/99
CHROMIUM, TOTAL	002	S	99L0740	10/19/99	10/30/99	10/31/99
COPPER, TOTAL	002	S	99L0740	10/19/99	10/30/99	10/31/99
MERCURY, TOTAL	002	S	99C0318	10/19/99	10/28/99	10/29/99
NICKEL, TOTAL	002	S	99L0740	10/19/99	10/30/99	10/31/99
LEAD, TOTAL	002	S	99L0740	10/19/99	10/30/99	10/31/99
ANTIMONY, TOTAL	002	S	99L0740	10/19/99	10/30/99	10/31/99
SELENIUM, TOTAL	002	S	99L0740	10/19/99	10/30/99	10/31/99
THALLIUM, TOTAL	002	S	99L0740	10/19/99	10/30/99	10/31/99
VANADIUM, TOTAL	002	S	99L0740	10/19/99	10/30/99	10/31/99
ZINC, TOTAL	002	S	99L0740	10/19/99	10/30/99	10/31/99
B0WMY3						
SILVER, TOTAL	003	S	99L0740	10/19/99	10/30/99	10/31/99
ARSENIC, TOTAL	003	S	99L0740	10/19/99	10/30/99	10/31/99
BARIUM, TOTAL	003	S	99L0740	10/19/99	10/30/99	10/31/99
BERYLLIUM, TOTAL	003	S	99L0740	10/19/99	10/30/99	11/01/99
CADMIUM, TOTAL	003	S	99L0740	10/19/99	10/30/99	10/31/99
CHROMIUM, TOTAL	003	S	99L0740	10/19/99	10/30/99	10/31/99
COPPER, TOTAL	003	S	99L0740	10/19/99	10/30/99	10/31/99

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

DATE RECEIVED: 10/21/99 RFW LOT # :9910L453

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	003	S	99C0318	10/19/99	10/28/99	10/29/99
NICKEL, TOTAL	003	S	99L0740	10/19/99	10/30/99	10/31/99
LEAD, TOTAL	003	S	99L0740	10/19/99	10/30/99	10/31/99
ANTIMONY, TOTAL	003	S	99L0740	10/19/99	10/30/99	10/31/99
SELENIUM, TOTAL	003	S	99L0740	10/19/99	10/30/99	10/31/99
THALLIUM, TOTAL	003	S	99L0740	10/19/99	10/30/99	10/31/99
VANADIUM, TOTAL	003	S	99L0740	10/19/99	10/30/99	10/31/99
ZINC, TOTAL	003	S	99L0740	10/19/99	10/30/99	10/31/99
B0WMY4						
SILVER, TOTAL	004	S	99L0740	10/19/99	10/30/99	10/31/99
ARSENIC, TOTAL	004	S	99L0740	10/19/99	10/30/99	10/31/99
BARIUM, TOTAL	004	S	99L0740	10/19/99	10/30/99	10/31/99
BERYLLIUM, TOTAL	004	S	99L0740	10/19/99	10/30/99	11/01/99
CADMIUM, TOTAL	004	S	99L0740	10/19/99	10/30/99	10/31/99
CHROMIUM, TOTAL	004	S	99L0740	10/19/99	10/30/99	10/31/99
COPPER, TOTAL	004	S	99L0740	10/19/99	10/30/99	10/31/99
MERCURY, TOTAL	004	S	99C0318	10/19/99	10/28/99	10/29/99
NICKEL, TOTAL	004	S	99L0740	10/19/99	10/30/99	10/31/99
LEAD, TOTAL	004	S	99L0740	10/19/99	10/30/99	10/31/99
ANTIMONY, TOTAL	004	S	99L0740	10/19/99	10/30/99	10/31/99
SELENIUM, TOTAL	004	S	99L0740	10/19/99	10/30/99	10/31/99
THALLIUM, TOTAL	004	S	99L0740	10/19/99	10/30/99	10/31/99
VANADIUM, TOTAL	004	S	99L0740	10/19/99	10/30/99	10/31/99
ZINC, TOTAL	004	S	99L0740	10/19/99	10/30/99	10/31/99
B0WMY6						
SILVER, TOTAL	005	S	99L0740	10/19/99	10/30/99	10/31/99
ARSENIC, TOTAL	005	S	99L0740	10/19/99	10/30/99	10/31/99
BARIUM, TOTAL	005	S	99L0740	10/19/99	10/30/99	10/31/99
BERYLLIUM, TOTAL	005	S	99L0740	10/19/99	10/30/99	11/01/99
CADMIUM, TOTAL	005	S	99L0740	10/19/99	10/30/99	10/31/99
CHROMIUM, TOTAL	005	S	99L0740	10/19/99	10/30/99	10/31/99
COPPER, TOTAL	005	S	99L0740	10/19/99	10/30/99	10/31/99
MERCURY, TOTAL	005	S	99C0318	10/19/99	10/28/99	10/29/99
NICKEL, TOTAL	005	S	99L0740	10/19/99	10/30/99	10/31/99

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

DATE RECEIVED: 10/21/99 RFW LOT # :9910L453

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TOTAL	005	S	99L0740	10/19/99	10/30/99	10/31/99
ANTIMONY, TOTAL	005	S	99L0740	10/19/99	10/30/99	10/31/99
SELENIUM, TOTAL	005	S	99L0740	10/19/99	10/30/99	10/31/99
THALLIUM, TOTAL	005	S	99L0740	10/19/99	10/30/99	10/31/99
VANADIUM, TOTAL	005	S	99L0740	10/19/99	10/30/99	10/31/99
ZINC, TOTAL	005	S	99L0740	10/19/99	10/30/99	10/31/99
B0WMY7						
SILVER, TOTAL	006	S	99L0740	10/19/99	10/30/99	10/31/99
ARSENIC, TOTAL	006	S	99L0740	10/19/99	10/30/99	10/31/99
BARIUM, TOTAL	006	S	99L0740	10/19/99	10/30/99	10/31/99
BERYLLIUM, TOTAL	006	S	99L0740	10/19/99	10/30/99	11/01/99
CADMIUM, TOTAL	006	S	99L0740	10/19/99	10/30/99	10/31/99
CHROMIUM, TOTAL	006	S	99L0740	10/19/99	10/30/99	10/31/99
COPPER, TOTAL	006	S	99L0740	10/19/99	10/30/99	10/31/99
MERCURY, TOTAL	006	S	99C0318	10/19/99	10/28/99	10/29/99
NICKEL, TOTAL	006	S	99L0740	10/19/99	10/30/99	10/31/99
LEAD, TOTAL	006	S	99L0740	10/19/99	10/30/99	10/31/99
ANTIMONY, TOTAL	006	S	99L0740	10/19/99	10/30/99	10/31/99
SELENIUM, TOTAL	006	S	99L0740	10/19/99	10/30/99	10/31/99
THALLIUM, TOTAL	006	S	99L0740	10/19/99	10/30/99	10/31/99
VANADIUM, TOTAL	006	S	99L0740	10/19/99	10/30/99	10/31/99
ZINC, TOTAL	006	S	99L0740	10/19/99	10/30/99	10/31/99
B0WMY8						
SILVER, TOTAL	007	S	99L0740	10/19/99	10/30/99	10/31/99
ARSENIC, TOTAL	007	S	99L0740	10/19/99	10/30/99	11/03/99
BARIUM, TOTAL	007	S	99L0740	10/19/99	10/30/99	10/31/99
BERYLLIUM, TOTAL	007	S	99L0740	10/19/99	10/30/99	11/01/99
CADMIUM, TOTAL	007	S	99L0740	10/19/99	10/30/99	11/03/99
CHROMIUM, TOTAL	007	S	99L0740	10/19/99	10/30/99	10/31/99
COPPER, TOTAL	007	S	99L0740	10/19/99	10/30/99	10/31/99
MERCURY, TOTAL	007	S	99C0318	10/19/99	10/28/99	10/29/99
NICKEL, TOTAL	007	S	99L0740	10/19/99	10/30/99	11/03/99
LEAD, TOTAL	007	S	99L0740	10/19/99	10/30/99	11/03/99
ANTIMONY, TOTAL	007	S	99L0740	10/19/99	10/30/99	10/31/99

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

DATE RECEIVED: 10/21/99 RFW LOT # :9910L453

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	007	S	99L0740	10/19/99	10/30/99	10/31/99
THALLIUM, TOTAL	007	S	99L0740	10/19/99	10/30/99	10/31/99
VANADIUM, TOTAL	007	S	99L0740	10/19/99	10/30/99	10/31/99
ZINC, TOTAL	007	S	99L0740	10/19/99	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
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
9910L453

Custody Transfer Record/Lab Work Request

Page 1 of 1

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

RECRA LabNet

Client: Thu 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: 10-21-99 Date Due: 11/20/99
Account #:

Refrigerator #		1	2	2					2			1					
#/Type Container	Liquid																
	Solid	1AG	1AG						1AG		1AG	1AG					
Volume	Liquid																
	Solid	250	500						500		250	1000					
Preservatives		–	–						–		–	–					
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN	PH	Inorg.					
		RECRA LabNet Use Only															
		0624H 0GCSC	0025H 0DRO	0PCB					Met①	1CNTO	1PH	Ang①					
001	Bowmy1	✓	✓	X					✓	X	✓	✓					
002	Bowmy2	✓	✓	X					✓	X	✓	✓					
003	Bowmy3	✓	✓	X					✓	X	✓	✓					
004	Bowmy4	✓	✓	X					✓	X	✓	✓					
005	Bowmy6	✓	✓	X					✓	X	✓	✓					
006	Bowmy7	✓	✓	X					✓	X	✓	✓					
007	Bowmy8	✓	✓	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

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

Special Instructions:
Saf# B99-078
COMPOSITE WASTE

*423579530852 -5.1°C
423579530863 -4.7°C

DATE/REVISIONS:
Met① 1. = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
Ang① 3. = 1N3N2, 1CCL, 1CFL, 1CSO4, 1CNO2,
4. 1CNO3, 1CPO4, 1SFD, 1NH3N, 1CR6
5.
6. Run Matrix QC

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

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

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

Relinquished by	Received by	Date	Time
Fed Ex	T Murray	10-21-99	0950

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

018

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-144	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 96-051	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: ~~TMA/RECRA~~ RECRA	Offsite Property No.: A990305	Bill of Lading/Air Bill No.: 42357953 0852	
		COA: B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	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			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	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										
343	BOWMY1	Soil	10-19-99	0842		X	X	X	X	X				
240	BOWMY2	Soil	10-19-99	0856		X	X	X	X	X				
233	BOWMY3	Soil	10-19-99	0903		X	X	X	X	X				
217	BOWMY4	Soil	10-19-99	0911		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers — Date/Time: Doug Bowers 10-19-99/1130	Received By: Ref IB — Date/Time: 10-19-99/1130		
Relinquished By: REF IB — Date/Time: 10-20-99/0830	Received By: Rikki Thoren — Date/Time: R Thoren 10/20/99/0830		
Relinquished By: Rikki Thoren — Date/Time: R Thoren 10-20-99/1430	Received By: FED EX — Date/Time:		
Relinquished By: Fed Ex — Date/Time: 10-21-99 0950	Received By: T Murray — Date/Time: 10-21-99 0950		

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

Collector unavailable to Relinquish chain use BOW 8C1 as shipping criteria

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

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

019

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-145	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 96-036	Field Logbook No. EL-1511		Method of Shipment FED EX		
Shipped To ~~TMA/RECRA~~ 10-19-99 RECRA	Offsite Property No. A99-0305		Bill of Lading/Air Bill No. 42357953 Ø863		
			COA B20CW1 67/C		

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										
273	BOWMY6	Soil	10-19-99	0919					X	X	X	X	X	
204	BOWMY7	Soil	10-19-99	0934					X	X	X	X	X	
232	BOWMY8	Soil	10-19-99	0952					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Date/Time Doug Bowers 10-19-99/1130	Received By Date/Time Ref 3B 10-19-99/1130		
Relinquished By Date/Time REF 3B 10-20-99/0830	Received By Rikki Thoren Date/Time R. Thoren 10-20-99/0830		
Relinquished By Rikki Thoren Date/Time R. Thoren 10/20/99/1430	Received By Date/Time Fed EX		
Relinquished By Date/Time Fed EX 10-21-99 0950	Received By Date/Time T Murray 10-21-99 0950		

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

Collector unavailable to relinquish chain use BOW8C1 as shipping criteria

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

020

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9910L453
SDG/SAF#: H0584/B99-078

W.O #: 10985-001-001-9999-00
Date Received: 10-21-99

DIESEL RANGE ORGANICS

The set of samples consisted of seven (7) soil samples collected on 10-19-99.

The sample and its associated QC samples were prepared on 10-25-99 and analyzed by methodology based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 11-16,17-99. 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.

DEC 1999
RECEIVED
Data
Log In

Pat C

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-22-99
Date

R:\SHARE\LC\GCSCAN\10-453d.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 7 pages.

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

GLOSSARY OF 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: 11/18/99 08:51

RFW Batch Number: **9910L453** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

03

	Cust ID:	B0WMY1	B0WMY1	B0WMY1	B0WMY2	B0WMY3	B0WMY4
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	78 %	79 %	87 %	83 %	82 %	81 %
Diesel Range Organics		4.2 U	83 %	81 %	5.0 U	6.9 U	4.7 U

	Cust ID:	B0WMY6	B0WMY7	B0WMY8	BLK	BLK BS
Sample Information	RFW#:	005	006	007	99LE1294-MB1	99LE1294-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Surrogate:	p-Terphenyl	84 %	82 %	79 %	74 %	77 %
Diesel Range Organics		4.4 U	4.2 U	4.1 U	4.0 U	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.

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

DATE RECEIVED: 10/21/99 RFW LOT # :9910L453

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WMY1	001	S	99LE1294	10/19/99	10/25/99	11/16/99
B0WMY1	001 MS	S	99LE1294	10/19/99	10/25/99	11/16/99
B0WMY1	001 MSD	S	99LE1294	10/19/99	10/25/99	11/16/99
B0WMY2	002	S	99LE1294	10/19/99	10/25/99	11/16/99
B0WMY3	003	S	99LE1294	10/19/99	10/25/99	11/16/99
B0WMY4	004	S	99LE1294	10/19/99	10/25/99	11/16/99
B0WMY6	005	S	99LE1294	10/19/99	10/25/99	11/16/99
B0WMY7	006	S	99LE1294	10/19/99	10/25/99	11/16/99
B0WMY8	007	S	99LE1294	10/19/99	10/25/99	11/17/99

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

RECRA LabNet Use Only
9910L453

Custody Transfer Record/Lab Work Request

Page 1 of 1

A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

RECRA LabNet

05

Client: Thu 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: 10-21-99 Date Due: 11/20/99
Account #:

Refrigerator #		1	2	2					2			1					
#/Type Container	Liquid																
	Solid	1AG	1AG						1AG		1AG	1AG					
Volume	Liquid																
	Solid	250	500						500		250	1000					
Preservatives		–	–						–		–	–					
ANALYSES REQUESTED		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN	pH	Inorg					
		RECRA LabNet Use Only															
		0624H 0GCSC	0625H 0DRO	0PCB					Met①	1CNTO	1PH	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	0624H 0GCSC	0625H 0DRO	0PCB					Met①	1CNTO	1PH	Ang①				
001	Bowmy1			S	10-19-99	0842	✓	✓	X					✓	X	✓	✓				
002	Bowmy2					0850	✓	✓	X					✓	X	✓	✓				
003	Bowmy3					0903	✓	✓	X					✓	X	✓	✓				
004	Bowmy4					0911	✓	✓	X					✓	X	✓	✓				
005	Bowmy6					0919	✓	✓	X					✓	X	✓	✓				
006	Bowmy7					0934	✓	✓	X					✓	X	✓	✓				
007	Bowmy8					0952	✓	✓	X					✓	X	✓	✓				

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

Special Instructions:
Saf # B99-078
COMPOSITE WASTE

*423579530852 -5.1°C
423579530863 -4.7°C

DATE/REVISIONS:
Met① 1. = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
Ang① 3. = 1N3N2, 1CCL, 1CFL, 1CSO4, 1CNO2,
4. 1CNO3, 1CPO4, 1SFD, 1NH3N, 1CR6
5.
6. Run Matrix QC

Relinquished by	Received by	Date	Time
Fed Ex	TMurray	10-21-99	0950

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

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

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-144	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 96-051	Field Logbook No. EL-1511		Method of Shipment FED EX	
Shipped To ~~TMA/RECRA~~ RECRA	Offsite Property No. A990305		Bill of Lading/Air Bill No. 42357953 0852	
			COA B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS												
	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				
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL				
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	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										
343	BCWMY1	Soil	10-19-99	0842		X	X	X	X	X				
240	BCWMY2	Soil	10-19-99	0856		X	X	X	X	X				
233	BOWMY3	Soil	10-19-99	0903		X	X	X	X	X				
217	BOWMY4	Soil	10-19-99	0911		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Date/Time Doug Bowers 10-19-99/1130	Received By Date/Time R of IB 10-19-99/1130		
Relinquished By Date/Time REF IB 10-20-99/0830	Received By Rikki Thoren Date/Time R Thoren 10/20/99/0830		
Relinquished By Rikki Thoren Date/Time R Thoren 10-20-99/1430	Received By Date/Time FED EX		
Relinquished By Date/Time Fed Ex 10-21-99 0950	Received By Date/Time T Murray 10-21-99 0950		

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
Collector unavailable to relinquish chain
use BOW 8C1 as shipping criteria

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	B99-078-145	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 96-036	**Field Logbook No.** EL-1511		**Method of Shipment** FED EX	
Shipped To ~~TMA/RECRA~~ 10-19-99 RECRA	**Offsite Property No.** A99-0305		**Bill of Lading/Air Bill No.** 42357953 Ø863	
			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										
273	BOWMY6	Soil	10-19-99	0919					X	X	X	X	X	
204	BOWMY7	Soil	10-19-99	0934					X	X	X	X	X	
232	BOWMY8	Soil	10-19-99	0952					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Date/Time Doug Bowers 10-19-99/1130	Received By Ref 3B Date/Time 10-19-99/1130		
Relinquished By Date/Time REF 3B 10-20-99/0830	Received By Rikki Thoren Date/Time R. Thoren 10-20-99/0830		
Relinquished By Rikki Thoren Date/Time R. Thoren 10/20/99/1430	Received By Date/Time FED EX		
Relinquished By Date/Time Fed Ex 10-21-99 0950	Received By Date/Time T Murray 10-21-99 0950		

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
Collector unavailable to relinquish chain
use BOW8C1 as shipping criteria

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 #: 9910L453
SDG/SAF#: H0584/B99-078

W.O. #: #: 10985-001-001-9999-00
Date Received: 10-21-99

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 10-30-99.

