H0528 - TMA/RICKA

Thermo Nutech
W.O. No. N9-09-088-7207

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JAN 27 2000
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Bechtel Hanford Inc.
SDG H0528

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0528 is composed of thirteen solid (soil) samples designated under SAF No. B99-078 with a Project Designation of: 200 Area Source characterization-200-CW-1 OU.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklists. The results were transmitted to BHI via facsimile on November 1 and 2, 1999 with the exception of the add-on Strontium analyses, which were reported to BHI via fax on November 18,1999.

2.0 ANALYSIS NOTES

2.1 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.2 Total and Isotopic Uranium Analyses

Isotopic analyses were to be based on the results from the total uranium analyses. Isotopic uranium was not requested for any samples in this SDG. No problems were encountered during the course of the analyses.

2.3 Gamma Spec Analyses

No problems were encountered during the course of the analyses.

2.4 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses. Recounts were performed on samples B0WBJ3 and B0WBJ8.

2.5 Americium-241 Analyses

No problems were encountered during the course of the analyses

2.6 Tritium Analyses

No problems were encountered during the course of the analyses.

2.7 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.8 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.9 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.10 Neptunium-237 Analyses

The yield for the duplicate analysis was only 6%, no activity was detected in the sample. The original analysis yield was acceptable and no activity was detected from that analysis either. Neptunium-237 was not detected in any of the samples.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

SAMPLE SUMMARY

SDG 7207
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0W9N0	GP-7	SOLID		N909088-01	B99-078	B99-078-110	09/10/99 07:37
B0W9N1	GP-7	SOLID		N909088-02	B99-078	B99-078-110	09/10/99 07:49
B0W9N2	GP-7	SOLID		N909088-03	B99-078	B99-078-110	09/10/99 07:58
B0W9N3	GP-7	SOLID		N909088-04	B99-078	B99-078-110	09/10/99 08:05
B0W9N4	GP-7	SOLID		N909088-05	B99-078	B99-078-110	09/10/99 08:30
B0W9N5	GP-7	SOLID		N909088-06	B99-078	B99-078-110	09/10/99 08:49
B0W9N6	GP-7	SOLID		N909088-07	B99-078	B99-078-110	09/10/99 09:00
B0WBJ3	200 CWI,B8757	SOLID		N909088-09	B99-078	B99-078-117	09/09/99 07:38
B0WBJ4	200 CWI,B8757	SOLID		N909088-10	B99-078	B99-078-117	09/09/99 07:48
B0WBJ5	200 CWI,B8757	SOLID		N909088-11	B99-078	B99-078-117	09/09/99 08:06
B0WBJ8	200 CWI,B8757	SOLID		N909088-12	B99-078	B99-078-118	09/09/99 08:23
B0WBJ9	200 CWI,B8757	SOLID		N909088-13	B99-078	B99-078-118	09/09/99 08:45
B0WBJ2	200 CWI,B8757	SOLID		N909088-08	B99-078	B99-078-117	09/09/99 07:24
Method Blank		SOLID		N909088-15	B99-078		
Method Blank		SOLID		N909088-20	B99-078		
Method Blank		SOLID		N909117-10	B99-078		
Lab Control Sample		SOLID		N909088-14	B99-078		
Lab Control Sample		SOLID		N909088-19	B99-078		
Lab Control Sample		SOLID		N909117-09	B99-078		
Duplicate (N909088-01)	GP-7	SOLID		N909088-18	B99-078		09/10/99 07:37
Duplicate (N909088-08)	200 CWI,B8757	SOLID		N909088-16	B99-078		09/09/99 07:24
Duplicate (N909088-12)	200 CWI,B8757	SOLID		N909088-17	B99-078		09/09/99 08:23

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

QC SUMMARY

SDG 7207
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

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
7207	B99-078-110	B0W9N0	SOLID	94.7			09/11/99	1	N909088-01	7207-001
		B0W9N1	SOLID	96.9			09/11/99	1	N909088-02	7207-002
		B0W9N2	SOLID	97.1			09/11/99	1	N909088-03	7207-003
		B0W9N3	SOLID	96.8			09/11/99	1	N909088-04	7207-004
		B0W9N4	SOLID	96.4			09/11/99	1	N909088-05	7207-005
		B0W9N5	SOLID	93.9			09/11/99	1	N909088-06	7207-006
		B0W9N6	SOLID	87.6			09/11/99	1	N909088-07	7207-007
	B99-078-117	B0WBJ3	SOLID	89.4			09/11/99	2	N909088-09	7207-009
		B0WBJ4	SOLID	94.8			09/11/99	2	N909088-10	7207-010
		B0WBJ5	SOLID	92.9			09/11/99	2	N909088-11	7207-011
		BOWBJ2	SOLID	91.3			09/11/99	2	N909088-08	7207-008
	B99-078-118	B0WBJ8	SOLID	93.2			09/11/99	2	N909088-12	7207-012
		B0WBJ9	SOLID	94.6			09/11/99	2	N909088-13	7207-013
		Method Blank	SOLID						N909088-15	7207-015
		Method Blank	SOLID						N909088-20	7207-020
		Lab Control Sample	SOLID						N909088-14	7207-014
		Lab Control Sample	SOLID						N909088-19	7207-019
		Duplicate (N909088-01)	SOLID				09/11/99	1	N909088-18	7207-018
		Duplicate (N909088-08)	SOLID	91.3			09/11/99	2	N909088-16	7207-016
		Duplicate (N909088-12)	SOLID				09/11/99	2	N909088-17	7207-017
7212		Method Blank	SOLID						N909117-10	7212-010
		Lab Control Sample	SOLID						N909117-09	7212-009

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

SDG 7207
Contact Kevin C. Johnson

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	6893-183	5.0	6			1	1	1/1		
NP	SOLID	Neptunium in Soil	6893-183	5.0	6			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6893-183	5.0	6			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6893-183	5.0	6			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6893-183	10.0	6			1	1	1/1		
			6893-184	10.0	7			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6893-183	10.0	2			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6893-183	15.0	13			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6893-183	9.0	6			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6893-183	10.0	2			1	1	1/1		
NI_L	SOLID	Nickel 63 in Soil	6893-183	10.0	2			1	1	1/1		

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

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

2030 Wright Avenue
P.O. Box 4040
Richmond, CA 94804-0040
(510) 235-2633 • FAX (510) 235-0438

Facsimile Cover Sheet

Date: 11-18-99

TO: Company Name: BHI

Individual: JOAN KESSNER

Fax Number:

Telephone #:

FROM: KEVIN JOHNSON

Number of pages being sent (including this page): 31

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If you have received this facsimile in error, please immediately notify us by telephone and return the original facsimile to us at the above address via the United States Postal Service. Thank you.

IF YOU DO NOT RECEIVE ALL OF THIS TRANSMISSION, PLEASE CALL THE FACSIMILE OPERATOR AT (510) 235-2633.

Operator Name: KIM

Comments: DEAR JOAN,
HERE IS THE FULL DATA PACKAGE
FOR SDG H0528, COMPLETE WITH
ADD-ON SR'S.