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. All blank spike recoveries were within advisory control limits of 50%-150%.
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 115% and 115% 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. A copy of the Sample Discrepancy Report (SDR) has been enclosed in the data package.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-15-99
Date

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

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

GLOSSARY OF OGCSC DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Recra LabNet Philadelphia **Sample Discrepancy Report (SDR)** SDR #: 99LC056

Initiator: C. Schnell
Date: 11/2/99
Client: INV. Hanford

RFW Batch: 9910L420 001-004 9910L441-001-003 9910L453 001-007
Samples: 9910L475 001-003
Method: SW846/MCAWW/CLP/

Parameter: OGCSC
Matrix: Soil
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 1-propanol 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

Recra LabNet Philadelphia **Sample Discrepancy Report (SDR)** SDR #: 99LL05+

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

RFW Batch: 9910L365 9910L392
Samples: 9910L420 9910L421 9910L440
Method: SW846/MCAWW/CLP/

Parameter: OGCSC
Matrix: Soil
Prep Batch: 99LLC162

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

GC SCAN

Report Date: 11/11/99 13:05

RFW Batch Number: **9910L453** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 01

	Cust ID:	B0WMY1	B0WMY1	B0WMY1	B0WMY2	B0WMY3	B0WMY4
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
n-Propyl Alcohol		5.0 U	10 * %	10 * %	6.0 U	8.5 U	5.5 U
Ethanol		5.0 U	5.0 U	5.0 U	6.0 U	8.5 U	5.5 U

	Cust ID:	B0WMY6	B0WMY7	B0WMY8	BLK	BLK BS
Sample Information	RFW#:	005	006	007	99LLC163-MB1	99LLC163-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
n-Propyl Alcohol		5.5 U	5.0 U	4.8 U	5.0 U	121 %
Ethanol		5.5 U	5.0 U	4.8 U	5.0 U	5.0 U

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

11/11/99

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

DATE RECEIVED: 10/21/99 RFW LOT # :9910L453

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WMY1	001	S	99LLC163	10/19/99	10/25/99	10/30/99
B0WMY1	001 MS	S	99LLC163	10/19/99	10/25/99	10/30/99
B0WMY1	001 MSD	S	99LLC163	10/19/99	10/25/99	10/30/99
B0WMY2	002	S	99LLC163	10/19/99	10/25/99	10/30/99
B0WMY3	003	S	99LLC163	10/19/99	10/25/99	10/30/99
B0WMY4	004	S	99LLC163	10/19/99	10/25/99	10/30/99
B0WMY6	005	S	99LLC163	10/19/99	10/25/99	10/30/99
B0WMY7	006	S	99LLC163	10/19/99	10/25/99	10/30/99
B0WMY8	007	S	99LLC163	10/19/99	10/25/99	10/30/99

LAB QC:

BLK	MB1	S	99LLC163	N/A	10/25/99	10/30/99
BLK	MB1 BS	S	99LLC163	N/A	10/25/99	10/30/99

RECRA LabNet Use Only

9910L453

Custody Transfer Record/Lab Work Request

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All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

007

Client: Thu 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: 10-21-99 Date Due: 11/20/99

Account #:

Refrigerator #		1	2	2					2			1						
#/Type Container	Liquid																	
	Solid	1AG	1AG						1AG		1AG	1AG						
Volume	Liquid																	
	Solid	250	500						500		250	1000						
Preservatives		-	-						-		-	-						
ANALYSES REQUESTED		ORGANIC							INORG									
		VOA	BNA	Pest/PCB	Herb				Metal	CN	PH	Inorg						
		RECRA LabNet Use Only																
		0624H 0SCSC	0625H 0DRO	0PCB					Met①	1CNTO	1PH	Ing①						
001	BOWMY1	✓	✓	X					✓	X	✓	✓						
002	BOWMY2	✓	✓	X					✓	X	✓	✓						
003	BOWMY3	✓	✓	X					✓	X	✓	✓						
004	BOWMY4	✓	✓	X					✓	X	✓	✓						
005	BOWMY6	✓	✓	X					✓	X	✓	✓						
006	BOWMY7	✓	✓	X					✓	X	✓	✓						
007	BOWMY8	✓	✓	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

Special Instructions:

Saf# B99-078

COMPOSITE WASTE

*423579530852 - 5.1°C
423579530863 - 4.7°C

DATE/REVISIONS:

Met① 1. = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
Ing① 3. = 1N3N2, 1CCL, 1CFL, 1CSO4, 1CNO2,
4. 1CNO3, 1CPO4, 1SFD, 1NH3N, 1CR6
5.
6. Run Matrix QC

Relinquished by	Received by	Date	Time
Fed Ex	TMurray	10-21-99	0950

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

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-144	Page 1 of 1

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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 96-051	Field Logbook No.: EL-1511		Method of Shipment: FED EX	
Shipped To: ~~TMA/RECRA~~ 07B 10-19-99 RECRA	Offsite Property No.: A990305		Bill of Lading/Air Bill No.: 42357953 0852	
			COA: B20CW1 67/C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	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			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	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										
343	BOWMY1	Soil	10-19-99	0842		X	X	X	X	X				
240	BOWMY2	Soil	10-19-99	0856		X	X	X	X	X				
233	BOWMY3	Soil	10-19-99	0903		X	X	X	X	X				
217	BOWMY4	Soil	10-19-99	0911		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 10-19-99/1130	Received By: Ref IB	Date/Time: 10-19-99/1130
Relinquished By: REF IB	Date/Time: 10-20-99/0830	Received By: Rikki Thoren / R. Thoren	Date/Time: 10/20/99/0830
Relinquished By: Rikki Thoren / R Thoren	Date/Time: 10-20-99/1430	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10-21-99 0950	Received By: T Murray	Date/Time: 10-21-99 0950

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

Collector unavailable to relinquish chain use BOW 8C1 as shipping criteria

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	B99-078-145

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 96-0316	Field Logbook No. EL-1511		Method of Shipment FED EX
Shipped To ~~TMA/RECRA~~ 10-19-99 RECRA	Offsite Property No. A99-0305		Bill of Lading/Air Bill No. 42357953 0863
			COA B20CW1 67IC

Price Code 8N

Data Turnaround 45 Days

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										
73	BOWM Y6	Soil	10-19-99	0919					X	X	X	X	X	
104	BOWM Y7	Soil	10-19-99	0934					X	X	X	X	X	
232	BOWM Y8	Soil	10-19-99	0952					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers 10-19-99/1130	Date/Time	Received By Ref 3B 10-19-99/1130	Date/Time
Relinquished By REF 3B 10-20-99/0830	Date/Time	Received By Rikki Thoren R. Thoren 10-20-99/0830	Date/Time
Relinquished By Rikki Thoren R. Thoren 10-20-99/1430	Date/Time	Received By Fed EX	Date/Time
Relinquished By Fed EX 10-21-99 0950	Date/Time	Received By TMoody 10-21-99 0950	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; 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

Collector unavailable to relinquish chain use BOWSC1 as shipping criteria

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

609

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

DATE RECEIVED: 10/21/99 RFW LOT # :9910L453

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WMY1	001	S	99LLC163	10/19/99	10/25/99	10/30/99
B0WMY1	001 MS	S	99LLC163	10/19/99	10/25/99	10/30/99
B0WMY1	001 MSD	S	99LLC163	10/19/99	10/25/99	10/30/99
B0WMY2	002	S	99LLC163	10/19/99	10/25/99	10/30/99
B0WMY3	003	S	99LLC163	10/19/99	10/25/99	10/30/99
B0WMY4	004	S	99LLC163	10/19/99	10/25/99	10/30/99
B0WMY6	005	S	99LLC163	10/19/99	10/25/99	10/30/99
B0WMY7	006	S	99LLC163	10/19/99	10/25/99	10/30/99
B0WMY8	007	S	99LLC163	10/19/99	10/25/99	10/30/99

LAB QC:

BLK	MB1	S	99LLC163	N/A	10/25/99	10/30/99
BLK	MB1 BS	S	99LLC163	N/A	10/25/99	10/30/99

RECRA LabNet Use Only

9910L453

Custody Transfer Record/Lab Work Request

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FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

007

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: 10-21-99 Date Due: 11/20/99

Account #:

Refrigerator #		1	2	2					2			1					
#/Type Container	Liquid																
	Solid	1AG	1AG						1AG		1AG	1AG					
Volume	Liquid																
	Solid	250	500						500		250	1000					
Preservatives		-	-						-		-	-					
ANALYSES REQUESTED		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN	PH	Inorg					
		RECRA LabNet Use Only															
		0624H 0SCSC	0625H 0DRO	0PCB					Met①	1CNTO	1PH	Ing①					

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 0SCSC	0625H 0DRO	0PCB					Met①	1CNTO	1PH	Ing①				
001	Bowmy1			S	10-19-99	0842	✓	✓	X					✓	X	✓	✓				
002	Bowmy2					0850	✓	✓	X					✓	X	✓	✓				
003	Bowmy3					0903	✓	✓	X					✓	X	✓	✓				
004	Bowmy4					0911	✓	✓	X					✓	X	✓	✓				
005	Bowmy6					0919	✓	✓	X					✓	X	✓	✓				
006	Bowmy7					0934	✓	✓	X					✓	X	✓	✓				
007	Bowmy8					0952	✓	✓	X					✓	X	✓	✓				

Special Instructions:

Saf# B99-078

COMPOSITE WASTE

*423579530852 - 5.1°C
423579530863 - 4.7°C

DATE/REVISIONS:

Met① 1. = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
Ing① 3. = 1N3N2, 1CCL, 1CFL, 1CSO4, 1CNO2,
4. 1CNO3, 1CPO4, 1SFD, 1NH3N, 1CR6
5.
6. Run Matrix QC

Relinquished by	Received by	Date	Time
Fed Ex	TMurray	10-21-99	0950

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-144	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 96-051	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA/RECRA~~ RECRA	Offsite Property No.: A990305		Bill of Lading/Air Bill No.: 42357953 0852
			COA B20CW1 67/C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	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			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	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										
343 BOWMY1	Soil	10-19-99	0842		X	X	X	X	X				
240 BOWMY2	Soil	10-19-99	0878		X	X	X	X	X				
253 BOWMY3	Soil	10-19-99	0903		X	X	X	X	X				
217 BOWMY4	Soil	10-19-99	0911		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 10-19-99/1130	Received By: R.f. IB	Date/Time: 10-19-99/1130
Relinquished By: REF IB	Date/Time: 10.20.99/0830	Received By: Rikki Thoren / R. Thoren	Date/Time: 10/20/99 0830
Relinquished By: Rikki Thoren / R Thoren	Date/Time: 10.20.99/1430	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10.21.99 0950	Received By: TMurray	Date/Time: 10.21.99 0950

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

Collector unavailable to relinquish chain. Use BOW8C1 as shipping criteria

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	B99-078-143

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 96-0316	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA/RECRA~~ 10-19-99 RECRA	Offsite Property No.: A99-0305		Bill of Lading/Air Bill No.: 42357953 0863
			COA: B20CW1 67IC

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										
73	BOWM Y6	Soil	10-19-99	0919					X	X	X	X	X	
104	BOWM Y7	Soil	10-19-99	0934					X	X	X	X	X	
232	BOWM Y8	Soil	10-19-99	0952					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: Doug Bowers	Doug Bowers	10-19-99/1130
Received By:	Ref 3B	10-19-99/1130
Relinquished By: Ref 3B	Ref 3B	10-20-99/0830
Received By: Rikki Thoren	R. Thoren	10-20-99/0830
Relinquished By: Rikki Thoren	R. Thoren	10/20/99/1430
Received By: Fed Ex	Fed Ex	
Relinquished By: Fed Ex	Fed Ex	10-21-99 0950
Received By:	Tommy	10-21-99 0950

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

Collector unavailable to relinquish chain use BOW8C1 as shipping criteria

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

009

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

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-078
RFW#: 9910L453
SDG/SAF#: H0584/B99-078

W.O.#: 10985-001-001-9999-00
Date Received: 10-21-99

PCB

The set of samples consisted of seven (7) soil samples collected on 10-19-99.

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

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

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

DEC 1999
RECEIVED
Data
Log In

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-30-99
Date

pef\r:\group\data\pest\10L-453.pcb

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

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

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

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

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

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 11/24/99 15:16

RFW Batch Number: **9910L453** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1

004

	Cust ID:	B0WMY1	B0WMY1	B0WMY1	B0WMY2	B0WMY3	B0WMY4
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	98 %	102 %	92 %	95 %	92 %	90 %
	Decachlorobiphenyl	107 %	104 %	101 %	100 %	101 %	101 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		35 U	35 U	35 U	41 U	57 U	40 U
Aroclor-1221		71 U	71 U	71 U	83 U	110 U	79 U
Aroclor-1232		35 U	35 U	35 U	41 U	57 U	40 U
Aroclor-1242		35 U	35 U	35 U	41 U	57 U	40 U
Aroclor-1248		35 U	35 U	35 U	41 U	57 U	40 U
Aroclor-1254		35 U	87 %	73 %	41 U	57 U	40 U
Aroclor-1260		47	76	49	41 U	57 U	40 U

	Cust ID:	B0WMY6	B0WMY7	B0WMY8	PBLKYH	PBLKYH BS
Sample Information	RFW#:	005	006	007	99LE1303-MB1	99LE1303-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	98 %	70 %	92 %	92 %	95 %
	Decachlorobiphenyl	106 %	79 %	99 %	101 %	100 %
		fl	fl	fl	fl	fl
Aroclor-1016		36 U	36 U	34 U	33 U	33 U
Aroclor-1221		73 U	71 U	69 U	67 U	67 U
Aroclor-1232		36 U	36 U	34 U	33 U	33 U
Aroclor-1242		36 U	36 U	34 U	33 U	33 U
Aroclor-1248		36 U	36 U	34 U	33 U	33 U
Aroclor-1254		36 U	36 U	34 U	33 U	82 %
Aroclor-1260		36 U	36 U	34 U	33 U	33 U

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

gw 11-26-99

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

DATE RECEIVED: 10/21/99 RFW LOT # :9910L453

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WMY1	001	S	99LE1303	10/19/99	10/26/99	11/18/99
B0WMY1	001 MS	S	99LE1303	10/19/99	10/26/99	11/18/99
B0WMY1	001 MSD	S	99LE1303	10/19/99	10/26/99	11/18/99
B0WMY2	002	S	99LE1303	10/19/99	10/26/99	11/19/99
B0WMY3	003	S	99LE1303	10/19/99	10/26/99	11/19/99
B0WMY4	004	S	99LE1303	10/19/99	10/26/99	11/19/99
B0WMY6	005	S	99LE1303	10/19/99	10/26/99	11/19/99
B0WMY7	006	S	99LE1303	10/19/99	10/26/99	11/19/99
B0WMY8	007	S	99LE1303	10/19/99	10/26/99	11/19/99

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
9910L453

Custody Transfer Record/Lab Work Request

Page 1 of 1

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

RECRA LabNet

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: 10-21-99 Date Due: 11/20/99

Account #:

Refrigerator #		1	2	2					2								
#/Type Container	Liquid																
	Solid	1AG	1AG						1AG		1AG	1AG					
Volume	Liquid																
	Solid	250	500						500		250	1000					
Preservatives		–	–						–		–	–					
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN	PH	Inorg.					
		RECRA LabNet Use Only															
		0624H 0GCSC	0625H 0DRO	0PCB					Met①	1CNTO	1PH	Ang①					
001	BOWMY1	✓	✓	X					✓	X	✓	✓					
002	BOWMY2	✓	✓	X					✓	X	✓	✓					
003	BOWMY3	✓	✓	X					✓	X	✓	✓					
004	BOWMY4	✓	✓	X					✓	X	✓	✓					
005	BOWMY6	✓	✓	X					✓	X	✓	✓					
006	BOWMY7	✓	✓	X					✓	X	✓	✓					
007	BOWMY8	✓	✓	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

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

Special Instructions:
Sap# B99-078
COMPOSITE WASTE

*423579530852 -5.1°C
423579530863 -4.7°C

DATE/REVISIONS:
Met① 1. = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
Ang① 3. = 1N3N2, 1CCL, 1CFL, 1CSO4, 1CNO2,
4. 1CNO3, 1CPO4, 1SFD, 1NH3N, 1CRG
5.
6. Run Matrix QC

Relinquished by	Received by	Date	Time
Fed Ex	TMurray	10-21-99	0950

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

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

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

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-144	Page 1 of 1

007

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 96-051	**Field Logbook No.** EL-1511		**Method of Shipment** FED EX
Shipped To ~~TMA/RECRA~~ RECRA	**Offsite Property No.** A990305		**Bill of Lading/Air Bill No.** 42357953 0852
			COA B20CW1 67/C

Price Code 8N **Data Turnaround** 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS												
	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				
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL				
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	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										
343	BOWMY1	Soil	10-19-99	0842		X	X	X	X	X				
240	BOWMY2	Soil	10-19-99	0856		X	X	X	X	X				
233	BOWMY3	Soil	10-19-99	0903		X	X	X	X	X				
217	BOWMY4	Soil	10-19-99	0911		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Date/Time Doug Bowers 10-19-99/1130	Received By Date/Time Ref IB 10-19-99/1130		
Relinquished By Date/Time REF IB 10-20-99/0830	Received By Rikki Thoren Date/Time R. Thoren 10/20/99/0830		
Relinquished By Rikki Thoren Date/Time R Thoren 10-20-99/1430	Received By Date/Time FED EX		
Relinquished By Date/Time Fed Ex 10-21-99 0950	Received By Date/Time T Murray 10-21-99 0950		

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

Collector unavailable to Relinquish chain use BOW 8C1 as shipping criteria

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	B99-078-145	Page 1 of 1

008

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 96.036	**Field Logbook No.** EL-1511		**Method of Shipment** FED EX
Shipped To ~~TMA/RECRA~~ 10-19-99 RECRA	**Offsite Property No.** A99-0305		**Bill of Lading/Air Bill No.** 42357953 Ø863
			COA B20CW1 671C

Price Code 8N **Data Turnaround** 45 Days

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	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										
273	BOWMY6	Soil	10-19-99	0919					X	X	X	X	X	
204	BOWMY7	Soil	10-19-99	0934					X	X	X	X	X	
232	BOWMY8	Soil	10-19-99	0952					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Date/Time Doug Bowers 10-19-99/1130	Received By Date/Time Ref 3B 10-19-99/1130		
Relinquished By Date/Time REF 3B 10-20-99/0830	Received By Rikki Thoren Date/Time R. Thoren 10-20-99/0830		
Relinquished By Rikki Thoren Date/Time R. Thoren 10/20/99/1430	Received By Date/Time Fed EX		
Relinquished By Date/Time Fed EX 10-21-99 0950	Received By Date/Time T Murray 10-21-99 0950		

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
Collector unavailable to relinquish chain
use BOW861 as shipping criteria

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
****REVISION****

Client : TNU-HANFORD B99-078
RFW # : 9910L453
SDG/SAF #: H0584/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 10-21-99

SEMIVOLATILE

This narrative was corrected to add the TIC search for Tributylphosphate.

Seven (7) soil samples were collected on 10-19-99.

The samples and their associated QC samples were extracted on 10-26-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 11-01-99.

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 and Tributylphosphate; however, they were not identified in the samples.

2000
RECEIVED
Data
Log In

by J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

01-17-00
Date

som\gorup\data\bna\tnu10453.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 19 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: 11/20/99 11:47

RFW Batch Number: **9910L453** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0WMY1		B0WMY2		B0WMY3		B0WMY4		B0WMY6		B0WMY7	
Sample Information	RFW#:	001		002		003		004		005		006	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	79	%	75	%	74	%	76	%	76	%	89	%
	2-Fluorobiphenyl	84	%	80	%	71	%	76	%	80	%	85	%
	Terphenyl-d14	82	%	86	%	72	%	82	%	89	%	89	%
	Phenol-d5	75	%	65	%	72	%	66	%	67	%	81	%
	2-Fluorophenol	71	%	62	%	68	%	62	%	64	%	74	%
	2,4,6-Tribromophenol	75	%	59	%	77	%	62	%	59	%	75	%
			fl		fl		fl		fl		fl		fl
Phenol		350	U	420	U	580	U	400	U	370	U	360	U
bis(2-Chloroethyl)ether		350	U	420	U	580	U	400	U	370	U	360	U
2-Chlorophenol		350	U	420	U	580	U	400	U	370	U	360	U
1,3-Dichlorobenzene		350	U	420	U	580	U	400	U	370	U	360	U
1,4-Dichlorobenzene		350	U	420	U	580	U	400	U	370	U	360	U
1,2-Dichlorobenzene		350	U	420	U	580	U	400	U	370	U	360	U
2-Methylphenol		350	U	420	U	580	U	400	U	370	U	360	U
2,2'-oxybis(1-Chloropropane)		350	U	420	U	580	U	400	U	370	U	360	U
4-Methylphenol		350	U	420	U	580	U	400	U	370	U	360	U
N-Nitroso-di-n-propylamine		350	U	420	U	580	U	400	U	370	U	360	U
Hexachloroethane		350	U	420	U	580	U	400	U	370	U	360	U
Nitrobenzene		350	U	420	U	580	U	400	U	370	U	360	U
Isophorone		350	U	420	U	580	U	400	U	370	U	360	U
2-Nitrophenol		350	U	420	U	580	U	400	U	370	U	360	U
2,4-Dimethylphenol		350	U	420	U	580	U	400	U	370	U	360	U
bis(2-Chloroethoxy)methane		350	U	420	U	580	U	400	U	370	U	360	U
2,4-Dichlorophenol		350	U	420	U	580	U	400	U	370	U	360	U
1,2,4-Trichlorobenzene		350	U	420	U	580	U	400	U	370	U	360	U
Naphthalene		350	U	420	U	580	U	400	U	370	U	360	U
4-Chloroaniline		350	U	420	U	580	U	400	U	370	U	360	U
Hexachlorobutadiene		350	U	420	U	580	U	400	U	370	U	360	U
4-Chloro-3-methylphenol		350	U	420	U	580	U	400	U	370	U	360	U
2-Methylnaphthalene		350	U	420	U	580	U	400	U	370	U	360	U
Hexachlorocyclopentadiene		350	U	420	U	580	U	400	U	370	U	360	U
2,4,6-Trichlorophenol		350	U	420	U	580	U	400	U	370	U	360	U
2,4,5-Trichlorophenol		880	U	1000	U	1400	U	990	U	920	U	900	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9910L453 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1b

Cust ID:	B0WMY1		B0WMY2		B0WMY3		B0WMY4		B0WMY6		B0WMY7	
RFW#:	001		002		003		004		005		006	
2-Chloronaphthalene	350	U	420	U	580	U	400	U	370	U	360	U
2-Nitroaniline	880	U	1000	U	1400	U	990	U	920	U	900	U
Dimethylphthalate	350	U	420	U	580	U	400	U	370	U	360	U
Acenaphthylene	350	U	420	U	580	U	400	U	370	U	360	U
2,6-Dinitrotoluene	350	U	420	U	580	U	400	U	370	U	360	U
3-Nitroaniline	880	U	1000	U	1400	U	990	U	920	U	900	U
Acenaphthene	350	U	420	U	580	U	400	U	370	U	360	U
2,4-Dinitrophenol	880	U	1000	U	1400	U	990	U	920	U	900	U
4-Nitrophenol	880	U	1000	U	1400	U	990	U	920	U	900	U
Dibenzofuran	350	U	420	U	580	U	400	U	370	U	360	U
2,4-Dinitrotoluene	350	U	420	U	580	U	400	U	370	U	360	U
Diethylphthalate	350	U	420	U	580	U	400	U	370	U	360	U
4-Chlorophenyl-phenylether	350	U	420	U	580	U	400	U	370	U	360	U
Fluorene	350	U	420	U	580	U	400	U	370	U	360	U
4-Nitroaniline	880	U	1000	U	1400	U	990	U	920	U	900	U
4,6-Dinitro-2-methylphenol	880	U	1000	U	1400	U	990	U	920	U	900	U
N-Nitrosodiphenylamine (1)	350	U	420	U	580	U	400	U	370	U	360	U
4-Bromophenyl-phenylether	350	U	420	U	580	U	400	U	370	U	360	U
Hexachlorobenzene	350	U	420	U	580	U	400	U	370	U	360	U
Pentachlorophenol	880	U	1000	U	1400	U	990	U	920	U	900	U
Phenanthrene	350	U	420	U	580	U	400	U	370	U	360	U
Anthracene	350	U	420	U	580	U	400	U	370	U	360	U
Carbazole	350	U	420	U	580	U	400	U	370	U	360	U
Di-n-butylphthalate	350	U	420	U	580	U	400	U	370	U	360	U
Fluoranthene	26	J	420	U	580	U	400	U	370	U	360	U
Pyrene	27	J	420	U	580	U	400	U	370	U	360	U
Butylbenzylphthalate	350	U	420	U	580	U	400	U	370	U	360	U
3,3'-Dichlorobenzidine	350	U	420	U	580	U	400	U	370	U	360	U
Benzo(a)anthracene	350	U	420	U	580	U	400	U	370	U	360	U
Chrysene	19	J	420	U	580	U	400	U	370	U	360	U
bis(2-Ethylhexyl)phthalate	350	U	420	U	580	U	400	U	370	U	360	U
Di-n-octyl phthalate	350	U	420	U	580	U	400	U	370	U	360	U
Benzo(b)fluoranthene	350	U	420	U	580	U	400	U	370	U	360	U
Benzo(k)fluoranthene	350	U	420	U	580	U	400	U	370	U	360	U
Benzo(a)pyrene	350	U	420	U	580	U	400	U	370	U	360	U
Indeno(1,2,3-cd)pyrene	350	U	420	U	580	U	400	U	370	U	360	U
Dibenz(a,h)anthracene	350	U	420	U	580	U	400	U	370	U	360	U
Benzo(g,h,i)perylene	350	U	420	U	580	U	400	U	370	U	360	U

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

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

RFW Batch Number: **9910L453** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Report Date: 11/20/99 11:47 Page: 2a

	Cust ID:	B0WMY8		B0WMY8		B0WMY8		SBLKFD		SBLKFD BS	
Sample Information	RFW#:	007		007 MS		007 MSD		99LE1305-MB1		99LE1305-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	79	%	89	%	84	%	80	%	66	%
	2-Fluorobiphenyl	83	%	91	%	84	%	80	%	65	%
	Terphenyl-d14	99	%	94	%	97	%	105	%	69	%
	Phenol-d5	69	%	76	%	73	%	74	%	59	%
	2-Fluorophenol	68	%	76	%	68	%	72	%	58	%
	2,4,6-Tribromophenol	59	%	80	%	80	%	77	%	70	%
Phenol		340	U	73	%	68	%	330	U	55	%
bis(2-Chloroethyl)ether		340	U	340	U	340	U	330	U	330	U
2-Chlorophenol		340	U	75	%	69	%	330	U	58	%
1,3-Dichlorobenzene		340	U	340	U	340	U	330	U	330	U
1,4-Dichlorobenzene		340	U	86	%	75	%	330	U	61	%
1,2-Dichlorobenzene		340	U	340	U	340	U	330	U	330	U
2-Methylphenol		340	U	340	U	340	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		340	U	340	U	340	U	330	U	330	U
4-Methylphenol		340	U	340	U	340	U	330	U	330	U
N-Nitroso-di-n-propylamine		340	U	98	%	86	%	330	U	67	%
Hexachloroethane		340	U	340	U	340	U	330	U	330	U
Nitrobenzene		340	U	340	U	340	U	330	U	330	U
Isophorone		340	U	340	U	340	U	330	U	330	U
2-Nitrophenol		340	U	340	U	340	U	330	U	330	U
2,4-Dimethylphenol		340	U	340	U	340	U	330	U	330	U
bis(2-Chloroethoxy)methane		340	U	340	U	340	U	330	U	330	U
2,4-Dichlorophenol		340	U	340	U	340	U	330	U	330	U
1,2,4-Trichlorobenzene		340	U	93	%	83	%	330	U	69	%
Naphthalene		340	U	340	U	340	U	330	U	330	U
4-Chloroaniline		340	U	340	U	340	U	330	U	330	U
Hexachlorobutadiene		340	U	340	U	340	U	330	U	330	U
4-Chloro-3-methylphenol		340	U	77	%	74	%	330	U	62	%
2-Methylnaphthalene		340	U	340	U	340	U	330	U	330	U
Hexachlorocyclopentadiene		340	U	340	U	340	U	330	U	330	U
2,4,6-Trichlorophenol		340	U	340	U	340	U	330	U	330	U
2,4,5-Trichlorophenol		860	U	860	U	860	U	840	U	840	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0WMY8		B0WMY8		B0WMY8		SBLKFD		SBLKFD BS	
RFW#:	007		007 MS		007 MSD		99LE1305-MB1		99LE1305-MB1	
2-Chloronaphthalene	340	U	340	U	340	U	330	U	330	U
2-Nitroaniline	860	U	860	U	860	U	840	U	840	U
Dimethylphthalate	340	U	340	U	340	U	330	U	330	U
Acenaphthylene	340	U	340	U	340	U	330	U	330	U
2,6-Dinitrotoluene	340	U	340	U	340	U	330	U	330	U
3-Nitroaniline	860	U	860	U	860	U	840	U	840	U
Acenaphthene	340	U	88	%	81	%	330	U	69	%
2,4-Dinitrophenol	860	U	860	U	860	U	840	U	840	U
4-Nitrophenol	860	U	67	%	55	%	840	U	55	%
Dibenzofuran	340	U	340	U	340	U	330	U	330	U
2,4-Dinitrotoluene	340	U	82	%	81	%	330	U	67	%
Diethylphthalate	340	U	340	U	340	U	330	U	330	U
4-Chlorophenyl-phenylether	340	U	340	U	340	U	330	U	330	U
Fluorene	340	U	340	U	340	U	330	U	330	U
4-Nitroaniline	860	U	860	U	860	U	840	U	840	U
4,6-Dinitro-2-methylphenol	860	U	860	U	860	U	840	U	840	U
N-Nitrosodiphenylamine (1)	340	U	340	U	340	U	330	U	330	U
4-Bromophenyl-phenylether	340	U	340	U	340	U	330	U	330	U
Hexachlorobenzene	340	U	340	U	340	U	330	U	330	U
Pentachlorophenol	860	U	92	%	79	%	840	U	71	%
Phenanthrene	340	U	340	U	340	U	330	U	330	U
Anthracene	340	U	340	U	340	U	330	U	330	U
Carbazole	340	U	340	U	340	U	330	U	330	U
Di-n-butylphthalate	340	U	340	U	340	U	330	U	330	U
Fluoranthene	340	U	340	U	340	U	330	U	330	U
Pyrene	340	U	102	%	100	%	330	U	71	%
Butylbenzylphthalate	340	U	340	U	340	U	330	U	330	U
3,3'-Dichlorobenzidine	340	U	340	U	340	U	330	U	330	U
Benzo(a)anthracene	340	U	340	U	340	U	330	U	330	U
Chrysene	340	U	340	U	340	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	340	U	340	U	340	U	330	U	330	U
Di-n-octyl phthalate	340	U	340	U	340	U	330	U	330	U
Benzo(b)fluoranthene	340	U	340	U	340	U	330	U	330	U
Benzo(k)fluoranthene	340	U	340	U	340	U	330	U	330	U
Benzo(a)pyrene	340	U	340	U	340	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	340	U	340	U	340	U	330	U	330	U
Dibenz(a,h)anthracene	340	U	340	U	340	U	330	U	330	U
Benzo(g,h,i)perylene	340	U	340	U	340	U	330	U	330	U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WMY1