KEVIN

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

WORK SUMMARY

SDG 7207
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0W9N0			N909088-01	7207-001	GAM		10/20/99	11/01/99	NJV	Gamma Scan
GP-7		SOLID	09/10/99	7207-001	SR		11/13/99	11/18/99	NJV	Total Strontium in Soil
B99-078-110	B99-078		09/11/99							
B0W9N1			N909088-02	7207-002	GAM		10/20/99	11/01/99	NJV	Gamma Scan
GP-7		SOLID	09/10/99	7207-002	SR		11/13/99	11/18/99	NJV	Total Strontium in Soil
B99-078-110	B99-078		09/11/99							
B0W9N2			N909088-03	7207-003	GAM		10/20/99	11/01/99	NJV	Gamma Scan
GP-7		SOLID	09/10/99	7207-003	SR		11/13/99	11/18/99	NJV	Total Strontium in Soil
B99-078-110	B99-078		09/11/99							
B0W9N3			N909088-04	7207-004	GAM		10/20/99	11/01/99	NJV	Gamma Scan
GP-7		SOLID	09/10/99	7207-004	SR		11/13/99	11/18/99	NJV	Total Strontium in Soil
B99-078-110	B99-078		09/11/99							
B0W9N4			N909088-05	7207-005	GAM		10/20/99	11/01/99	NJV	Gamma Scan
GP-7		SOLID	09/10/99	7207-005	SR		11/13/99	11/18/99	NJV	Total Strontium in Soil
B99-078-110	B99-078		09/11/99							
B0W9N5			N909088-06	7207-006	GAM		10/20/99	11/01/99	NJV	Gamma Scan
GP-7		SOLID	09/10/99	7207-006	SR		11/13/99	11/18/99	NJV	Total Strontium in Soil
B99-078-110	B99-078		09/11/99							
B0W9N6			N909088-07	7207-007	GAM		10/20/99	11/01/99	NJV	Gamma Scan
GP-7		SOLID	09/10/99	7207-007	SR		11/13/99	11/18/99	NJV	Total Strontium in Soil
B99-078-110	B99-078		09/11/99							
B0WBJ3			N909088-09	7207-009	AM		10/27/99	11/01/99	NJV	Americium 241 in Soil
200 CWI,B8757		SOLID	09/09/99	7207-009	GAM		10/20/99	11/01/99	NJV	Gamma Scan
B99-078-117	B99-078		09/11/99	7207-009	NP		10/28/99	11/01/99	NJV	Neptunium in Soil
				7207-009	PU		11/01/99	11/02/99	NJV	Plutonium, Isotopic in Solids
				7207-009	SR		10/27/99	11/01/99	NJV	Total Strontium in Soil
				7207-009	TH		10/27/99	11/01/99	NJV	Thorium, Isotopic in Soil
				7207-009	U_T		10/11/99	11/01/99	NJV	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

SDG 7207
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0WBJ4			N909088-10	7207-010	AM		10/27/99	11/01/99	NJV	Americium 241 in Soil
200 CWI,B8757		SOLID	09/09/99	7207-010	GAM		10/20/99	11/01/99	NJV	Gamma Scan
B99-078-117	B99-078		09/11/99	7207-010	NP		10/28/99	11/01/99	NJV	Neptunium in Soil
				7207-010	PU		10/28/99	11/02/99	NJV	Plutonium, Isotopic in Solids
				7207-010	SR		10/27/99	11/01/99	NJV	Total Strontium in Soil
				7207-010	TH		10/27/99	11/01/99	NJV	Thorium, Isotopic in Soil
				7207-010	U_T		10/11/99	11/01/99	NJV	Uranium, Total in Soil
B0WBJ5			N909088-11	7207-011	AM		10/27/99	11/01/99	NJV	Americium 241 in Soil
200 CWI,B8757		SOLID	09/09/99	7207-011	GAM		10/20/99	11/01/99	NJV	Gamma Scan
B99-078-117	B99-078		09/11/99	7207-011	NP		10/28/99	11/01/99	NJV	Neptunium in Soil
				7207-011	PU		10/28/99	11/02/99	NJV	Plutonium, Isotopic in Solids
				7207-011	SR		10/27/99	11/01/99	NJV	Total Strontium in Soil
				7207-011	TH		10/28/99	11/01/99	NJV	Thorium, Isotopic in Soil
				7207-011	U_T		10/11/99	11/01/99	NJV	Uranium, Total in Soil
B0WBJ8			N909088-12	7207-012	AM		10/27/99	11/01/99	NJV	Americium 241 in Soil
200 CWI,B8757		SOLID	09/09/99	7207-012	GAM		10/20/99	11/01/99	NJV	Gamma Scan
B99-078-118	B99-078		09/11/99	7207-012	H		11/02/99	11/02/99	NJV	Tritium in Soil
				7207-012	NI_L		10/30/99	11/02/99	NJV	Nickel 63 in Soil
				7207-012	NP		10/28/99	11/01/99	NJV	Neptunium in Soil
				7207-012	PU		11/01/99	11/02/99	NJV	Plutonium, Isotopic in Solids
				7207-012	SR		10/27/99	11/01/99	NJV	Total Strontium in Soil
				7207-012	TC		10/23/99	11/02/99	NJV	Technetium 99 in Soil
				7207-012	TH		10/27/99	11/01/99	NJV	Thorium, Isotopic in Soil
				7207-012	U_T		10/11/99	11/01/99	NJV	Uranium, Total in Soil
B0WBJ9			N909088-13	7207-013	AM		10/27/99	11/01/99	NJV	Americium 241 in Soil
200 CWI,B8757		SOLID	09/09/99	7207-013	GAM		10/20/99	11/01/99	NJV	Gamma Scan
B99-078-118	B99-078		09/11/99	7207-013	H		11/02/99	11/02/99	NJV	Tritium in Soil
				7207-013	NI_L		10/30/99	11/02/99	NJV	Nickel 63 in Soil
				7207-013	NP		10/28/99	11/01/99	NJV	Neptunium in Soil
				7207-013	PU		10/28/99	11/02/99	NJV	Plutonium, Isotopic in Solids
				7207-013	SR		10/27/99	11/01/99	NJV	Total Strontium in Soil
				7207-013	TC		10/23/99	11/02/99	NJV	Technetium 99 in Soil
				7207-013	TH		10/27/99	11/01/99	NJV	Thorium, Isotopic in Soil
				7207-013	U_T		10/11/99	11/02/99	NJV	Uranium, Total in Soil