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L453-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A110105

Level: (low/med) LOW Date Received: 10/21/99

% Moisture: 6 decanted: (Y/N) __ Date Extracted: 10/26/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/01/99

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.	ALDOL CONDENSATE	8.24	200	JA

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WMY2

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L453-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A110106

Level: (low/med) LOW Date Received: 10/21/99

% Moisture: 20 decanted: (Y/N) __ Date Extracted: 10/26/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/01/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0

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

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WMY3

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L453-003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A110107

Level: (low/med) LOW Date Received: 10/21/99

% Moisture: 42 decanted: (Y/N)__ Date Extracted: 10/26/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/01/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0

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

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WMY4

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L453-004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A110108

Level: (low/med) LOW Date Received: 10/21/99

% Moisture: 16 decanted: (Y/N) __ Date Extracted: 10/26/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/01/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0

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

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WMY6

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L453-005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A110109

Level: (low/med) LOW Date Received: 10/21/99

% Moisture: 9 decanted: (Y/N) Date Extracted: 10/26/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/01/99

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.	ALDOL CONDENSATE	8.23	70	JA

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WMY7

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L453-006

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A110113

Level: (low/med) LOW Date Received: 10/21/99

% Moisture: 7 decanted: (Y/N)__ Date Extracted: 10/26/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/01/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0

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

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WMY8

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L453-007

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A110111

Level: (low/med) LOW Date Received: 10/21/99

% Moisture: 3 decanted: (Y/N) __ Date Extracted: 10/26/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/01/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0

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

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

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

DATE RECEIVED: 10/21/99 RFW LOT # :9910L453

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WMY1	001	S	99LE1305	10/19/99	10/26/99	11/01/99
B0WMY2	002	S	99LE1305	10/19/99	10/26/99	11/01/99
B0WMY3	003	S	99LE1305	10/19/99	10/26/99	11/01/99
B0WMY4	004	S	99LE1305	10/19/99	10/26/99	11/01/99
B0WMY6	005	S	99LE1305	10/19/99	10/26/99	11/01/99
B0WMY7	006	S	99LE1305	10/19/99	10/26/99	11/01/99
B0WMY8	007	S	99LE1305	10/19/99	10/26/99	11/01/99
B0WMY8	007 MS	S	99LE1305	10/19/99	10/26/99	11/01/99
B0WMY8	007 MSD	S	99LE1305	10/19/99	10/26/99	11/01/99

LAB QC:

SBLKFD	MB1	S	99LE1305	N/A	10/26/99	11/01/99
SBLKFD	MB1 BS	S	99LE1305	N/A	10/26/99	11/01/99

RECRA LabNet Use Only

9910L453

Custody Transfer Record/Lab Work Request

Page 1 of 1

A11

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

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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: 10-21-99 Date Due: 11/20/99

Account #:

Refrigerator #		1	2	2					2			1					
#/Type Container	Liquid																
	Solid	1AG	1AG	1					1AG	1	1AG	1AG					
Volume	Liquid																
	Solid	250	500	1					500	1	250	1000					
Preservatives		-	-						-		-	-					
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN	PH	Inorg.					
		RECRA LabNet Use Only															
		0624H 0GCSC	0625H 0DRO	0PCB					Met①	1CNTO	1PH	Ang①					
001	BOWMY1	S	10-19-99	0842	✓	✓	X		✓	X	✓	✓					
002	BOWMY2			0850	✓	✓	X		✓	X	✓	✓					
003	BOWMY3			0903	✓	✓	X		✓	X	✓	✓					
004	BOWMY4			0911	✓	✓	X		✓	X	✓	✓					
005	BOWMY6			0919	✓	✓	X		✓	X	✓	✓					
006	BOWMY7			0934	✓	✓	X		✓	X	✓	✓					
007	BOWMY8			0952	✓	✓	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

Special Instructions:

Saf# B99-078

COMPOSITE WASTE

*423579530852 - 5.1°C
423579530863 - 4.7°C

DATE/REVISIONS:

Met① 1. = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg
Ang① 3. = 1N3N2, 1CCL, 1CFL, 1CSO4, 1CNO2
4. 1CNO3, 1CPO4, 1SFD, 1NH3N, 1CR6
5.
6. Run Matrix QC

Relinquished by	Received by	Date	Time
Fed Ex	TMurray	10-21-99	0950

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

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-144	Page 1 of 1

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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 96-051	Field Logbook No. EL-1511		Method of Shipment FED EX		
Shipped To ~~TMA/RECRA~~ DTB 10-19-99 RECRA	Offsite Property No. A990305		Bill of Lading/Air Bill No. 42357953 0852		
			COA B20cwj 67/C		

POSSIBLE SAMPLE HAZARDS/REMARKS	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			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	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										
143	BOWMY1	Soil	10-19-99	0842		X	X	X	X	X				
240	BOWMY2	Soil	10-19-99	0856		X	X	X	X	X				
233	BOWMY3	Soil	10-19-99	0903		X	X	X	X	X				
217	BOWMY4	Soil	10-19-99	0911		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers	Date/Time 10-19-99/1130	Received By Ref IB	Date/Time 10-19-99/1130
Relinquished By REF IB	Date/Time 10-20-99/0830	Received By Rikki Thoren/ R. Thoren	Date/Time 10/20/99/0830
Relinquished By Rikki Thoren R Thoren	Date/Time 10-20-99/1430	Received By FED EX	Date/Time
Relinquished By Fed Ex	Date/Time 10-21-99 0950	Received By T Murray	Date/Time 10-21-99 0950

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

Collector unavailable to Relinquish chain use BOW 8C1 as shipping criteria

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	B99-078-145	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 96-036	Field Logbook No.: EL-1511		Method of Shipment: FED EX		
Shipped To: ~~TMA/RECRA~~ 10-19-99 RECRA	Offsite Property No.: A99-0305		Bill of Lading/Air Bill No.: 42357953 Ø863		
			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										
.73	BOWMY6	Soil	10-19-99	0919					X	X	X	X	X	
204	BOWMY7	Soil	10-19-99	0934					X	X	X	X	X	
232	BOWMY8	Soil	10-19-99	0952					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 10-19-99/1130	Received By: Ref 3B	Date/Time: 10-19-99/1130
Relinquished By: REF 3B	Date/Time: 10-20-99/0830	Received By: Rikki Thoren / R. Thoren	Date/Time: 10-20-99/0830
Relinquished By: Rikki Thoren / R. Thoren	Date/Time: 10/20/99/1430	Received By: Fed EX	Date/Time:
Relinquished By: Fed EX	Date/Time: 10-21-99 0950	Received By: T Murray	Date/Time: 10-21-99 0950

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

Collector unavailable to relinquish chain use BOW8C1 as shipping criteria

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 # : 9910L453
SDG/SAF #: H0584/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 10-21-99

GC/MS VOLATILE

Seven (7) soil samples were collected on 10-19-99.

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 10-31-99 and 11-01-99.

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

1. The cooler temperatures upon receipt have been recorded on the chain-of-custody.
2. The required holding time for analysis was met.
3. Non-target compounds were detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blanks contained the common laboratory contaminant Methylene Chloride at levels less than 2x the CRQL. The method blank 99LVH505-MB1 also contained the target compound 2-Hexanone at a level less than the CRQL.

DEC 1999
RECEIVED
Data
Log In

By S. D. Wesson
J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

12-08-99
Date

som\group\data\voa\tnu10453.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 20 pages.

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

GLOSSARY OF VOA DATA

DATA QUALIFIERS

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

mmz\10-94\gloss.voa

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.voa

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 12/06/99 18:22

RFW Batch Number: **9910L453** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0WMY1		B0WMY2		B0WMY3		B0WMY4		B0WMY6		B0WMY7	
Sample Information	RFW#:	001		002		003		004		005		006	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.926		0.962		0.962		0.962		0.980		0.943	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	102	%	102	%	100	%	97	%	99	%	96	%
	Bromofluorobenzene	87	%	89	%	93	%	93	%	91	%	91	%
	1,2-Dichloroethane-d4	97	%	83	%	96	%	97	%	97	%	96	%
Chloromethane		10	U	12	U	17	U	11	U	11	U	10	U
Bromomethane		10	U	12	U	17	U	11	U	11	U	10	U
Vinyl Chloride		10	U	12	U	17	U	11	U	11	U	10	U
Chloroethane		10	U	12	U	17	U	11	U	11	U	10	U
Methylene Chloride		7	B	9	B	9	B	6	JB	7	B	5	JB
Acetone		10	U	12	U	17	U	11	U	11	U	10	U
Carbon Disulfide		5	U	6	U	8	U	6	U	6	U	5	U
1,1-Dichloroethene		5	U	6	U	8	U	6	U	6	U	5	U
1,1-Dichloroethane		5	U	6	U	8	U	6	U	6	U	5	U
1,2-Dichloroethene (total)		5	U	6	U	8	U	6	U	6	U	5	U
Chloroform		5	U	6	U	8	U	6	U	6	U	5	U
1,2-Dichloroethane		5	U	6	U	8	U	6	U	6	U	5	U
2-Butanone		10	U	12	U	17	U	11	U	11	U	10	U
1,1,1-Trichloroethane		5	U	6	U	8	U	6	U	6	U	5	U
Carbon Tetrachloride		5	U	6	U	8	U	6	U	6	U	5	U
Bromodichloromethane		5	U	6	U	8	U	6	U	6	U	5	U
1,2-Dichloropropane		5	U	6	U	8	U	6	U	6	U	5	U
cis-1,3-Dichloropropene		5	U	6	U	8	U	6	U	6	U	5	U
Trichloroethene		5	U	6	U	8	U	6	U	6	U	5	U
Dibromochloromethane		5	U	6	U	8	U	6	U	6	U	5	U
1,1,2-Trichloroethane		5	U	6	U	8	U	6	U	6	U	5	U
Benzene		5	U	6	U	8	U	6	U	6	U	5	U
Trans-1,3-Dichloropropene		5	U	6	U	8	U	6	U	6	U	5	U
Bromoform		5	U	6	U	8	U	6	U	6	U	5	U
4-Methyl-2-pentanone		10	U	12	U	17	U	11	U	11	U	10	U
2-Hexanone		10	U	12	U	17	U	11	U	11	U	10	U
Tetrachloroethene		2	J	6	U	8	U	6	U	6	U	5	U
1,1,2,2-Tetrachloroethane		5	U	6	U	8	U	6	U	6	U	5	U
Toluene		5	U	6	U	8	U	6	U	6	U	5	U

*= Outside of EPA CLP QC limits.

12-07-99

RFW Batch Number: **9910L453** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1b

Cust ID:	B0WMY1	B0WMY2	B0WMY3	B0WMY4	B0WMY6	B0WMY7
RFW#:	001	002	003	004	005	006
Chlorobenzene	5 U	6 U	8 U	6 U	6 U	5 U
Ethylbenzene	5 U	6 U	8 U	6 U	6 U	5 U
Styrene	5 U	6 U	8 U	6 U	6 U	5 U
Xylene (total)	5 U	6 U	8 U	6 U	6 U	5 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 12/06/99 18:22

RFW Batch Number: **9910L453** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

	Cust ID:	B0WMY8		B0WMY8		B0WMY8		VBLKAE		VBLKAI		VBLKAI BS	
Sample Information	RFW#:	007		007 MS		007 MSD		99LVH503-MB1		99LVH505-MB1		99LVH505-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		0.926		0.893		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	98	%	99	%	99	%	99	%	96	%	98	%
	Bromofluorobenzene	90	%	98	%	99	%	96	%	95	%	96	%
	1,2-Dichloroethane-d4	96	%	100	%	101	%	99	%	103	%	99	%
		fl		fl		fl		fl		fl		fl	
Chloromethane		10	U	10	U	9	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	9	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	9	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	9	U	10	U	10	U	10	U
Methylene Chloride		5	B	6	B	6	B	6		4	J	6	B
Acetone		10	U	10	U	9	U	10	U	10	U	10	U
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	94	%	95	%	5	U	5	U	92	%
1,1-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	5	U	5	U	5	U
Chloroform		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
2-Butanone		10	U	10	U	9	U	10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		5	U	5	U	5	U	5	U	5	U	5	U
Bromodichloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene		5	U	95	%	96	%	5	U	5	U	94	%
Dibromochloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Benzene		5	U	100	%	102	%	5	U	5	U	100	%
Trans-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Bromoform		5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	9	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	9	U	10	U	2	J	10	U
Tetrachloroethene		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Toluene		5	U	100	%	103	%	5	U	5	U	99	%

*= Outside of EPA CLP QC limits.

12-07-99

RFW Batch Number: **9910L453** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2b

Cust ID:	B0WMY8	B0WMY8	B0WMY8	VBLKAE	VBLKAI	VBLKAI BS
RFW#:	007	007 MS	007 MSD	99LVH503-MB1	99LVH505-MB1	99LVH505-MB1
Chlorobenzene	5 U	100 %	103 %	5 U	5 U	99 %
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WMY1

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L453-001

Sample wt/vol: 5.40 (g/mL) G Lab File ID: h103113

Level: (low/med) LOW Date Received: 10/21/99

% Moisture: not dec. 6 Date Analyzed: 10/31/99

Column: (pack/cap) CAP Dilution Factor: 0.926

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WMY2

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L453-002

Sample wt/vol: 5.20 (g/mL) G Lab File ID: h103114

Level: (low/med) LOW Date Received: 10/21/99

% Moisture: not dec. 20 Date Analyzed: 10/31/99

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

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WMY3

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L453-003

Sample wt/vol: 5.20 (g/mL) G Lab File ID: h103115

Level: (low/med) LOW Date Received: 10/21/99

% Moisture: not dec. 42 Date Analyzed: 10/31/99

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

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WMY4

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L453-004

Sample wt/vol: 5.20 (g/mL) G Lab File ID: h103116

Level: (low/med) LOW Date Received: 10/21/99

% Moisture: not dec. 16 Date Analyzed: 10/31/99

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

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WMY6

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L453-005

Sample wt/vol: 5.10 (g/mL) G Lab File ID: h103117

Level: (low/med) LOW Date Received: 10/21/99

% Moisture: not dec. 9 Date Analyzed: 10/31/99

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

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WMY7

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L453-006

Sample wt/vol: 5.30 (g/mL) G Lab File ID: h103118

Level: (low/med) LOW Date Received: 10/21/99

% Moisture: not dec. 7 Date Analyzed: 10/31/99

Column: (pack/cap) CAP Dilution Factor: 0.943

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0WMY8

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9910L453-007

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h103119

Level: (low/med) LOW Date Received: 10/21/99

% Moisture: not dec. 3 Date Analyzed: 10/31/99

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	SILOXANE	22.083	80	J
2. 55429851	BENZENEETHANAMINE, N-[(PENTA	25.370	7	NJ

FORM 1 VOA-TIC 1/87 Rev.