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

SDG 7207
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
BOWBJ2			N909088-08	7207-008	AM		10/27/99	11/01/99	NJV	Americium 241 in Soil
200 CWI,B8757		SOLID	09/09/99	7207-008	GAM		10/20/99	11/01/99	NJV	Gamma Scan
B99-078-117	B99-078		09/11/99	7207-008	NP		10/28/99	11/01/99	NJV	Neptunium in Soil
				7207-008	PU		10/28/99	11/02/99	NJV	Plutonium, Isotopic in Solids
				7207-008	SR		10/27/99	11/01/99	NJV	Total Strontium in Soil
				7207-008	TH		10/27/99	11/01/99	NJV	Thorium, Isotopic in Soil
				7207-008	U_T		10/11/99	11/01/99	NJV	Uranium, Total in Soil
Method Blank			N909088-15	7207-015	AM		10/28/99	11/01/99	NJV	Americium 241 in Soil
		SOLID		7207-015	GAM		10/20/99	11/01/99	NJV	Gamma Scan
	B99-078			7207-015	H		11/02/99	11/02/99	NJV	Tritium in Soil
				7207-015	NP		10/28/99	11/01/99	NJV	Neptunium in Soil
				7207-015	PU		10/28/99	11/02/99	NJV	Plutonium, Isotopic in Solids
				7207-015	SR		10/27/99	11/01/99	NJV	Total Strontium in Soil
				7207-015	TH		10/27/99	11/01/99	NJV	Thorium, Isotopic in Soil
				7207-015	U_T		10/11/99	11/01/99	NJV	Uranium, Total in Soil
Method Blank			N909088-20	7207-020	SR		11/13/99	11/18/99	NJV	Total Strontium in Soil
		SOLID								
	B99-078									
Method Blank			N909117-10	7212-010	NI_L		10/30/99	11/04/99	NJV	Nickel 63 in Soil
		SOLID		7212-010	TC		10/23/99	11/02/99	NJV	Technetium 99 in Soil
	B99-078									
Lab Control Sample			N909088-14	7207-014	AM		10/27/99	11/01/99	NJV	Americium 241 in Soil
		SOLID		7207-014	GAM		10/20/99	11/01/99	NJV	Gamma Scan
	B99-078			7207-014	H		11/02/99	11/02/99	NJV	Tritium in Soil
				7207-014	NP		10/28/99	11/01/99	NJV	Neptunium in Soil
				7207-014	PU		10/29/99	11/02/99	NJV	Plutonium, Isotopic in Solids
				7207-014	SR		10/27/99	11/01/99	NJV	Total Strontium in Soil
				7207-014	TH		10/27/99	11/01/99	NJV	Thorium, Isotopic in Soil
				7207-014	U_T		10/11/99	11/01/99	NJV	Uranium, Total in Soil
Lab Control Sample			N909088-19	7207-019	SR		11/13/99	11/18/99	NJV	Total Strontium in Soil
		SOLID								
	B99-078									

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SAMPLE DELIVERY GROUP H0528

SDG 7207
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WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			N909117-09	7212-009	NI_L		10/30/99	11/04/99	NJV	Nickel 63 in Soil
		SOLID		7212-009	TC		10/22/99	11/02/99	NJV	Technetium 99 in Soil
	B99-078									
Duplicate (N909088-01)			N909088-18	7207-018	SR		11/13/99	11/18/99	NJV	Total Strontium in Soil
GP-7		SOLID	09/10/99							
	B99-078		09/11/99							
Duplicate (N909088-08)			N909088-16	7207-016	AM		10/29/99	11/01/99	NJV	Americium 241 in Soil
200 CWI,B8757		SOLID	09/09/99	7207-016	GAM		10/21/99	11/01/99	NJV	Gamma Scan
	B99-078		09/11/99	7207-016	NP		10/28/99	11/01/99	NJV	Neptunium in Soil
				7207-016	PU		10/28/99	11/02/99	NJV	Plutonium, Isotopic in Solids
				7207-016	SR		10/27/99	11/01/99	NJV	Total Strontium in Soil
				7207-016	TH		10/27/99	11/01/99	NJV	Thorium, Isotopic in Soil
				7207-016	U_T		10/11/99	11/01/99	NJV	Uranium, Total in Soil
Duplicate (N909088-12)			N909088-17	7207-017	H		11/02/99	11/02/99	NJV	Tritium in Soil
200 CWI,B8757		SOLID	09/09/99	7207-017	NI_L		10/30/99	11/02/99	NJV	Nickel 63 in Soil
	B99-078		09/11/99	7207-017	TC		10/22/99	11/02/99	NJV	Technetium 99 in Soil

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B99-078	Americium 241 in Soil	AM/CMPLATE	6			1	1	1	9
GAM	B99-078	Gamma Scan	GAMMAHI	13			1	1	1	16
H	B99-078	Tritium in Soil	EPA906.0	2			1	1	1	5
NI_L	B99-078	Nickel 63 in Soil	NI63LSC	2			1	1	1	5
NP	B99-078	Neptunium in Soil	NP237PLATE	6			1	1	1	9
PU	B99-078	Plutonium, Isotopic in Solids	PUPLATE	6			1	1	1	9
SR	B99-078	Total Strontium in Soil	SRTOTAL	13			2	2	2	19
TC	B99-078	Technetium 99 in Soil	TC99TRLSC	2			1	1	1	5
TH	B99-078	Thorium, Isotopic in Soil	THPLATE	6			1	1	1	9
U_T	B99-078	Uranium, Total in Soil	UKPA	6			1	1	1	9
TOTALS				62			11	11	11	95

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

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-15 Method Blank

METHOD BLANK

SDG	7207	Client/Case no	Hanford SDG H0528
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909088-15	Client sample id	Method Blank
Dept sample id	7207-015	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	0.068	0.052	0.084	400	U	H
Neptunium 237	13994-20-2	-0.005	0.010	0.031		U	NP
Total Uranium (ug/g)	7440-61-1	-0.003	0.003	0.007	1.0	U	U_T
Plutonium 238	13981-16-3	-0.014	0.014	0.042	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.007	0.026	1.0	U	PU
Americium 241	14596-10-2	0.012	0.023	0.042	1.0	U	AM
Total Strontium	SR-RAD	-0.060	0.13	0.19	1.0	U	SR
Thorium 228	14274-82-9	0.021	0.17	0.31	1.0	U	TH
Thorium 230	14269-63-7	0.488	0.26	0.23	1.0	J	TH
Thorium 232	TH-232	0.021	0.042	0.16	1.0	U	TH
Potassium 40	13966-00-2	U		0.20		U	GAM
Cobalt 60	10198-40-0	U		0.013	0.050	U	GAM
Cesium 137	10045-97-3	U		0.011	0.10	U	GAM
Europium 152	14683-23-9	U		0.030	0.10	U	GAM
Europium 154	15585-10-1	U		0.038	0.10	U	GAM
Europium 155	14391-16-3	U		0.039	0.10	U	GAM
Radium 226	13982-63-3	U		0.022	0.10	U	GAM
Radium 228	15262-20-1	U		0.050	0.20	U	GAM
Thorium 228	14274-82-9	U		0.017		U	GAM
Thorium 232	TH-232	U		0.050		U	GAM
Americium 241	14596-10-2	U		0.090		U	GAM
Uranium 238	U-238	U		1.1		U	GAM
Uranium 235	15117-96-1	U		0.046		U	GAM

200 Area Source chrctztn-200-CW-1 OU

QC-BLANK 31980

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-20 Method Blank

METHOD BLANK

SDG	7207	Client/Case no	Hanford	SDG	H0528
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909088-20	Client sample id	Method Blank		
Dept sample id	7207-020	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 Strontium	SR-RAD	-0.069	0.10	0.15	1.0	U	SR

200 Area Source chrctztn-200-CW-1 OU

QC-BLANK 32338

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909117-10 Method Blank

METHOD BLANK

SDG	7207	Client/Case no	Hanford SDG H0528
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909117-10	Client sample id	Method Blank
Dept sample id	7212-010	Material/Matrix	SOLID
		SAF No	B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	N.A.			400		H
Technetium 99	14133-76-7	0.125	0.25	0.54	15	U	TC
Neptunium 237	13994-20-2	N.A.					NP
Total Uranium (ug/g)	7440-61-1	N.A.			1.0		U_T
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	-0.384	1.2	2.1	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 chrctztn-200-CW-1 OU

QC-BLANK 32081

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-14

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7207

Contact Kevin C. Johnson

Client/Case no Hanford SDG H0528

Case no TRB-SBB-207925

Lab sample id N909088-14

Dept sample id 7207-014

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	7.28	0.38	0.21	400	J	H	7.22	0.29	101	82-118	80-120
Neptunium 237	5.70	0.43	0.064			NP	5.29	0.21	108	84-116	
Total Uranium (ug/g)	31.8	9.5	0.072	1.0		U_T	34.6	1.4	92	57-143	80-120
Plutonium 238	11.2	1.1	0.086	1.0		PU	10.0	0.40	112	81-119	80-120
Plutonium 239/240	11.9	1.1	0.057	1.0		PU	13.2	0.53	90	85-115	80-120
Americium 241	9.98	0.87	0.056	1.0		AM	11.5	0.46	87	86-114	80-120
Total Strontium	10.9	0.66	0.46	1.0		SR	10.2	0.41	107	80-120	
Thorium 230	25.8	1.5	0.18	1.0	B	TH	24.5	0.98	105	86-114	
Cobalt 60	0.333	0.024	0.012	0.050		GAM	0.366	0.015	91	76-124	80-120
Cesium 137	0.337	0.021	0.013	0.10		GAM	0.348	0.014	97	76-124	80-120

200 Area Source chrctztn-200-CW-1 OU

QC-LCS 31979

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 11/18/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-19 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7207
Contact Kevin C. Johnson

Client/Case no Hanford SDG H0528
Case no TRB-SBB-207925

Lab sample id N909088-19
Dept sample id 7207-019

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 Strontium	12.0	0.36	0.15	1.0		SR	11.3	0.45	106	82-118	

200 Area Source chrctztn-200-CW-1 OU

QC-LCS 32337

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909117-09 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7207 Client/Case no Hanford SDG H0528

Contact Kevin C. Johnson Case no TRB-SBB-207925

Lab sample id N909117-09 Client sample id Lab Control Sample

Dept sample id 7212-009 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
Technetium 99	53.7	1.5	0.60	15		TC	55.0	2.2	98	84-116	80-120
Neptunium 237	N.A.					NP					
Total Uranium (ug/g)	N.A.			1.0		U_T					80-120
Plutonium 238	N.A.			1.0		PU					80-120
Plutonium 239/240	N.A.			1.0		PU					80-120
Nickel 63	150	3.6	2.2	30		NI_L	147	5.9	102	83-117	
Americium 241	N.A.			1.0		AM					80-120
Total Strontium	N.A.			1.0		SR					
Thorium 230	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 chrctztn-200-CW-1 OU

QC-LCS 32080

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-18 B0W9N0

DUPLICATE

SDG	7207	Client/Case no	Hanford SDG H0528
Contact	Kevin C. Johnson	Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL	
Lab sample id	N909088-18	Lab sample id	N909088-01
Dept sample id	7207-018	Dept sample id	7207-001
		Received	09/11/99
		% solids	94.7
Client sample id	B0W9N0		
Location/Matrix	GP-7 SOLID		
Collected	09/10/99 07:37		
Custody/SAF No	B99-078-110 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 Strontium	0.041	0.10	0.13	1.0	U	SR	-0.010	0.10	0.15	U	-		

200 Area Source chrctztn-200-CW-1 OU

QC-DUP#1 32158

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-16 BOWBJ2

DUPLICATE

SDG	7207			Client/Case no	Hanford SDG H0528
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL			
Lab sample id	N909088-16	Lab sample id	N909088-08	Client sample id	BOWBJ2
Dept sample id	7207-016	Dept sample id	7207-008	Location/Matrix	200 CWI,B8757 SOLID
		Received	09/11/99	Collected	09/09/99 07:24
% solids	91.3	% solids	91.3	Custody/SAF No	B99-078-117 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
Neptunium 237	-0.029	0.058	0.22		U	NP	0	0.004	0.005	U	-	
Total Uranium (ug/g)	0.818	0.085	0.007	1.0	J	U_T	0.894	0.27	0.007	J	9	53
Plutonium 238	-0.003	0.011	0.026	1.0	U	PU	-0.013	0.013	0.043	U	-	
Plutonium 239/240	0.011	0.016	0.025	1.0	U	PU	0.016	0.019	0.031	U	-	
Americium 241	0.263	0.069	0.046	1.0	J	AM	0.241	0.082	0.055	J	9	65
Total Strontium	0.945	0.14	0.15	1.0	J	SR	0.983	0.14	0.14	J	4	37
Thorium 228	0.286	0.14	0.20	1.0	J	TH	0.216	0.13	0.19	J	28	115
Thorium 230	0.836	0.21	0.19	1.0	JB	TH	0.430	0.19	0.22	JB	64	68
Thorium 232	0.357	0.12	0.078	1.0	J	TH	0.290	0.13	0.10	J	21	83
Potassium 40	11.0	0.62	0.30			GAM	11.7	0.60	0.29		6	34
Cobalt 60	0.073	0.032	0.032	0.050		GAM	0.047	0.022	0.027	J	43	102
Cesium 137	408	0.80	0.18	0.10		GAM	426	0.80	0.25		4	32
Europium 152	U		0.73	0.10	U	GAM	U		0.74	U	-	
Europium 154	0.374	0.13	0.14	0.10		GAM	0.520	0.15	0.15		33	74
Europium 155	U		0.44	0.10	U	GAM	U		0.70	U	-	
Radium 226	0.531	0.23	0.30	0.10		GAM	0.656	0.23	0.32		21	88
Radium 228	0.652	0.16	0.16	0.20		GAM	0.777	0.19	0.20		17	61
Thorium 228	0.798	0.21	0.30			GAM	0.624	0.24	0.36		24	75
Thorium 232	0.652	0.16	0.16			GAM	0.777	0.19	0.20		17	61
Americium 241	U		0.30		U	GAM	U		1.8	U	-	
Uranium 238	U		5.9		U	GAM	U		5.7	U	-	
Uranium 235	U		0.71		U	GAM	U		0.90	U	-	