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

DATE RECEIVED: 10/21/99 RFW LOT # :9910L453

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WMY1	001	S	99LVH503	10/19/99	N/A	10/31/99
B0WMY2	002	S	99LVH503	10/19/99	N/A	10/31/99
B0WMY3	003	S	99LVH503	10/19/99	N/A	10/31/99
B0WMY4	004	S	99LVH503	10/19/99	N/A	10/31/99
B0WMY6	005	S	99LVH503	10/19/99	N/A	10/31/99
B0WMY7	006	S	99LVH503	10/19/99	N/A	10/31/99
B0WMY8	007	S	99LVH503	10/19/99	N/A	10/31/99
B0WMY8	007 MS	S	99LVH505	10/19/99	N/A	11/01/99
B0WMY8	007 MSD	S	99LVH505	10/19/99	N/A	11/01/99

LAB QC:

VBLKAE	MB1	S	99LVH503	N/A	N/A	10/31/99
VBLKAI	MB1	S	99LVH505	N/A	N/A	11/01/99
VBLKAI	MB1 BS	S	99LVH505	N/A	N/A	11/01/99

12-07-99

RECRA LabNet Use Only

9910L453

Custody Transfer Record/Lab Work Request

Page 1 of 1

A11

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

RECRA LabNet

18

Client: Thu 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: 10-21-99 Date Due: 11/20/99

Account #:

Refrigerator #		1	2	2					2								
#/Type Container	Liquid																
	Solid	1AG	1AG						1AG		1AG	1AG					
Volume	Liquid																
	Solid	250	500						500		250	1000					
Preservatives		–	–						–		–	–					
ANALYSES REQUESTED		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN	PH	Inorg.					
		RECRA LabNet Use Only															
		0624H 0GCSC	0625H 0DRO	0PCB					Met(1)	1CNTO	1PH	Ang(1)					
001	BOWMY1	✓	✓	X					✓	X	✓	✓					
002	BOWMY2	✓	✓	X					✓	X	✓	✓					
003	BOWMY3	✓	✓	X					✓	X	✓	✓					
004	BOWMY4	✓	✓	X					✓	X	✓	✓					
005	BOWMY6	✓	✓	X					✓	X	✓	✓					
006	BOWMY7	✓	✓	X					✓	X	✓	✓					
007	BOWMY8	✓	✓	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

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

Special Instructions:
Saf # B99-078

COMPOSITE WASTE

423579530852 - 5.1°C
423579530863 - 4.7°C

DATE/REVISIONS:
Met(1) 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. Run Matrix QC

Relinquished by	Received by	Date	Time
Fed Ex	TMurray	10-21-99	0950

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-144	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 96-051	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA/RECRA~~ RECRA	Offsite Property No.: A990305		Bill of Lading/Air Bill No.: 42357953 0852
			COA: B20CW1 67/C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	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			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	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										
343	BOWM41	Soil	10-19-99	0842		X	X	X	X	X				
240	BOWM42	Soil	10-19-99	0858		X	X	X	X	X				
233	BOWM43	Soil	10-19-99	0903		X	X	X	X	X				
217	BOWM44	Soil	10-19-99	0911		X	X	X	X	X				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 10-19-99/1130	Received By: Ref IB	Date/Time: 10-19-99/1130
Relinquished By: REF IB	Date/Time: 10.20.99/0830	Received By: Rikki Thoren / R. Thoren	Date/Time: 10/20/99/0830
Relinquished By: Rikki Thoren / R Thoren	Date/Time: 10.20.99/1430	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 10.21.99 0950	Received By: TMurray	Date/Time: 10.21.99 0950

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

Collector unavailable to relinquish chain use BOW80 as shipping criteria

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

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 96.036	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA/RECRA~~ 10-19-99 RECRA	Offsite Property No.: A99.0305		Bill of Lading/Air Bill No.: 42357953 Ø863
			COA: B20CW1 67IC

Price Code: 8N

Data Turnaround: 45 Days

20

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										
73	BOWMY6	Soil	10-19-99	0919					X	X	X	X	X	
204	BOWMY7	Soil	10-19-99	0934					X	X	X	X	X	
232	BOWMY8	Soil	10-19-99	0952					X	X	X	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers (Doug Bowers)	10-19-99/1130	Ref 3B	10-19-99/1130
REF 3B	10-20-99/0830	Rikki Thoren (R. Thoren)	10-20-99/0830
Rikki Thoren (R. Thoren)	10/20/99/1430	Fed EX	
Fed EX	10-21-99 0950	T Murray	10-21-99 0950

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

Collector unavailable to relinquish chain use BOW8C1 as Shipping criteria

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

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

HU-04 [illegible]

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H0584 was composed of seven solid 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. Partial results were transmitted to BHI via facsimile on January 14, 2000.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

No problems were encountered during the course of the analyses. H samples were batched with SDG H0578 (7245).

2.2 Nickel-63 Analyses

Due to a multitude of problems and QC sample failures the Ni-63 samples were reanalyzed, except for sample B0WMY8 (7251-07). Nickel-63 samples were batched with SDG H0604 (7267). No problems were encountered during the reanalysis. The Ni-63 matrix spike is associated with SDG H0604 (not listed on prep batch summary).

2.3 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.4 Technetium-99 Analyses

Tc samples were batched with SDG H0578 (7245). 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

Samples B0WMY2 (7235-02) and B0WMY8 (7235-07) were reanalyzed due to low yields. The samples were reanalyzed with a new group of QC samples. No problems were encountered for other thorium samples in SDG H0584. No problems were encountered for the reanalysis of samples B0WMY2 and B0WMY8.

2.6 Total Uranium Analyses

No problems were encountered during the course of the analyses.

JAN 2000

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 3, 1999 via facsimile.

2.8 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

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/RICHMOND

SAMPLE DELIVERY GROUP H0584

SAMPLE SUMMARY

SDG 7251
Contact Melissa C. Mannion

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0584

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0WMY1	200 B Pond	SOLID		N910166-01	B99-078	B99-078-144	10/19/99 08:42
B0WMY2	200 B Pond	SOLID		N910166-02	B99-078	B99-078-144	10/19/99 08:50
B0WMY3	200 B Pond	SOLID		N910166-03	B99-078	B99-078-144	10/19/99 09:03
B0WMY4	200 B Pond	SOLID		N910166-04	B99-078	B99-078-144	10/19/99 09:11
B0WMY6	200 B Pond	SOLID		N910166-05	B99-078	B99-078-145	10/19/99 09:19
B0WMY7	200 B Pond	SOLID		N910166-06	B99-078	B99-078-145	10/19/99 09:34
B0WMY8	200 B Pond	SOLID		N910166-07	B99-078	B99-078-145	10/19/99 09:52
Method Blank		SOLID		N910146-09	B99-078		
Method Blank		SOLID		N910166-09	B99-078		
Method Blank		SOLID		N910166-14	B99-078		
Method Blank		SOLID		N910166-21	B99-078		
Method Blank		SOLID		N911026-14	B99-078		
Lab Control Sample		SOLID		N910146-08	B99-078		
Lab Control Sample		SOLID		N910166-08	B99-078		
Lab Control Sample		SOLID		N910166-13	B99-078		
Lab Control Sample		SOLID		N910166-20	B99-078		
Lab Control Sample		SOLID		N911026-13	B99-078		
Duplicate (N910166-01)	200 B Pond	SOLID		N910166-10	B99-078		10/19/99 08:42
Duplicate (N910166-01)	200 B Pond	SOLID		N910166-15	B99-078		10/19/99 08:42
Duplicate (N910166-02)	200 B Pond	SOLID		N910166-22	B99-078		10/19/99 08:50
Duplicate (N910166-05)	200 B Pond	SOLID		N910166-11	B99-078		10/19/99 09:19
Duplicate (N910166-05)	200 B Pond	SOLID		N910166-19	B99-078		10/19/99 09:19
Spike (N910166-06)	200 B Pond	SOLID		N910166-12	B99-078		10/19/99 09:34

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

SDG 7251
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0584

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7245		Method Blank	SOLID						N910146-09	7245-009
		Lab Control Sample	SOLID						N910146-08	7245-008
7251	B99-078-144	B0WMY1	SOLID	94.8			10/21/99	2	N910166-01	7251-001
		B0WMY2	SOLID	92.4			10/21/99	2	N910166-02	7251-002
		B0WMY3	SOLID	95.1			10/21/99	2	N910166-03	7251-003
		B0WMY4	SOLID	96.3			10/21/99	2	N910166-04	7251-004
	B99-078-145	B0WMY6	SOLID	89.6			10/21/99	2	N910166-05	7251-005
		B0WMY7	SOLID	97.4			10/21/99	2	N910166-06	7251-006
		B0WMY8	SOLID	97.1			10/21/99	2	N910166-07	7251-007
		Method Blank	SOLID						N910166-09	7251-009
		Method Blank	SOLID						N910166-14	7251-014
		Method Blank	SOLID						N910166-21	7251-021
		Lab Control Sample	SOLID						N910166-08	7251-008
		Lab Control Sample	SOLID						N910166-13	7251-013
		Lab Control Sample	SOLID						N910166-20	7251-020
		Duplicate (N910166-01)	SOLID				10/21/99	2	N910166-10	7251-010
		Duplicate (N910166-01)	SOLID				10/21/99	2	N910166-15	7251-015
		Duplicate (N910166-02)	SOLID				10/21/99	2	N910166-22	7251-022
		Duplicate (N910166-05)	SOLID				10/21/99	2	N910166-11	7251-011
		Duplicate (N910166-05)	SOLID				10/21/99	2	N910166-19	7251-019
		Spike (N910166-06)	SOLID				10/21/99	2	N910166-12	7251-012
7267		Method Blank	SOLID						N911026-14	7267-014
		Lab Control Sample	SOLID						N911026-13	7267-013

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

SDG 7251
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0584

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	6904-150	5.0	7			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6904-150	5.0	7			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6904-150	5.0	7			2	2	2/2		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6904-150	10.0	7			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6904-128	10.0	3			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6904-150	15.0	7			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6904-150	9.0	7			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6904-128	10.0	3			1	1	1/1	1/1	
NI_L	SOLID	Nickel 63 in Soil	6909-012	10.0	3			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 01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

WORK SUMMARY

SDG 7251
Contact Melissa C. Mannion

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0584

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0WMY1			N910166-01	7251-001	AM		12/28/99	01/14/00	MCM	Americium 241 in Soil
200 B Pond		SOLID	10/19/99	7251-001	GAM		12/07/99	01/14/00	MCM	Gamma Scan
B99-078-144	B99-078		10/21/99	7251-001	PU		12/22/99	01/14/00	MCM	Plutonium, Isotopic in Solids
				7251-001	SR		12/27/99	01/14/00	MCM	Total Strontium in Soil
				7251-001	TH		12/29/99	01/14/00	MCM	Thorium, Isotopic in Soil
				7251-001	U_T		11/08/99	01/14/00	MCM	Uranium, Total in Soil
B0WMY2			N910166-02	7251-002	AM		12/28/99	01/14/00	MCM	Americium 241 in Soil
200 B Pond		SOLID	10/19/99	7251-002	GAM		12/07/99	01/14/00	MCM	Gamma Scan
B99-078-144	B99-078		10/21/99	7251-002	PU		12/22/99	01/14/00	MCM	Plutonium, Isotopic in Solids
				7251-002	SR		12/18/99	01/14/00	MCM	Total Strontium in Soil
				7251-002	TH	A1	01/25/00	01/28/00	MCM	Thorium, Isotopic in Soil
				7251-002	U_T		11/08/99	01/14/00	MCM	Uranium, Total in Soil
B0WMY3			N910166-03	7251-003	AM		12/28/99	01/14/00	MCM	Americium 241 in Soil
200 B Pond		SOLID	10/19/99	7251-003	GAM		12/07/99	01/14/00	MCM	Gamma Scan
B99-078-144	B99-078		10/21/99	7251-003	PU		12/22/99	01/14/00	MCM	Plutonium, Isotopic in Solids
				7251-003	SR		12/18/99	01/14/00	MCM	Total Strontium in Soil
				7251-003	TH		12/29/99	01/14/00	MCM	Thorium, Isotopic in Soil
				7251-003	U_T		11/08/99	01/14/00	MCM	Uranium, Total in Soil
B0WMY4			N910166-04	7251-004	AM		12/28/99	01/14/00	MCM	Americium 241 in Soil
200 B Pond		SOLID	10/19/99	7251-004	GAM		12/07/99	01/14/00	MCM	Gamma Scan
B99-078-144	B99-078		10/21/99	7251-004	PU		12/22/99	01/14/00	MCM	Plutonium, Isotopic in Solids
				7251-004	SR		12/18/99	01/14/00	MCM	Total Strontium in Soil
				7251-004	TH		12/29/99	01/14/00	MCM	Thorium, Isotopic in Soil
				7251-004	U_T		11/08/99	01/14/00	MCM	Uranium, Total in Soil
B0WMY6			N910166-05	7251-005	AM		12/28/99	01/14/00	MCM	Americium 241 in Soil
200 B Pond		SOLID	10/19/99	7251-005	GAM		12/07/99	01/14/00	MCM	Gamma Scan
B99-078-145	B99-078		10/21/99	7251-005	H		12/18/99	01/14/00	MCM	Tritium in Soil
				7251-005	NI_L	A1	01/20/00	01/28/00	MCM	Nickel 63 in Soil
				7251-005	PU		12/22/99	01/14/00	MCM	Plutonium, Isotopic in Solids
				7251-005	SR		12/18/99	01/14/00	MCM	Total Strontium in Soil
				7251-005	TC		12/21/99	01/14/00	MCM	Technetium 99 in Soil
				7251-005	TH		12/29/99	01/14/00	MCM	Thorium, Isotopic in Soil
				7251-005	U_T		11/08/99	01/14/00	MCM	Uranium, Total in Soil

Lab id TMANC
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

SDG 7251
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0584

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0WMY7			N910166-06	7251-006	AM		12/28/99	01/14/00	MCM	Americium 241 in Soil
200 B Pond		SOLID	10/19/99	7251-006	GAM		12/07/99	01/14/00	MCM	Gamma Scan
B99-078-145	B99-078		10/21/99	7251-006	H		12/18/99	01/14/00	MCM	Tritium in Soil
				7251-006	NI_L	A1	01/20/00	01/28/00	MCM	Nickel 63 in Soil
				7251-006	PU		12/22/99	01/14/00	MCM	Plutonium, Isotopic in Solids
				7251-006	SR		12/20/99	01/14/00	MCM	Total Strontium in Soil
				7251-006	TC		12/27/99	01/14/00	MCM	Technetium 99 in Soil
				7251-006	TH		12/29/99	01/14/00	MCM	Thorium, Isotopic in Soil
				7251-006	U_T		11/08/99	01/14/00	MCM	Uranium, Total in Soil
B0WMY8			N910166-07	7251-007	AM		12/29/99	01/14/00	MCM	Americium 241 in Soil
200 B Pond		SOLID	10/19/99	7251-007	GAM		12/07/99	01/14/00	MCM	Gamma Scan
B99-078-145	B99-078		10/21/99	7251-007	H		12/18/99	01/14/00	MCM	Tritium in Soil
				7251-007	NI_L		12/21/99	01/28/00	MCM	Nickel 63 in Soil
				7251-007	PU		12/22/99	01/14/00	MCM	Plutonium, Isotopic in Solids
				7251-007	SR		12/20/99	01/14/00	MCM	Total Strontium in Soil
				7251-007	TC		12/20/99	01/14/00	MCM	Technetium 99 in Soil
				7251-007	TH	A1	01/25/00	01/28/00	MCM	Thorium, Isotopic in Soil
				7251-007	U_T		11/08/99	01/14/00	MCM	Uranium, Total in Soil
Method Blank			N910146-09	7245-009	H		12/18/99	01/07/00	NJV	Tritium in Soil
		SOLID		7245-009	TC		12/21/99	01/07/00	NJV	Technetium 99 in Soil
	B99-078									
Method Blank			N910166-09	7251-009	AM		12/29/99	01/14/00	MCM	Americium 241 in Soil
		SOLID		7251-009	GAM		12/08/99	01/14/00	MCM	Gamma Scan
	B99-078			7251-009	PU		12/21/99	01/14/00	MCM	Plutonium, Isotopic in Solids
				7251-009	SR		12/17/99	01/14/00	MCM	Total Strontium in Soil
				7251-009	TH		12/28/99	01/14/00	MCM	Thorium, Isotopic in Soil
Method Blank			N910166-14	7251-014	U_T		11/08/99	01/14/00	MCM	Uranium, Total in Soil
		SOLID								
	B99-078									
Method Blank			N910166-21	7251-021	TH		01/25/00	01/28/00	MCM	Thorium, Isotopic in Soil
		SOLID								
	B99-078									

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SAMPLE DELIVERY GROUP H0584

SDG 7251
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0584

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Method Blank	B99-078	SOLID	N911026-14	7267-014	NI_L		01/16/00	01/18/00	MCM	Nickel 63 in Soil
Lab Control Sample	B99-078	SOLID	N910146-08	7245-008	H		12/18/99	01/07/00	NJV	Tritium in Soil
				7245-008	TC		12/21/99	01/07/00	NJV	Technetium 99 in Soil
Lab Control Sample	B99-078	SOLID	N910166-08	7251-008	AM		12/28/99	01/14/00	MCM	Americium 241 in Soil
				7251-008	GAM		12/07/99	01/14/00	MCM	Gamma Scan
				7251-008	PU		12/22/99	01/14/00	MCM	Plutonium, Isotopic in Solids
				7251-008	SR		12/17/99	01/14/00	MCM	Total Strontium in Soil
				7251-008	TH		12/28/99	01/14/00	MCM	Thorium, Isotopic in Soil
Lab Control Sample	B99-078	SOLID	N910166-13	7251-013	U_T		11/08/99	01/14/00	MCM	Uranium, Total in Soil
Lab Control Sample	B99-078	SOLID	N910166-20	7251-020	TH		01/25/00	01/28/00	MCM	Thorium, Isotopic in Soil
Lab Control Sample	B99-078	SOLID	N911026-13	7267-013	NI_L		01/16/00	01/18/00	MCM	Nickel 63 in Soil
Duplicate (N910166-01)			N910166-10	7251-010	AM		12/29/99	01/14/00	MCM	Americium 241 in Soil
200 B Pond	B99-078	SOLID	10/19/99	7251-010	GAM		12/09/99	01/14/00	MCM	Gamma Scan
			10/21/99	7251-010	PU		12/22/99	01/14/00	MCM	Plutonium, Isotopic in Solids
				7251-010	SR		12/28/99	01/14/00	MCM	Total Strontium in Soil
				7251-010	TH		12/29/99	01/14/00	MCM	Thorium, Isotopic in Soil
Duplicate (N910166-01)			N910166-15	7251-015	U_T		11/08/99	01/14/00	MCM	Uranium, Total in Soil
200 B Pond	B99-078	SOLID	10/19/99							
			10/21/99							
Duplicate (N910166-02)			N910166-22	7251-022	TH		01/25/00	01/28/00	MCM	Thorium, Isotopic in Soil
200 B Pond	B99-078	SOLID	10/19/99							
			10/21/99							