200 Area Source chrctztn-200-CW-1 OU

QC-DUP#8 31981

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-17 B0WBJ8

DUPLICATE

SDG 7207		Client/Case no Hanford	SDG H0528
Contact Kevin C. Johnson		Case no TRB-SBB-207925	
DUPLICATE	ORIGINAL		
Lab sample id N909088-17	Lab sample id N909088-12	Client sample id B0WBJ8	
Dept sample id 7207-017	Dept sample id 7207-012	Location/Matrix 200 CWI,B8757	SOLID
	Received 09/11/99	Collected 09/09/99 08:23	
	% solids 93.2	Custody/SAF No B99-078-118	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	-0.036	0.050	0.087	400	U	H	-0.054	0.049	0.085	U	-		
Technetium 99	0.123	0.14	0.38	15	U	TC	0.076	0.15	0.41	U	-		
Nickel 63	-1.16	4.0	6.7	30	U	NI_L	0.039	2.7	4.5	U	-		

200 Area Source chrctztn-200-CW-1 OU

QC-DUP#12 31982

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

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-01 B0W9N0

DATA SHEET

SDG	7207	Client/Case no	Hanford	SDG H0528	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909088-01	Client sample id	B0W9N0		
Dept sample id	7207-001	Location/Matrix	GP-7	SOLID	
Received	09/11/99	Collected	09/10/99 07:37		
% solids	94.7	Custody/SAF No	B99-078-110	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.010	0.10	0.15	1.0	U	SR
Potassium 40	13966-00-2	12.4	0.63	0.34			GAM
Cobalt 60	10198-40-0	U		0.034	0.050	U	GAM
Cesium 137	10045-97-3	0.054	0.035	0.038	0.10	J	GAM
Europium 152	14683-23-9	U		0.072	0.10	U	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Europium 155	14391-16-3	U		0.079	0.10	U	GAM
Radium 226	13982-63-3	0.665	0.060	0.057	0.10		GAM
Radium 228	15262-20-1	0.991	0.16	0.16	0.20		GAM
Thorium 228	14274-82-9	0.894	0.039	0.035			GAM
Thorium 232	TH-232	0.991	0.16	0.16			GAM
Americium 241	14596-10-2	U		0.049		U	GAM
Uranium 238	U-238	U		4.1		U	GAM
Uranium 235	15117-96-1	U		0.10		U	GAM

200 Area Source chrctztn-200-CW-1 OU

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-02 B0W9N1

DATA SHEET

SDG	7207	Client/Case no	Hanford	SDG H0528	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909088-02	Client sample id	B0W9N1		
Dept sample id	7207-002	Location/Matrix	GP-7	SOLID	
Received	09/11/99	Collected	09/10/99 07:49		
% solids	96.9	Custody/SAF No	B99-078-110	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.025	0.088	0.12	1.0	U	SR
Potassium 40	13966-00-2	9.63	0.49	0.23			GAM
Cobalt 60	10198-40-0	U		0.022	0.050	U	GAM
Cesium 137	10045-97-3	0.019	0.018	0.023	0.10	U	GAM
Europium 152	14683-23-9	U		0.054	0.10	U	GAM
Europium 154	15585-10-1	U		0.081	0.10	U	GAM
Europium 155	14391-16-3	U		0.093	0.10	U	GAM
Radium 226	13982-63-3	0.390	0.042	0.042	0.10		GAM
Radium 228	15262-20-1	0.538	0.098	0.10	0.20		GAM
Thorium 228	14274-82-9	0.512	0.027	0.027			GAM
Thorium 232	TH-232	0.538	0.098	0.10			GAM
Americium 241	14596-10-2	U		0.084		U	GAM
Uranium 238	U-238	U		2.6		U	GAM
Uranium 235	15117-96-1	U		0.085		U	GAM

200 Area Source chrctztn-200-CW-1 OU

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-03 B0W9N2

DATA SHEET

SDG	7207	Client/Case no	Hanford SDG H0528
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909088-03	Client sample id	B0W9N2
Dept sample id	7207-003	Location/Matrix	GP-7 SOLID
Received	09/11/99	Collected	09/10/99 07:58
% solids	97.1	Custody/SAF No	B99-078-110 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.031	0.092	0.13	1.0	U	SR
Potassium 40	13966-00-2	10.2	0.32	0.13			GAM
Cobalt 60	10198-40-0	U		0.014	0.050	U	GAM
Cesium 137	10045-97-3	U		0.012	0.10	U	GAM
Europium 152	14683-23-9	U		0.033	0.10	U	GAM
Europium 154	15585-10-1	U		0.048	0.10	U	GAM
Europium 155	14391-16-3	U		0.034	0.10	U	GAM
Radium 226	13982-63-3	0.358	0.026	0.023	0.10		GAM
Radium 228	15262-20-1	0.514	0.061	0.059	0.20		GAM
Thorium 228	14274-82-9	0.500	0.019	0.016			GAM
Thorium 232	TH-232	0.514	0.061	0.059			GAM
Americium 241	14596-10-2	U		0.042		U	GAM
Uranium 238	U-238	U		1.7		U	GAM
Uranium 235	15117-96-1	U		0.055		U	GAM

200 Area Source chrctztn-200-CW-1 OU

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-04 B0W9N3

DATA SHEET

SDG	7207	Client/Case no	Hanford SDG H0528
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909088-04	Client sample id	B0W9N3
Dept sample id	7207-004	Location/Matrix	GP-7 SOLID
Received	09/11/99	Collected	09/10/99 08:05
% solids	96.8	Custody/SAF No	B99-078-110 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.016	0.087	0.12	1.0	U	SR
Potassium 40	13966-00-2	10.1	0.40	0.19			GAM
Cobalt 60	10198-40-0	U		0.018	0.050	U	GAM
Cesium 137	10045-97-3	U		0.017	0.10	U	GAM
Europium 152	14683-23-9	U		0.043	0.10	U	GAM
Europium 154	15585-10-1	U		0.065	0.10	U	GAM
Europium 155	14391-16-3	U		0.061	0.10	U	GAM
Radium 226	13982-63-3	0.374	0.035	0.033	0.10		GAM
Radium 228	15262-20-1	0.553	0.085	0.081	0.20		GAM
Thorium 228	14274-82-9	0.495	0.024	0.024			GAM
Thorium 232	TH-232	0.553	0.085	0.081			GAM
Americium 241	14596-10-2	U		0.15		U	GAM
Uranium 238	U-238	U		2.3		U	GAM
Uranium 235	15117-96-1	U		0.076		U	GAM