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SAMPLE DELIVERY GROUP H0584

SDG 7251
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0584

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Duplicate (N910166-05)			N910166-11	7251-011	H		12/19/99	01/14/00	MCM	Tritium in Soil
200 B Pond		SOLID	10/19/99	7251-011	TC		12/20/99	01/14/00	MCM	Technetium 99 in Soil
	B99-078		10/21/99							
Duplicate (N910166-05)			N910166-19	7251-019	NI_L		01/20/00	01/28/00	MCM	Nickel 63 in Soil
200 B Pond		SOLID	10/19/99							
	B99-078		10/21/99							
Spike (N910166-06)			N910166-12	7251-012	H		12/19/99	01/14/00	MCM	Tritium in Soil
200 B Pond		SOLID	10/19/99							
	B99-078		10/21/99							

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		6
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			2	2	2		13
U_T	B99-078	Uranium, Total in Soil	UKPA	7			1	1	1		10
TOTALS				51			10	10	10	1	82

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SAMPLE DELIVERY GROUP H0584

N910146-09 Method Blank

METHOD BLANK

SDG	7251	Client/Case no	Hanford	SDG H0584	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	N910146-09	Client sample id	Method Blank		
Dept sample id	7245-009	Material/Matrix		SOLID	
		SAF No	B99-078		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.096	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	N.A.			1.0		PU
Plutonium 239/240	PU-239/240	N.A.			1.0		PU
Nickel 63	13981-37-8	N.A.			30		NI_L
Americium 241	14596-10-2	N.A.			1.0		AM
Total Strontium	SR-RAD	N.A.			1.0		SR
Thorium 228	14274-82-9	N.A.			1.0		TH
Thorium 230	14269-63-7	N.A.			1.0		TH
Thorium 232	TH-232	N.A.			1.0		TH
Potassium 40	13966-00-2	N.A.					GAM
Cobalt 60	10198-40-0	N.A.			0.050		GAM
Cesium 137	10045-97-3	N.A.			0.10		GAM
Europium 152	14683-23-9	N.A.			0.10		GAM
Europium 154	15585-10-1	N.A.			0.10		GAM
Europium 155	14391-16-3	N.A.			0.10		GAM
Radium 226	13982-63-3	N.A.			0.10		GAM
Radium 228	15262-20-1	N.A.			0.20		GAM
Thorium 228	14274-82-9	N.A.					GAM
Thorium 232	TH-232	N.A.					GAM
Americium 241	14596-10-2	N.A.					GAM
Uranium 238	U-238	N.A.					GAM
Uranium 235	15117-96-1	N.A.					GAM

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	01/28/00

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SAMPLE DELIVERY GROUP H0584

N910166-09 Method Blank

METHOD BLANK

SDG	7251	Client/Case no	Hanford SDG H0584
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910166-09	Client sample id	Method Blank
Dept sample id	7251-009	Material/Matrix	SOLID
		SAF No	B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Plutonium 238	13981-16-3	0	0.016	0.039	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.004	0.016	0.039	1.0	U	PU
Americium 241	14596-10-2	0.002	0.015	0.024	1.0	U	AM
Total Strontium	SR-RAD	-0.044	0.11	0.19	1.0	U	SR
Thorium 228	14274-82-9	0.018	0.18	0.33	1.0	U	TH
Thorium 230	14269-63-7	0.197	0.14	0.14	1.0	J	TH
Thorium 232	TH-232	0.018	0.072	0.14	1.0	U	TH
Potassium 40	13966-00-2	U		0.25		U	GAM
Cobalt 60	10198-40-0	U		0.009	0.050	U	GAM
Cesium 137	10045-97-3	U		0.012	0.10	U	GAM
Europium 152	14683-23-9	U		0.032	0.10	U	GAM
Europium 154	15585-10-1	U		0.033	0.10	U	GAM
Europium 155	14391-16-3	U		0.043	0.10	U	GAM
Radium 226	13982-63-3	U		0.026	0.10	U	GAM
Radium 228	15262-20-1	U		0.089	0.20	U	GAM
Thorium 228	14274-82-9	U		0.020		U	GAM
Thorium 232	TH-232	U		0.089		U	GAM
Americium 241	14596-10-2	U		0.098		U	GAM
Uranium 238	U-238	U		1.8		U	GAM
Uranium 235	15117-96-1	U		0.057		U	GAM

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

QC-BLANK 32640

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N910166-14 Method Blank

METHOD BLANK

SDG	7251	Client/Case no	Hanford	SDG H0584	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	N910166-14	Client sample id	Method Blank		
Dept sample id	7251-014	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	-0.002	0.002	0.004	1.0	U	U_T

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

QC-BLANK 32292

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N910166-21 Method Blank

METHOD BLANK

SDG	7251	Client/Case no	Hanford SDG H0584
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910166-21	Client sample id	Method Blank
Dept sample id	7251-021	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
Thorium 228	14274-82-9	0.018	0.090	0.16	1.0	U	TH
Thorium 230	14269-63-7	0.170	0.13	0.16	1.0	J	TH
Thorium 232	TH-232	-0.009	0.018	0.068	1.0	U	TH

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

QC-BLANK 33172

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N911026-14

Method Blank

METHOD BLANK

SDG	7251	Client/Case no	Hanford SDG H0584
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N911026-14	Client sample id	Method Blank
Dept sample id	7267-014	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
Tritium	10028-17-8	N.A.			400		H
Plutonium 238	13981-16-3	N.A.			1.0		PU
Plutonium 239/240	PU-239/240	N.A.			1.0		PU
Nickel 63	13981-37-8	-0.346	1.2	2.0	30	U	NI_L
Americium 241	14596-10-2	N.A.			1.0		AM
Total Strontium	SR-RAD	N.A.			1.0		SR
Thorium 228	14274-82-9	N.A.			1.0		TH
Thorium 230	14269-63-7	N.A.			1.0		TH
Thorium 232	TH-232	N.A.			1.0		TH
Potassium 40	13966-00-2	N.A.					GAM
Cobalt 60	10198-40-0	N.A.			0.050		GAM
Cesium 137	10045-97-3	N.A.			0.10		GAM
Europium 152	14683-23-9	N.A.			0.10		GAM
Europium 154	15585-10-1	N.A.			0.10		GAM
Europium 155	14391-16-3	N.A.			0.10		GAM
Radium 226	13982-63-3	N.A.			0.10		GAM
Radium 228	15262-20-1	N.A.			0.20		GAM
Thorium 228	14274-82-9	N.A.					GAM
Thorium 232	TH-232	N.A.					GAM
Americium 241	14596-10-2	N.A.					GAM
Uranium 238	U-238	N.A.					GAM
Uranium 235	15117-96-1	N.A.					GAM

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

QC-BLANK 32824

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N910146-08

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7251

Contact Melissa C. Mannion

Client/Case no Hanford SDG H0584

Case no TRB-SBB-207925

Lab sample id N910146-08

Dept sample id 7245-008

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	13.0	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	N.A.			1.0		PU					80-120
Plutonium 239/240	N.A.			1.0		PU					80-120
Nickel 63	N.A.			30		NI_L					
Americium 241	N.A.			1.0		AM					80-120
Total Strontium	N.A.			1.0		SR					
Thorium 228	N.A.			1.0		TH					
Thorium 230	N.A.			1.0		TH					
Thorium 232	N.A.			1.0		TH					
Cobalt 60	N.A.			0.050		GAM					80-120
Cesium 137	N.A.			0.10		GAM					80-120

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

QC-LCS 32543

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N910166-08

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7251

Contact Melissa C. Mannion

Client/Case no Hanford SDG H0584

Case no TRB-SBB-207925

Lab sample id N910166-08

Dept sample id 7251-008

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Plutonium 238	13.0	1.1	0.081	1.0		PU	12.5	0.50	104	84-116	80-120
Plutonium 239/240	13.1	1.1	0.046	1.0		PU	13.2	0.53	99	84-116	80-120
Americium 241	10.2	0.66	0.053	1.0		AM	11.5	0.46	89	88-112	80-120
Total Strontium	13.2	0.58	0.26	1.0		SR	12.4	0.50	106	82-118	
Thorium 228	-0.012	0.12	0.22	1.0	U	TH					
Thorium 230	23.4	1.5	0.16	1.0	B	TH	22.4	0.90	104	86-114	
Thorium 232	0.024	0.048	0.091	1.0	U	TH					
Cobalt 60	0.384	0.012	0.005	0.050		GAM	0.401	0.016	96	77-123	80-120
Cesium 137	0.425	0.011	0.007	0.10		GAM	0.444	0.018	96	77-123	80-120

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

QC-LCS 32639

Lab id TMANC

Protocol Hanford

Version Ver 1.0

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N910166-13

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7251

Contact Melissa C. Mannion

Client/Case no Hanford SDG H0584

Case no TRB-SBB-207925

Lab sample id N910166-13

Dept sample id 7251-013

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Uranium (ug/g)	38.4	4.7	0.041	1.0		U_T	41.2	1.6	93	78-122	80-120

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

QC-LCS 32291

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N910166-20 Lab Control Sample

LAB CONTROL SAMPLE

SDG	7251	Client/Case no	Hanford SDG H0584
Contact	Melissa C. Mannion	Case no	TRB-SBB-207925
Lab sample id	N910166-20	Client sample id	Lab Control Sample
Dept sample id	7251-020	Material/Matrix	SOLID
		SAF No	B99-078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Thorium 228	-0.018	0.053	0.14	1.0	U	TH					
Thorium 230	20.7	1.2	0.16	1.0	B	TH	20.4	0.82	102	87-113	
Thorium 232	0.080	0.053	0.068	1.0	J	TH					

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

QC-LCS 33171

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N911026-13

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7251

Contact Melissa C. Mannion

Client/Case no Hanford SDG H0584

Case no TRB-SBB-207925

Lab sample id N911026-13

Dept sample id 7267-013

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	N.A.			400		H					80-120
Plutonium 238	N.A.			1.0		PU					80-120
Plutonium 239/240	N.A.			1.0		PU					80-120
Nickel 63	153	3.8	2.0	30		NI_L	147	5.9	104	83-117	
Americium 241	N.A.			1.0		AM					80-120
Total Strontium	N.A.			1.0		SR					
Thorium 228	N.A.			1.0		TH					
Thorium 230	N.A.			1.0		TH					
Thorium 232	N.A.			1.0		TH					
Cobalt 60	N.A.			0.050		GAM					80-120
Cesium 137	N.A.			0.10		GAM					80-120

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

QC-LCS 32823

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N910166-10

B0WMY1

DUPLICATE

SDG	7251			Client/Case no	Hanford SDG H0584
Contact	Melissa C. Mannion			Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL			
Lab sample id	N910166-10	Lab sample id	N910166-01	Client sample id	B0WMY1
Dept sample id	7251-010	Dept sample id	7251-001	Location/Matrix	200 B Pond SOLID
		Received	10/21/99	Collected	10/19/99 08:42
		% solids	94.8	Custody/SAF No	B99-078-144 B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Plutonium 238	0.092	0.044	0.034	1.0	J	PU	0.060	0.037	0.044	J	42	114
Plutonium 239/240	1.33	0.18	0.034	1.0		PU	1.32	0.18	0.035		1	31
Americium 241	0.213	0.060	0.059	1.0	J	AM	0.233	0.083	0.081	J	9	70
Total Strontium	0.527	0.12	0.14	1.0	J	SR	0.570	0.10	0.12	J	8	48
Thorium 228	0.894	0.29	0.30	1.0	J	TH	0.906	0.32	0.33	J	1	73
Thorium 230	0.298	0.17	0.22	1.0	J	TH	0.588	0.27	0.22	J	65	109
Thorium 232	0.765	0.23	0.14	1.0	J	TH	0.520	0.23	0.17	J	38	77
Potassium 40	11.6	0.40	0.15			GAM	11.3	0.41	0.17		3	33
Cobalt 60	U		0.020	0.050	U	GAM	U		0.020	U	-	
Cesium 137	25.5	0.14	0.038	0.10		GAM	25.3	0.14	0.040		1	32
Europium 152	U		0.13	0.10	U	GAM	U		0.14	U	-	
Europium 154	U		0.065	0.10	U	GAM	U		0.070	U	-	
Europium 155	U		0.097	0.10	U	GAM	U		0.10	U	-	
Radium 226	0.833	0.066	0.071	0.10		GAM	0.806	0.072	0.077		3	36
Radium 228	0.821	0.084	0.081	0.20		GAM	0.765	0.088	0.085		7	39
Thorium 228	0.797	0.046	0.062			GAM	0.790	0.047	0.064		1	34
Thorium 232	0.821	0.084	0.081			GAM	0.765	0.088	0.085		7	39
Americium 241	U		0.11		U	GAM	0.097	0.071	0.12	U	-	
Uranium 238	U		2.4		U	GAM	4.05	2.7	2.8		51	171
Uranium 235	U		0.15		U	GAM	U		0.15	U	-	

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

QC-DUP#1 32641

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N910166-15 B0WMY1

DUPLICATE

SDG	7251			Client/Case no	Hanford SDG H0584
Contact	Melissa C. Mannion			Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL			
Lab sample id	N910166-15	Lab sample id	N910166-01	Client sample id	B0WMY1
Dept sample id	7251-015	Dept sample id	7251-001	Location/Matrix	200 B Pond SOLID
		Received	10/21/99	Collected	10/19/99 08:42
		% solids	94.8	Custody/SAF No	B99-078-144 B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Total Uranium (ug/g)	0.848	0.098	0.004	1.0	J	U_T	0.793	0.092	0.004	J	7	31	

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

QC-DUP#1 32293

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N910166-22 B0WMY2

DUPLICATE

SDG 7251		Client/Case no Hanford	SDG H0584
Contact Melissa C. Mannion		Case no TRB-SBB-207925	
DUPLICATE	ORIGINAL		
Lab sample id N910166-22	Lab sample id N910166-02	Client sample id B0WMY2	
Dept sample id 7251-022	Dept sample id 7251-002	Location/Matrix 200 B Pond	SOLID
	Received 10/21/99	Collected 10/19/99 08:50	
	% solids 92.4	Custody/SAF No B99-078-144	B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Thorium 228	0.503	0.17	0.17	1.0	J	TH	0.717	0.19	0.15	J	35	64	
Thorium 230	U		0.16	1.0	U	TH	U		0.18	U	-		
Thorium 232	0.557	0.15	0.070	1.0	J	TH	0.561	0.15	0.079	J	1	58	

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

QC DUP#2A1 33173

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N910166-11 B0WMY6

DUPLICATE

SDG	7251			Client/Case no	Hanford SDG H0584
Contact	Melissa C. Mannion			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N910166-11	Lab sample id	N910166-05	Client sample id	B0WMY6
Dept sample id	7251-011	Dept sample id	7251-005	Location/Matrix	200 B Pond SOLID
		Received	10/21/99	Collected	10/19/99 09:19
		% solids	89.6	Custody/SAF No	B99-078-145 B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Tritium	0.013	0.053	0.090	400	U	H	0.038	0.056	0.093	U	-		
Technetium 99	1.44	0.26	0.48	15	JB	TC	1.86	0.22	0.35	JB	25	38	

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

QC-DUP#5 32642

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N910166-19

B0WMY6

DUPLICATE

SDG	7251			Client/Case no	Hanford SDG H0584
Contact	Melissa C. Mannion			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N910166-19	Lab sample id	N910166-05	Client sample id	B0WMY6
Dept sample id	7251-019	Dept sample id	7251-005	Location/Matrix	200 B Pond SOLID
		Received	10/21/99	Collected	10/19/99 09:19
		% solids	89.6	Custody/SAF No	B99-078-145 B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Nickel 63	0.754	1.3	2.1	30	U	NI_L	0.883	1.2	2.0	U	-		

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

QC DUP#5A1 33006

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/28/00

MATRIX SPIKE

SDG	7251			Client/Case no	Hanford SDG H0584
Contact	Melissa C. Mannion			Case no	TRB-SBB-207925
	MATRIX SPIKE		ORIGINAL		
Lab sample id	N910166-12	Lab sample id	N910166-06	Client sample id	B0WMY7
Dept sample id	7251-012	Dept sample id	7251-006	Location/Matrix	200 B Pond SOLID
		Received	10/21/99	Collected	10/19/99 09:34
		% solids	97.4	Custody/SAF No	B99-078-145 B99-078