200 Area Source chrctztn-200-CW-1 OU

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-05 B0W9N4

DATA SHEET

SDG	7207	Client/Case no	Hanford	SDG H0528	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909088-05	Client sample id	B0W9N4		
Dept sample id	7207-005	Location/Matrix	GP-7	SOLID	
Received	09/11/99	Collected	09/10/99 08:30		
% solids	96.4	Custody/SAF No	B99-078-110	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.049	0.096	0.13	1.0	U	SR
Potassium 40	13966-00-2	10.8	1.2	0.16			GAM
Cobalt 60	10198-40-0	U		0.015	0.050	U	GAM
Cesium 137	10045-97-3	0.026	0.015	0.019	0.10	J	GAM
Europium 152	14683-23-9	U		0.036	0.10	U	GAM
Europium 154	15585-10-1	U		0.053	0.10	U	GAM
Europium 155	14391-16-3	U		0.048	0.10	U	GAM
Radium 226	13982-63-3	0.431	0.030	0.029	0.10		GAM
Radium 228	15262-20-1	0.608	0.066	0.063	0.20		GAM
Thorium 228	14274-82-9	0.583	0.022	0.018			GAM
Thorium 232	TH-232	0.608	0.066	0.063			GAM
Americium 241	14596-10-2	U		0.021		U	GAM
Uranium 238	U-238	U		1.7		U	GAM
Uranium 235	15117-96-1	U		0.055		U	GAM

200 Area Source chrctztn-200-CW-1 OU

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-06 B0W9N5

DATA SHEET

SDG	7207	Client/Case no	Hanford SDG H0528
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909088-06	Client sample id	B0W9N5
Dept sample id	7207-006	Location/Matrix	GP-7 SOLID
Received	09/11/99	Collected	09/10/99 08:49
% solids	93.9	Custody/SAF No	B99-078-110 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.057	0.084	0.12	1.0	U	SR
Potassium 40	13966-00-2	10.3	0.63	0.27			GAM
Cobalt 60	10198-40-0	U		0.030	0.050	U	GAM
Cesium 137	10045-97-3	0.083	0.027	0.033	0.10	J	GAM
Europium 152	14683-23-9	U		0.074	0.10	U	GAM
Europium 154	15585-10-1	U		0.099	0.10	U	GAM
Europium 155	14391-16-3	U		0.078	0.10	U	GAM
Radium 226	13982-63-3	0.454	0.052	0.052	0.10		GAM
Radium 228	15262-20-1	0.548	0.12	0.12	0.20		GAM
Thorium 228	14274-82-9	0.557	0.034	0.033			GAM
Thorium 232	TH-232	0.548	0.12	0.12			GAM
Americium 241	14596-10-2	U		0.11		U	GAM
Uranium 238	U-238	U		3.3		U	GAM
Uranium 235	15117-96-1	U		0.11		U	GAM

200 Area Source chrctztn-200-CW-1 OU

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-07 B0W9N6

DATA SHEET

SDG	7207	Client/Case no	Hanford	SDG H0528	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909088-07	Client sample id	B0W9N6		
Dept sample id	7207-007	Location/Matrix	GP-7	SOLID	
Received	09/11/99	Collected	09/10/99 09:00		
% solids	87.6	Custody/SAF No	B99-078-110	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.049	0.12	0.15	1.0	U	SR
Potassium 40	13966-00-2	15.1	0.53	0.29			GAM
Cobalt 60	10198-40-0	U		0.023	0.050	U	GAM
Cesium 137	10045-97-3	U		0.022	0.10	U	GAM
Europium 152	14683-23-9	U		0.054	0.10	U	GAM
Europium 154	15585-10-1	U		0.078	0.10	U	GAM
Europium 155	14391-16-3	U		0.081	0.10	U	GAM
Radium 226	13982-63-3	0.646	0.050	0.045	0.10		GAM
Radium 228	15262-20-1	0.930	0.11	0.10	0.20		GAM
Thorium 228	14274-82-9	0.840	0.033	0.029			GAM
Thorium 232	TH-232	0.930	0.11	0.10			GAM
Americium 241	14596-10-2	U		0.071		U	GAM
Uranium 238	U-238	U		2.8		U	GAM
Uranium 235	15117-96-1	U		0.095		U	GAM

200 Area Source chrctztn-200-CW-1 OU

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-09 B0WBJ3

DATA SHEET

SDG	7207	Client/Case no	Hanford	SDG_H0528	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909088-09	Client sample id	B0WBJ3		
Dept sample id	7207-009	Location/Matrix	200 CWI,B8757	SOLID	
Received	09/11/99	Collected	09/09/99 07:38		
% solids	89.4	Custody/SAF No	B99-078-117	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Neptunium 237	13994-20-2	0.009	0.017	0.035		U	NP
Total Uranium (ug/g)	7440-61-1	0.703	0.21	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	-0.009	0.019	0.045	1.0	U	PU
Plutonium 239/240	PU-239/240	0.003	0.019	0.034	1.0	U	PU
Americium 241	14596-10-2	0.161	0.050	0.043	1.0	J	AM
Total Strontium	SR-RAD	0.713	0.12	0.13	1.0	J	SR
Thorium 228	14274-82-9	0.456	0.15	0.14	1.0	J	TH
Thorium 230	14269-63-7	0.300	0.15	0.18	1.0	JB	TH
Thorium 232	TH-232	0.507	0.15	0.079	1.0	J	TH
Potassium 40	13966-00-2	13.2	0.83	0.45			GAM
Cobalt 60	10198-40-0	0.100	0.048	0.049	0.050		GAM
Cesium 137	10045-97-3	10.2	0.15	0.056	0.10		GAM
Europium 152	14683-23-9	U		0.17	0.10	U	GAM
Europium 154	15585-10-1	0.818	0.21	0.18	0.10		GAM
Europium 155	14391-16-3	0.602	0.12	0.15	0.10		GAM
Radium 226	13982-63-3	0.765	0.10	0.10	0.10		GAM
Radium 228	15262-20-1	0.836	0.20	0.18	0.20		GAM
Thorium 228	14274-82-9	0.787	0.066	0.078			GAM
Thorium 232	TH-232	0.836	0.20	0.18			GAM
Americium 241	14596-10-2	0.288	0.069	0.088			GAM
Uranium 238	U-238	U		8.2		U	GAM
Uranium 235	15117-96-1	U		0.19		U	GAM