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	42.1	0.43	0.093	400	J	H	46.5	1.9	0.015	0.052	91	85-115	

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

QC-MS#6 32643

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N910166-01 B0WMY1

DATA SHEET

SDG	7251	Client/Case no	Hanford SDG H0584
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910166-01	Client sample id	B0WMY1
Dept sample id	7251-001	Location/Matrix	200 B Pond SOLID
Received	10/21/99	Collected	10/19/99 08:42
% solids	94.8	Custody/SAF No	B99-078-144 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	0.793	0.092	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0.060	0.037	0.044	1.0	J	PU
Plutonium 239/240	PU-239/240	1.32	0.18	0.035	1.0		PU
Americium 241	14596-10-2	0.233	0.083	0.081	1.0	J	AM
Total Strontium	SR-RAD	0.570	0.10	0.12	1.0	J	SR
Thorium 228	14274-82-9	0.906	0.32	0.33	1.0	J	TH
Thorium 230	14269-63-7	0.588	0.27	0.22	1.0	J	TH
Thorium 232	TH-232	0.520	0.23	0.17	1.0	J	TH
Potassium 40	13966-00-2	11.3	0.41	0.17			GAM
Cobalt 60	10198-40-0	U		0.020	0.050	U	GAM
Cesium 137	10045-97-3	25.3	0.14	0.040	0.10		GAM
Europium 152	14683-23-9	U		0.14	0.10	U	GAM
Europium 154	15585-10-1	U		0.070	0.10	U	GAM
Europium 155	14391-16-3	U		0.10	0.10	U	GAM
Radium 226	13982-63-3	0.806	0.072	0.077	0.10		GAM
Radium 228	15262-20-1	0.765	0.088	0.085	0.20		GAM
Thorium 228	14274-82-9	0.790	0.047	0.064			GAM
Thorium 232	TH-232	0.765	0.088	0.085			GAM
Americium 241	14596-10-2	0.097	0.071	0.12		U	GAM
Uranium 238	U-238	4.05	2.7	2.8			GAM
Uranium 235	15117-96-1	U		0.15		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	01/28/00

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0584

N910166-02 B0WMY2

DATA SHEET

SDG	7251	Client/Case no	Hanford	SDG H0584	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	N910166-02	Client sample id	B0WMY2		
Dept sample id	7251-002	Location/Matrix	200 B Pond	SOLID	
Received	10/21/99	Collected	10/19/99 08:50		
% solids	92.4	Custody/SAF No	B99-078-144	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.406	0.047	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	-0.004	0.018	0.043	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.009	0.009	0.042	1.0	U	PU
Americium 241	14596-10-2	0.013	0.042	0.071	1.0	U	AM
Total Strontium	SR-RAD	0.107	0.12	0.16	1.0	U	SR
Thorium 228	14274-82-9	0.717	0.19	0.15	1.0	J	TH
Thorium 230	14269-63-7	U		0.18	1.0	U	TH
Thorium 232	TH-232	0.561	0.15	0.079	1.0	J	TH
Potassium 40	13966-00-2	15.4	0.62	0.27			GAM
Cobalt 60	10198-40-0	U		0.027	0.050	U	GAM
Cesium 137	10045-97-3	U		0.026	0.10	U	GAM
Europium 152	14683-23-9	U		0.067	0.10	U	GAM
Europium 154	15585-10-1	U		0.090	0.10	U	GAM
Europium 155	14391-16-3	U		0.096	0.10	U	GAM
Radium 226	13982-63-3	0.607	0.058	0.056	0.10		GAM
Radium 228	15262-20-1	0.896	0.12	0.11	0.20		GAM
Thorium 228	14274-82-9	0.741	0.036	0.034			GAM
Thorium 232	TH-232	0.896	0.12	0.11			GAM
Americium 241	14596-10-2	U		0.24		U	GAM
Uranium 238	U-238	U		3.5		U	GAM
Uranium 235	15117-96-1	U		0.12		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	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N910166-03 B0WMY3

DATA SHEET

SDG	7251	Client/Case no	Hanford SDG H0584
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910166-03	Client sample id	B0WMY3
Dept sample id	7251-003	Location/Matrix	200 B Pond SOLID
Received	10/21/99	Collected	10/19/99 09:03
% solids	95.1	Custody/SAF No	B99-078-144 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	0.587	0.068	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0.014	0.027	0.052	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.007	0.014	0.052	1.0	U	PU
Americium 241	14596-10-2	0.016	0.040	0.065	1.0	U	AM
Total Strontium	SR-RAD	0.048	0.13	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.408	0.15	0.18	1.0	J	TH
Thorium 230	14269-63-7	0.461	0.19	0.22	1.0	J	TH
Thorium 232	TH-232	0.364	0.13	0.082	1.0	J	TH
Potassium 40	13966-00-2	14.4	0.53	0.23			GAM
Cobalt 60	10198-40-0	U		0.020	0.050	U	GAM
Cesium 137	10045-97-3	U		0.018	0.10	U	GAM
Europium 152	14683-23-9	U		0.049	0.10	U	GAM
Europium 154	15585-10-1	U		0.076	0.10	U	GAM
Europium 155	14391-16-3	U		0.052	0.10	U	GAM
Radium 226	13982-63-3	0.431	0.040	0.037	0.10		GAM
Radium 228	15262-20-1	0.639	0.099	0.097	0.20		GAM
Thorium 228	14274-82-9	0.625	0.029	0.025			GAM
Thorium 232	TH-232	0.639	0.099	0.097			GAM
Americium 241	14596-10-2	U		0.064		U	GAM
Uranium 238	U-238	U		2.8		U	GAM
Uranium 235	15117-96-1	0.100	0.067	0.091			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	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N910166-04 B0WMY4

DATA SHEET

SDG	7251	Client/Case no	Hanford	SDG H0584	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	N910166-04	Client sample id	B0WMY4		
Dept sample id	7251-004	Location/Matrix	200 B Pond	SOLID	
Received	10/21/99	Collected	10/19/99 09:11		
% solids	96.3	Custody/SAF No	B99-078-144	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	0.539	0.064	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0.013	0.026	0.050	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.013	0.026	0.072	1.0	U	PU
Americium 241	14596-10-2	-0.017	0.084	0.15	1.0	U	AM
Total Strontium	SR-RAD	0.098	0.16	0.23	1.0	U	SR
Thorium 228	14274-82-9	0.626	0.20	0.18	1.0	J	TH
Thorium 230	14269-63-7	0.302	0.15	0.19	1.0	JB	TH
Thorium 232	TH-232	0.722	0.18	0.082	1.0	J	TH
Potassium 40	13966-00-2	13.1	0.55	0.097			GAM
Cobalt 60	10198-40-0	U		0.009	0.050	U	GAM
Cesium 137	10045-97-3	U		0.013	0.10	U	GAM
Europium 152	14683-23-9	U		0.021	0.10	U	GAM
Europium 154	15585-10-1	U		0.032	0.10	U	GAM
Europium 155	14391-16-3	U		0.022	0.10	U	GAM
Radium 226	13982-63-3	0.406	0.024	0.019	0.10		GAM
Radium 228	15262-20-1	0.575	0.053	0.045	0.20		GAM
Thorium 228	14274-82-9	0.560	0.019	0.011			GAM
Thorium 232	TH-232	0.575	0.053	0.045			GAM
Americium 241	14596-10-2	U		0.012		U	GAM
Uranium 238	U-238	U		1.1		U	GAM
Uranium 235	15117-96-1	U		0.039		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	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N910166-05 B0WMY6

DATA SHEET

SDG	7251	Client/Case no	Hanford	SDG H0584	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	N910166-05	Client sample id	B0WMY6		
Dept sample id	7251-005	Location/Matrix	200 B Pond	SOLID	
Received	10/21/99	Collected	10/19/99 09:19		
% solids	89.6	Custody/SAF No	B99-078-145	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	0.056	0.093	400	U	H
Technetium 99	14133-76-7	1.86	0.22	0.35	15	JB	TC
Total Uranium (ug/g)	7440-61-1	0.432	0.051	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0.005	0.021	0.041	1.0	U	PU
Plutonium 239/240	PU-239/240	0.011	0.021	0.041	1.0	U	PU
Nickel 63	13981-37-8	0.883	1.2	2.0	30	U	NI_L
Americium 241	14596-10-2	0	0.042	0.078	1.0	U	AM
Total Strontium	SR-RAD	0.161	0.16	0.21	1.0	U	SR
Thorium 228	14274-82-9	0.685	0.26	0.29	1.0	J	TH
Thorium 230	14269-63-7	0.670	0.23	0.20	1.0	J	TH
Thorium 232	TH-232	0.570	0.17	0.11	1.0	J	TH
Potassium 40	13966-00-2	13.3	0.37	0.18			GAM
Cobalt 60	10198-40-0	U		0.019	0.050	U	GAM
Cesium 137	10045-97-3	0.736	0.026	0.022	0.10		GAM
Europium 152	14683-23-9	U		0.041	0.10	U	GAM
Europium 154	15585-10-1	U		0.060	0.10	U	GAM
Europium 155	14391-16-3	0.033	0.022	0.033	0.10	J	GAM
Radium 226	13982-63-3	0.577	0.035	0.033	0.10		GAM
Radium 228	15262-20-1	0.846	0.081	0.077	0.20		GAM
Thorium 228	14274-82-9	0.822	0.022	0.021			GAM
Thorium 232	TH-232	0.846	0.081	0.077			GAM
Americium 241	14596-10-2	U		0.027		U	GAM
Uranium 238	U-238	U		2.1		U	GAM
Uranium 235	15117-96-1	0.057	0.044	0.061		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	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N910166-06 B0WMY7

DATA SHEET

SDG	7251	Client/Case no	Hanford SDG H0584
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910166-06	Client sample id	B0WMY7
Dept sample id	7251-006	Location/Matrix	200 B Pond SOLID
Received	10/21/99	Collected	10/19/99 09:34
% solids	97.4	Custody/SAF No	B99-078-145 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.015	0.052	0.088	400	U	H
Technetium 99	14133-76-7	1.51	0.27	0.55	15	JB	TC
Total Uranium (ug/g)	7440-61-1	0.480	0.056	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	-0.016	0.022	0.066	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.011	0.041	1.0	U	PU
Nickel 63	13981-37-8	0.379	1.2	2.0	30	U	NI_L
Americium 241	14596-10-2	0.009	0.043	0.083	1.0	U	AM
Total Strontium	SR-RAD	0.255	0.13	0.19	1.0	J	SR
Thorium 228	14274-82-9	0.370	0.19	0.21	1.0	J	TH
Thorium 230	14269-63-7	0.726	0.21	0.18	1.0	JB	TH
Thorium 232	TH-232	0.541	0.19	0.10	1.0	J	TH
Potassium 40	13966-00-2	12.1	0.33	0.15			GAM
Cobalt 60	10198-40-0	U		0.015	0.050	U	GAM
Cesium 137	10045-97-3	U		0.013	0.10	U	GAM
Europium 152	14683-23-9	U		0.033	0.10	U	GAM
Europium 154	15585-10-1	U		0.046	0.10	U	GAM
Europium 155	14391-16-3	U		0.035	0.10	U	GAM
Radium 226	13982-63-3	0.376	0.026	0.026	0.10		GAM
Radium 228	15262-20-1	0.499	0.059	0.061	0.20		GAM
Thorium 228	14274-82-9	0.482	0.017	0.016			GAM
Thorium 232	TH-232	0.499	0.059	0.061			GAM
Americium 241	14596-10-2	U		0.051		U	GAM
Uranium 238	U-238	U		1.7		U	GAM
Uranium 235	15117-96-1	U		0.052		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	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

N910166-07 B0WMY8

DATA SHEET

SDG	7251	Client/Case no	Hanford SDG H0584
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910166-07	Client sample id	B0WMY8
Dept sample id	7251-007	Location/Matrix	200 B Pond SOLID
Received	10/21/99	Collected	10/19/99 09:52
% solids	97.1	Custody/SAF No	B99-078-145 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.033	0.053	0.088	400	U	H
Technetium 99	14133-76-7	1.65	0.24	0.43	15	JB	TC
Total Uranium (ug/g)	7440-61-1	0.353	0.041	0.004	1.0	J	U_T
Plutonium 238	13981-16-3	0.018	0.027	0.043	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.009	0.018	0.050	1.0	U	PU
Nickel 63	13981-37-8	0.710	1.2	2.0	30	U	NI_L
Americium 241	14596-10-2	-0.010	0.040	0.077	1.0	U	AM
Total Strontium	SR-RAD	0.223	0.14	0.22	1.0	J	SR
Thorium 228	14274-82-9	0.958	0.20	0.13	1.0	J	TH
Thorium 230	14269-63-7	U		0.15	1.0	U	TH
Thorium 232	TH-232	0.974	0.20	0.067	1.0	J	TH
Potassium 40	13966-00-2	12.2	0.26	0.11			GAM
Cobalt 60	10198-40-0	U		0.011	0.050	U	GAM
Cesium 137	10045-97-3	U		0.011	0.10	U	GAM
Europium 152	14683-23-9	U		0.027	0.10	U	GAM
Europium 154	15585-10-1	U		0.039	0.10	U	GAM
Europium 155	14391-16-3	U		0.039	0.10	U	GAM
Radium 226	13982-63-3	0.401	0.021	0.020	0.10		GAM
Radium 228	15262-20-1	0.574	0.044	0.041	0.20		GAM
Thorium 228	14274-82-9	0.519	0.016	0.015			GAM
Thorium 232	TH-232	0.574	0.044	0.041			GAM
Americium 241	14596-10-2	U		0.095		U	GAM
Uranium 238	U-238	U		1.6		U	GAM
Uranium 235	15117-96-1	U		0.048		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	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

Test AM	Matrix SOLID
SDG 7251	
Contact Melissa C. Mannion	

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0584	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241
Preparation batch 6904-150					
B0WMY1	N910166-01			7251-001	0.233 J
B0WMY2	N910166-02			7251-002	U
B0WMY3	N910166-03			7251-003	U
B0WMY4	N910166-04			7251-004	U
B0WMY6	N910166-05			7251-005	U
B0WMY7	N910166-06			7251-006	U
B0WMY8	N910166-07			7251-007	U
BLK (QC ID=32640)	N910166-09			7251-009	U
LCS (QC ID=32639)	N910166-08			7251-008	ok
Duplicate (N910166-01)	N910166-10			7251-010	ok J

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	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 6904-150	2σ prep error 5.0 %			Reference Lab Notebook 6904 pg. 150												
B0WMY1	N910166-01			0.081	0.500			66		767			70	12/28/99	12/28	SS-044
B0WMY2	N910166-02			0.071	0.500			71		767			70	12/28/99	12/28	SS-045
B0WMY3	N910166-03			0.065	0.500			75		767			70	12/28/99	12/28	SS-047
B0WMY4	N910166-04			0.15	0.500			36		767			70	12/28/99	12/28	SS-048
B0WMY6	N910166-05			0.078	0.500			85		767			70	12/28/99	12/28	SS-049
B0WMY7	N910166-06			0.083	0.500			70		767			70	12/28/99	12/28	SS-050
B0WMY8	N910166-07			0.077	0.500			44		1074			71	12/28/99	12/29	SS-057
BLK (QC ID=32640)	N910166-09			0.024	0.500			89		1074				12/15/99	12/29	SS-058
LCS (QC ID=32639)	N910166-08			0.053	0.500			99		771				12/15/99	12/28	SS-035
Duplicate (N910166-01) (QC ID=32641)	N910166-10			0.059	0.500			73		1098			71	12/28/99	12/29	SS-035
Nominal values and limits from method				1.0	0.500			20-105		700	100		180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

Test AM	Matrix SOLID
SDG 7251	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0584	

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

AVERAGES ± 2 SD	MDA	0.074	±	0.064
FOR 10 SAMPLES	YIELD	71	±	38

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

Test	PU
Matrix	SOLID
SDG	7251
Contact	Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0584

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 6904-150						
B0WMY1	N910166-01			7251-001	0.060 J	1.32
B0WMY2	N910166-02			7251-002	U	U
B0WMY3	N910166-03			7251-003	U	U
B0WMY4	N910166-04			7251-004	U	U
B0WMY6	N910166-05			7251-005	U	U
B0WMY7	N910166-06			7251-006	U	U
B0WMY8	N910166-07			7251-007	U	U
BLK (QC ID=32640)	N910166-09			7251-009	U	U
LCS (QC ID=32639)	N910166-08			7251-008	ok	ok
Duplicate (N910166-01)	N910166-10			7251-010	ok J	ok
Nominal values and limits from method				RDLs (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 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 6904-150 2σ prep error 5.0 % Reference Lab Notebook 6904 pg. 150																
B0WMY1	N910166-01			0.044	0.500			81		609			64	12/22/99	12/22	SS-003
B0WMY2	N910166-02			0.043	0.500			87		609			64	12/22/99	12/22	SS-005
B0WMY3	N910166-03			0.052	0.500			54		609			64	12/22/99	12/22	SS-006
B0WMY4	N910166-04			0.072	0.500			61		609			64	12/22/99	12/22	SS-008
B0WMY6	N910166-05			0.041	0.500			73		609			64	12/22/99	12/22	SS-009
B0WMY7	N910166-06			0.066	0.500			70		609			64	12/22/99	12/22	SS-010
B0WMY8	N910166-07			0.050	0.500			87		609			64	12/22/99	12/22	SS-011
BLK (QC ID=32640)	N910166-09			0.039	0.500			95		609				12/16/99	12/21	SS-012
LCS (QC ID=32639)	N910166-08			0.081	0.500			98		498				12/15/99	12/22	SS-039
Duplicate (N910166-01) (QC ID=32641)	N910166-10			0.034	0.500			90		609			64	12/22/99	12/22	SS-013
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	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