200 Area Source chrctztn-200-CW-1 OU

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-10 B0WBJ4

DATA SHEET

SDG	7207	Client/Case no	Hanford	SDG H0528	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909088-10	Client sample id	B0WBJ4		
Dept sample id	7207-010	Location/Matrix	200 CWI,B8757	SOLID	
Received	09/11/99	Collected	09/09/99 07:48		
% solids	94.8	Custody/SAF No	B99-078-117	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Neptunium 237	13994-20-2	-0.010	0.010	0.032		U	NP
Total Uranium (ug/g)	7440-61-1	0.618	0.18	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	0.031	0.047	0.087	1.0	U	PU
Plutonium 239/240	PU-239/240	0.016	0.047	0.097	1.0	U	PU
Americium 241	14596-10-2	0.131	0.059	0.060	1.0	J	AM
Total Strontium	SR-RAD	0.494	0.11	0.13	1.0	J	SR
Thorium 228	14274-82-9	0.221	0.15	0.21	1.0	J	TH
Thorium 230	14269-63-7	0.248	0.13	0.16	1.0	JB	TH
Thorium 232	TH-232	0.257	0.11	0.088	1.0	J	TH
Potassium 40	13966-00-2	9.71	0.67	0.38			GAM
Cobalt 60	10198-40-0	U		0.037	0.050	U	GAM
Cesium 137	10045-97-3	312	0.80	0.27	0.10		GAM
Europium 152	14683-23-9	U		0.78	0.10	U	GAM
Europium 154	15585-10-1	0.228	0.12	0.14	0.10		GAM
Europium 155	14391-16-3	U		0.52	0.10	U	GAM
Radium 226	13982-63-3	U		0.54	0.10	U	GAM
Radium 228	15262-20-1	0.650	0.15	0.17	0.20		GAM
Thorium 228	14274-82-9	0.549	0.24	0.35			GAM
Thorium 232	TH-232	0.650	0.15	0.17			GAM
Americium 241	14596-10-2	U		0.71		U	GAM
Uranium 238	U-238	U		4.7		U	GAM
Uranium 235	15117-96-1	U		0.80		U	GAM

200 Area Source chrctztn-200-CW-1 OU

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-11 B0WBJ5

DATA SHEET

SDG	7207	Client/Case no	Hanford	SDG H0528	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909088-11	Client sample id	B0WBJ5		
Dept sample id	7207-011	Location/Matrix	200 CWI,B8757	SOLID	
Received	09/11/99	Collected	09/09/99 08:06		
% solids	92.9	Custody/SAF No	B99-078-117	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Neptunium 237	13994-20-2	0.003	0.012	0.023		U	NP
Total Uranium (ug/g)	7440-61-1	0.613	0.18	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	0.024	0.033	0.055	1.0	U	PU
Plutonium 239/240	PU-239/240	0.008	0.016	0.039	1.0	U	PU
Americium 241	14596-10-2	0.028	0.032	0.038	1.0	U	AM
Total Strontium	SR-RAD	9.18	0.61	0.45	1.0		SR
Thorium 228	14274-82-9	0.292	0.11	0.13	1.0	J	TH
Thorium 230	14269-63-7	0.440	0.14	0.13	1.0	JB	TH
Thorium 232	TH-232	0.259	0.095	0.060	1.0	J	TH
Potassium 40	13966-00-2	10.2	0.45	0.24			GAM
Cobalt 60	10198-40-0	U		0.018	0.050	U	GAM
Cesium 137	10045-97-3	3.02	0.058	0.027	0.10		GAM
Europium 152	14683-23-9	U		0.067	0.10	U	GAM
Europium 154	15585-10-1	U		0.068	0.10	U	GAM
Europium 155	14391-16-3	U		0.064	0.10	U	GAM
Radium 226	13982-63-3	0.433	0.044	0.042	0.10		GAM
Radium 228	15262-20-1	0.670	0.080	0.074	0.20		GAM
Thorium 228	14274-82-9	0.601	0.031	0.033			GAM
Thorium 232	TH-232	0.670	0.080	0.074			GAM
Americium 241	14596-10-2	U		0.076		U	GAM
Uranium 238	U-238	U		2.4		U	GAM
Uranium 235	15117-96-1	U		0.099		U	GAM

200 Area Source chrctztn-200-CW-1 OU

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-12 B0WBJ8

DATA SHEET

SDG	7207	Client/Case no	Hanford SDG H0528
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909088-12	Client sample id	B0WBJ8
Dept sample id	7207-012	Location/Matrix	200 CWI,B8757 SOLID
Received	09/11/99	Collected	09/09/99 08:23
% solids	93.2	Custody/SAF No	B99-078-118 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.054	0.049	0.085	400	U	H
Technetium 99	14133-76-7	0.076	0.15	0.41	15	U	TC
Neptunium 237	13994-20-2	0	0.010	0.023		U	NP
Total Uranium (ug/g)	7440-61-1	0.904	0.27	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	-0.007	0.020	0.052	1.0	U	PU
Plutonium 239/240	PU-239/240	0.007	0.014	0.032	1.0	U	PU
Nickel 63	13981-37-8	0.039	2.7	4.5	30	U	NI_L
Americium 241	14596-10-2	0.017	0.044	0.079	1.0	U	AM
Total Strontium	SR-RAD	11.7	0.40	0.16	1.0		SR
Thorium 228	14274-82-9	0.544	0.16	0.17	1.0	J	TH
Thorium 230	14269-63-7	0.664	0.20	0.18	1.0	JB	TH
Thorium 232	TH-232	0.252	0.10	0.077	1.0	J	TH
Potassium 40	13966-00-2	12.4	0.61	0.24			GAM
Cobalt 60	10198-40-0	U		0.029	0.050	U	GAM
Cesium 137	10045-97-3	4.87	0.095	0.044	0.10		GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.099	0.10	U	GAM
Europium 155	14391-16-3	U		0.13	0.10	U	GAM
Radium 226	13982-63-3	0.455	0.059	0.063	0.10		GAM
Radium 228	15262-20-1	0.678	0.13	0.12	0.20		GAM
Thorium 228	14274-82-9	0.650	0.047	0.056			GAM
Thorium 232	TH-232	0.678	0.13	0.12			GAM
Americium 241	14596-10-2	U		0.33		U	GAM
Uranium 238	U-238	U		3.6		U	GAM
Uranium 235	15117-96-1	U		0.16		U	GAM

200 Area Source chrctztn-200-CW-1 OU

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-13 B0WBJ9

DATA SHEET

SDG	7207	Client/Case no	Hanford	SDG H0528	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909088-13	Client sample id	B0WBJ9		
Dept sample id	7207-013	Location/Matrix	200 CWI,B8757	SOLID	
Received	09/11/99	Collected	09/09/99 08:45		
% solids	94.6	Custody/SAF No	B99-078-118	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.018	0.050	0.085	400	U	H
Technetium 99	14133-76-7	0.041	0.15	0.39	15	U	TC
Neptunium 237	13994-20-2	-0.002	0.008	0.023		U	NP
Total Uranium (ug/g)	7440-61-1	0.634	0.19	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	0.006	0.012	0.028	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.012	0.028	1.0	U	PU
Nickel 63	13981-37-8	-1.36	2.1	3.7	30	U	NI_L
Americium 241	14596-10-2	-0.006	0.024	0.066	1.0	U	AM
Total Strontium	SR-RAD	11.1	0.39	0.15	1.0		SR
Thorium 228	14274-82-9	0.261	0.14	0.17	1.0	J	TH
Thorium 230	14269-63-7	1.04	0.23	0.18	1.0	B	TH
Thorium 232	TH-232	0.471	0.14	0.077	1.0	J	TH
Potassium 40	13966-00-2	10.1	0.60	0.29			GAM
Cobalt 60	10198-40-0	U		0.031	0.050	U	GAM
Cesium 137	10045-97-3	2.45	0.072	0.039	0.10		GAM
Europium 152	14683-23-9	U		0.094	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.074	0.10	U	GAM
Radium 226	13982-63-3	0.417	0.063	0.064	0.10		GAM
Radium 228	15262-20-1	0.724	0.16	0.14	0.20		GAM
Thorium 228	14274-82-9	0.604	0.041	0.045			GAM
Thorium 232	TH-232	0.724	0.16	0.14			GAM
Americium 241	14596-10-2	U		0.058		U	GAM
Uranium 238	U-238	U		4.2		U	GAM
Uranium 235	15117-96-1	U		0.12		U	GAM