Test	PU
Matrix	SOLID
SDG	7251
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0584

PROCEDURES	REFERENCE	PUPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	0.052	±	0.031
FOR 10 SAMPLES	YIELD	80	±	29

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

Test TH Matrix SOLID
SDG 7251
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0584

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6904-150							
B0WMY1	N910166-01			7251-001	0.906 J	0.588 J	0.520 J
B0WMY2	N910166-02		A1	7251-002	0.717 J	U	0.561 J
B0WMY3	N910166-03			7251-003	0.408 J	0.461 J	0.364 J
B0WMY4	N910166-04			7251-004	0.626 J	0.302 J	0.722 J
B0WMY6	N910166-05			7251-005	0.685 J	0.670 J	0.570 J
B0WMY7	N910166-06			7251-006	0.370 J	0.726 J	0.541 J
B0WMY8	N910166-07		A1	7251-007	0.958 J	U	0.974 J
BLK (QC ID=32640)	N910166-09			7251-009	U	0.197 J	U
BLK (QC ID=33172)	N910166-21			7251-021	U	0.170 J	U
LCS (QC ID=32639)	N910166-08			7251-008	No data U	ok	No data U
LCS (QC ID=33171)	N910166-20			7251-020	No data U	ok	No data J
Duplicate (N910166-01)	N910166-10			7251-010	ok J	ok J	ok J
Duplicate (N910166-02)	N910166-22			7251-022	ok J	- U	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0
200 Area Source Chara. - 200-CW-1 OU							

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

Test	TH
Matrix	SOLID
SDG	7251
Contact	Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0584

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 6904-150 2σ prep error 5.0 % Reference Lab Notebook 6904 pg. 150																
B0WMY1	N910166-01			0.33	0.250			39		544			71	12/29/99	12/29	SS-027
B0WMY2	N910166-02		A1	0.18	0.250			81		578			98	01/25/00	01/25	SS-027
B0WMY3	N910166-03			0.22	0.250			79		544			71	12/29/99	12/29	SS-031
B0WMY4	N910166-04			0.19	0.250			79		544			71	12/29/99	12/29	SS-032
B0WMY6	N910166-05			0.29	0.250			61		544			71	12/29/99	12/29	SS-033
B0WMY7	N910166-06			0.21	0.250			65		544			71	12/29/99	12/29	SS-034
B0WMY8	N910166-07		A1	0.15	0.250			90		578			98	01/25/00	01/25	SS-029
BLK (QC ID=32640)	N910166-09			0.33	0.250			48		543				12/13/99	12/28	SS-039
BLK (QC ID=33172)	N910166-21			0.16	0.250			89		578				01/25/00	01/25	SS-032
LCS (QC ID=32639)	N910166-08			0.22	0.250			77		544				12/13/99	12/28	SS-038
LCS (QC ID=33171)	N910166-20			0.16	0.250			89		578				01/25/00	01/25	SS-031
Duplicate (N910166-01) (QC ID=32641)	N910166-10			0.30	0.250			60		543			71	12/29/99	12/29	SS-040
Duplicate (N910166-02) (QC ID=33173)	N910166-22			0.17	0.250			88		578			98	01/25/00	01/25	SS-033
Nominal values and limits from method				1.0	0.250			20-105		200			180			

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

AVERAGES ± 2 SD	MDA	0.22	± 0.13
FOR 13 SAMPLES	YIELD	73	± 33

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

Test SR	Matrix SOLID
SDG 7251	
Contact Melissa C. Mannion	

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0584	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 6904-150					
B0WMY1	N910166-01			7251-001	0.570 J
B0WMY2	N910166-02			7251-002	U
B0WMY3	N910166-03			7251-003	U
B0WMY4	N910166-04			7251-004	U
B0WMY6	N910166-05			7251-005	U
B0WMY7	N910166-06			7251-006	0.255 J
B0WMY8	N910166-07			7251-007	0.223 J
BLK (QC ID=32640)	N910166-09			7251-009	U
LCS (QC ID=32639)	N910166-08			7251-008	ok
Duplicate (N910166-01)	N910166-10			7251-010	ok J
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 6904-150	2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 150															
B0WMY1	N910166-01			0.12	1.00			91		200			69	12/18/99	12/27	GRB-230
B0WMY2	N910166-02			0.16	1.00			89		400			60	12/18/99	12/18	GRB-218
B0WMY3	N910166-03			0.17	1.00			85		400			60	12/18/99	12/18	GRB-219
B0WMY4	N910166-04			0.23	1.00			60		400			60	12/18/99	12/18	GRB-220
B0WMY6	N910166-05			0.21	1.00			71		400			60	12/18/99	12/18	GRB-221
B0WMY7	N910166-06			0.19	1.00			73		200			62	12/18/99	12/20	GRB-228
B0WMY8	N910166-07			0.22	1.00			67		200			62	12/18/99	12/20	GRB-204
BLK (QC ID=32640)	N910166-09			0.19	1.00			74		200				12/15/99	12/17	GRB-223
LCS (QC ID=32639)	N910166-08			0.26	1.00			71		200				12/15/99	12/17	GRB-221
Duplicate (N910166-01) (QC ID=32641)	N910166-10			0.14	1.00			74		200			70	12/18/99	12/28	GRB-222
Nominal values and limits from method				1.0	1.00					100			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

Test	SR
Matrix	SOLID
SDG	7251
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0584

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

AVERAGES ± 2 SD	MDA	0.19	±	0.086
FOR 10 SAMPLES	YIELD	76	±	20

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

Test	TC
Matrix	SOLID
SDG	7251
Contact	Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0584

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6904-128						
B0WMY6	N910166-05			7251-005	1.86	J
B0WMY7	N910166-06			7251-006	1.51	J
B0WMY8	N910166-07			7251-007	1.65	J
BLK (QC ID=32544)	N910146-09			7245-009	1.63	J
LCS (QC ID=32543)	N910146-08			7245-008	ok	
Duplicate (N910166-05)	N910166-11			7251-011	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	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											
B0WMY6	N910166-05			0.35	1.01			68		200			63	12/16/99	12/21	GRB-232
B0WMY7	N910166-06			0.55	1.03			61		101			69	12/16/99	12/27	GRB-203
B0WMY8	N910166-07			0.43	1.02			78		101			62	12/16/99	12/20	GRB-203
BLK (QC ID=32544)	N910146-09			0.24	1.02			68		400				12/15/99	12/21	GRB-230
LCS (QC ID=32543)	N910146-08			0.29	1.02			56		400				12/15/99	12/21	GRB-228
Duplicate (N910166-05) (QC ID=32642)	N910166-11			0.48	1.01			76		101			62	12/16/99	12/20	GRB-204
Nominal values and limits from method				15	1.02			20-105		50			180			

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

AVERAGES ± 2 SD	MDA	0.39	±	0.24
FOR 6 SAMPLES	YIELD	68	±	17

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

Test GAM Matrix SOLID
SDG 7251
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0584

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137
Preparation batch 6904-150							
B0WMY1	N910166-01			7251-001	U		25.3
B0WMY2	N910166-02			7251-002	U		U
B0WMY3	N910166-03			7251-003	U		U
B0WMY4	N910166-04			7251-004	U		U
B0WMY6	N910166-05			7251-005	U		0.736
B0WMY7	N910166-06			7251-006	U		U
B0WMY8	N910166-07			7251-007	U		U
BLK (QC ID=32640)	N910166-09			7251-009	U		U
LCS (QC ID=32639)	N910166-08			7251-008	ok		ok
Duplicate (N910166-01)	N910166-10			7251-010	-	U	ok
Nominal values and limits from method				RDLs (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	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-150 2σ prep error 15.0 % Reference Lab Notebook 6904 pg. 150																
B0WMY1	N910166-01			0.062	791					213			49	11/27/99	12/07	02,04,00
B0WMY2	N910166-02			0.080	734					225			49	11/27/99	12/07	MB,05,00
B0WMY3	N910166-03			0.066	638					207			49	11/27/99	12/07	02,04,00
B0WMY4	N910166-04			0.025	756					967			49	11/27/99	12/07	MB,07,00
B0WMY6	N910166-05			0.057	708					1009			49	11/28/99	12/07	02,01,00
B0WMY7	N910166-06			0.039	773					969			49	11/27/99	12/07	02,03,00
B0WMY8	N910166-07			0.032	768					970			49	11/27/99	12/07	MB,05,00
BLK (QC ID=32640)	N910166-09			0.025	638					213				11/27/99	12/08	MB,05,00
LCS (QC ID=32639)	N910166-08			0.005	638					952				11/27/99	12/07	01,04,00
Duplicate (N910166-01) (QC ID=32641)	N910166-10			0.059	791					231			51	11/27/99	12/09	02,04,00
Nominal values and limits from method				0.050	638					100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

Test GAM	Matrix SOLID
SDG 7251	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0584	

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

AVERAGES ± 2 SD	MDA	0.045	±	0.047
FOR 10 SAMPLES	YIELD		±	

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

Test U T	Matrix SOLID
SDG 7251	
Contact Melissa C. Mannion	

METHOD SUMMARY

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0584	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 6904-150					
B0WMY1	N910166-01			7251-001	0.793 J
B0WMY2	N910166-02			7251-002	0.406 J
B0WMY3	N910166-03			7251-003	0.587 J
B0WMY4	N910166-04			7251-004	0.539 J
B0WMY6	N910166-05			7251-005	0.432 J
B0WMY7	N910166-06			7251-006	0.480 J
B0WMY8	N910166-07			7251-007	0.353 J
BLK (QC ID=32292)	N910166-14			7251-014	U
LCS (QC ID=32291)	N910166-13			7251-013	ok
Duplicate (N910166-01)	N910166-15			7251-015	ok J
Nominal values and limits from method				RDLs (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 FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-150	2σ prep error 9.0 %			Reference Lab Notebook 6904 pg. 150												
B0WMY1	N910166-01			0.004	0.0500								20	11/05/99	11/08	KPA-001
B0WMY2	N910166-02			0.004	0.0500								20	11/05/99	11/08	KPA-001
B0WMY3	N910166-03			0.004	0.0500								20	11/05/99	11/08	KPA-001
B0WMY4	N910166-04			0.004	0.0500								20	11/05/99	11/08	KPA-001
B0WMY6	N910166-05			0.004	0.0500								20	11/05/99	11/08	KPA-001
B0WMY7	N910166-06			0.004	0.0500								20	11/05/99	11/08	KPA-001
B0WMY8	N910166-07			0.004	0.0500								20	11/05/99	11/08	KPA-001
BLK (QC ID=32292)	N910166-14			0.004	0.0500									11/05/99	11/08	KPA-001
LCS (QC ID=32291)	N910166-13			0.041	0.0500									11/05/99	11/08	KPA-001
Duplicate (N910166-01) (QC ID=32293)	N910166-15			0.004	0.0500								20	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 01/28/00	

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

Test	U T
Matrix	SOLID
SDG	7251
Contact	Melissa C. Mannion

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0584

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

AVERAGES ± 2 SD	MDA	0.008	±	0.023
FOR 10 SAMPLES	YIELD		±	

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

Test H Matrix SOLID
SDG 7251
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0584

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6904-128						
B0WMY6	N910166-05			7251-005	U	
B0WMY7	N910166-06			7251-006	U	
B0WMY8	N910166-07			7251-007	U	
BLK (QC ID=32544)	N910146-09			7245-009	U	
LCS (QC ID=32543)	N910146-08			7245-008	ok	J
Duplicate (N910166-05)	N910166-11			7251-011	-	U
Spike (N910166-06)	N910166-12			7251-012	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																
B0WMY6	N910166-05			0.093	20.1			100		120			60	12/17/99	12/18	LSC-005
B0WMY7	N910166-06			0.088	20.3			100		120			60	12/17/99	12/18	LSC-005
B0WMY8	N910166-07			0.088	20.2			100		120			60	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 (N910166-05) (QC ID=32642)	N910166-11			0.090	20.3			100		120			61	12/17/99	12/19	LSC-005
Spike (N910166-06) (QC ID=32643)	N910166-12			0.093	20.3			100		117			61	12/17/99	12/19	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 ± 0.083
YIELD 86 ± 49

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/28/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0584

Test	NI L Matrix SOLID
SDG	7251
Contact	Melissa C. Mannion

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0584

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6909-012						
B0WMY6	N910166-05		A1	7251-005	U	
B0WMY7	N910166-06		A1	7251-006	U	
B0WMY8	N910166-07			7251-007	U	
BLK (QC ID=32824)	N911026-14			7267-014	U	
LCS (QC ID=32823)	N911026-13			7267-013	ok	
Duplicate (N910166-05)	N910166-19			7251-019	-	U

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 6909-012 2σ prep error 10.0 % Reference Lab Notebook 6909 pg. 12																
B0WMY6	N910166-05		A1	2.0	0.500			100		100			93	01/12/00	01/20	LSC-007
B0WMY7	N910166-06		A1	2.0	0.500			100		100			93	01/12/00	01/20	LSC-007
B0WMY8	N910166-07			2.0	0.500			100		100			63	12/18/99	12/21	LSC-005
BLK (QC ID=32824)	N911026-14			2.0	0.500			100		100				01/14/00	01/16	LSC-005
LCS (QC ID=32823)	N911026-13			2.0	0.500			100		100				01/14/00	01/16	LSC-005
Duplicate (N910166-05) (QC ID=33006)	N910166-19			2.1	0.500			100		100			93	01/12/00	01/20	LSC-007
Nominal values and limits from method				30	0.500					10			180			

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

AVERAGES ± 2 SD	MDA	2.0	± 0.082
FOR 6 SAMPLES	YIELD	100	± 0

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/28/00

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-144	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 96.050	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA/RECRA~~ RAP 10-19-99 TMA	Offsite Property No.: A99 0304		Bill of Lading/Air Bill No.: 42357953 0841
			COA B20CW1 67/C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	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			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	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										
343	BOWM11	Soil	10-19-99	0842	X						X			
240	BOWM12	Soil	10-19-99	0858	X						X			
233	BOWM13	Soil	10-19-99	0903	X						X			
217	BOWM14	Soil	10-19-99	0911	X						X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 10-19-99/1130	Received By: Ref 3B	Date/Time: 10-19-99/1130
Relinquished By: REF 3B	Date/Time: 10-20-99/0830	Received By: Rikki Thoren / RThoren	Date/Time: 10/20/99/0830
Relinquished By: Rikki Thoren / RThoren	Date/Time: 10-20-99/1430	Received By: FED EX	Date/Time: 10/20/99
Relinquished By: FedEx	Date/Time: 10/21/99 10:00	Received By: NW McGoldenberg	Date/Time: 10/21/99 10:00
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, 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

Collector unavailable to relinquish chain use BOW 8C as shipping criteria

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-145

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-96 050	**Field Logbook No.** EL-1511		**Method of Shipment** FED EX
Shipped To ~~TMA/RECRA~~ 10-19-99 TMA	**Offsite Property No.** A99 0304		**Bill of Lading/Air Bill No.** 42357953 0841
			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										
273	BOWM Y6	Soil	10-19-99	0919	X	X	X	X						X
204	BOWM Y7	Soil	10-19-99	0934	X	X	X	X						X
231	BOWM Y8	Soil	10-19-99	0952	X	X	X	X						X

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

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers Doug Bowers	10-19-99/1170	Ref. 3B	10-19-99/1130
RET 3B	10-20-99/0830	R. Thoren/R. Thoren	10/20/99/0830
Rikki Thoren/R. Thoren	10-20-99 1430	FEDEX	10/20/99
FedEx	10/21/99 10:00	TM McGoldenberg	10/21/99 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

collector unavailable to relinquish chains
use BOW8C1 as shipping criteria

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 10-21-99 10:00

CoC No. B99-078-144, 145

Container I.D. No. ERC96-050 Requested TAT (Days) 45 P.O. Received Yes [ ] No [✓]

INSPECTION

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

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by M. Goldenberg Date: 10-21-99 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 _____