200 Area Source chrctztn-200-CW-1 OU

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

N909088-08 BOWBJ2

DATA SHEET

SDG	7207	Client/Case no	Hanford	SDG H0528	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909088-08	Client sample id	BOWBJ2		
Dept sample id	7207-008	Location/Matrix	200 CWI,B8757	SOLID	
Received	09/11/99	Collected	09/09/99 07:24		
% solids	91.3	Custody/SAF No	B99-078-117	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Neptunium 237	13994-20-2	0	0.004	0.005		U	NP
Total Uranium (ug/g)	7440-61-1	0.894	0.27	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	-0.013	0.013	0.043	1.0	U	PU
Plutonium 239/240	PU-239/240	0.016	0.019	0.031	1.0	U	PU
Americium 241	14596-10-2	0.241	0.082	0.055	1.0	J	AM
Total Strontium	SR-RAD	0.983	0.14	0.14	1.0	J	SR
Thorium 228	14274-82-9	0.216	0.13	0.19	1.0	J	TH
Thorium 230	14269-63-7	0.430	0.19	0.22	1.0	JB	TH
Thorium 232	TH-232	0.290	0.13	0.10	1.0	J	TH
Potassium 40	13966-00-2	11.7	0.60	0.29			GAM
Cobalt 60	10198-40-0	0.047	0.022	0.027	0.050	J	GAM
Cesium 137	10045-97-3	426	0.80	0.25	0.10		GAM
Europium 152	14683-23-9	U		0.74	0.10	U	GAM
Europium 154	15585-10-1	0.520	0.15	0.15	0.10		GAM
Europium 155	14391-16-3	U		0.70	0.10	U	GAM
Radium 226	13982-63-3	0.656	0.23	0.32	0.10		GAM
Radium 228	15262-20-1	0.777	0.19	0.20	0.20		GAM
Thorium 228	14274-82-9	0.624	0.24	0.36			GAM
Thorium 232	TH-232	0.777	0.19	0.20			GAM
Americium 241	14596-10-2	U		1.8		U	GAM
Uranium 238	U-238	U		5.7		U	GAM
Uranium 235	15117-96-1	U		0.90		U	GAM

200 Area Source chrctztn-200-CW-1 OU

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

Test AM Matrix SOLID
SDG 7207
Contact Kevin C. Johnson

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241
Preparation batch 6893-183					
B0WBJ3	N909088-09			7207-009	0.161 J
B0WBJ4	N909088-10			7207-010	0.131 J
B0WBJ5	N909088-11			7207-011	U
B0WBJ8	N909088-12			7207-012	U
B0WBJ9	N909088-13			7207-013	U
B0WBJ2	N909088-08			7207-008	0.241 J
BLK (QC ID=31980)	N909088-15			7207-015	U
LCS (QC ID=31979)	N909088-14			7207-014	ok
Duplicate (N909088-08)	N909088-16			7207-016	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0
200 Area Source chrctztn-200-CW-1 OU					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-183	2σ prep error 5.0 %			Reference Lab Notebook 6893 pg.183												
B0WBJ3	N909088-09			0.043	0.500			86		761			48	10/27/99	10/27	SS-061
B0WBJ4	N909088-10			0.060	0.500			62		761			48	10/27/99	10/27	SS-062
B0WBJ5	N909088-11			0.038	0.500			76		762			48	10/27/99	10/27	SS-063
B0WBJ8	N909088-12			0.079	0.500			54		762			48	10/27/99	10/27	SS-064
B0WBJ9	N909088-13			0.066	0.500			51		762			48	10/27/99	10/27	SS-065
B0WBJ2	N909088-08			0.055	0.500			52		761			48	10/27/99	10/27	SS-060
BLK (QC ID=31980)	N909088-15			0.042	0.500			81		1002				10/27/99	10/28	SS-050
LCS (QC ID=31979)	N909088-14			0.056	0.500			52		762				10/27/99	10/27	SS-066
Duplicate (N909088-08) (QC ID=31981)	N909088-16			0.046	0.500			83		747			50	10/27/99	10/29	SS-005
Nominal values and limits from method				1.0	0.500			20-105		700	100		180			

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

Test AM	Matrix SOLID
SDG 7207	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0528	

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	0.054	±	0.026
FOR 9 SAMPLES	YIELD	66	±	30

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

Test NP Matrix SOLID
SDG 7207
Contact Kevin C. Johnson

METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 6893-183						
B0WBJ3	N909088-09			7207-009	U	
B0WBJ4	N909088-10			7207-010	U	
B0WBJ5	N909088-11			7207-011	U	
B0WBJ8	N909088-12			7207-012	U	
B0WBJ9	N909088-13			7207-013	U	
B0WBJ2	N909088-08			7207-008	U	
BLK (QC ID=31980)	N909088-15			7207-015	U	
LCS (QC ID=31979)	N909088-14			7207-014	ok	
Duplicate (N909088-08)	N909088-16			7207-016	-	U

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

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-183 2σ prep error 5.0 % Reference Lab Notebook 6893 pg.183																
B0WBJ3	N909088-09			0.035	1.00			41		200			49	10/23/99	10/28	BETA
B0WBJ4	N909088-10			0.032	1.00			52		200			49	10/23/99	10/28	BETA
B0WBJ5	N909088-11			0.023	1.00			58		200			49	10/23/99	10/28	BETA
B0WBJ8	N909088-12			0.023	1.00			49		200			49	10/23/99	10/28	BETA
B0WBJ9	N909088-13			0.023	1.00			54		200			49	10/23/99	10/28	BETA
B0WBJ2	N909088-08			0.005	1.00			62		200			49	10/23/99	10/28	BETA
BLK (QC ID=31980)	N909088-15			0.031	1.00			44		200				10/23/99	10/28	BETA
LCS (QC ID=31979)	N909088-14			0.064	1.00			27		200				10/23/99	10/28	BETA
Duplicate (N909088-08) (QC ID=31981)	N909088-16			0.22	1.00			6		200			49	10/23/99	10/28	BETA
Nominal values and limits from method					1.00			20-105		100						

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

Test NP	Matrix SOLID
SDG 7207	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

NEPTUNIUM IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0528	

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

AVERAGES ± 2 SD	MDA	0.051	±	0.13
FOR 9 SAMPLES	YIELD	44	±	35

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

Test PU Matrix SOLID	Client Hanford
SDG 7207	Contract TRB-SBB-207925
Contact Kevin C. Johnson	Case no SDG H0528

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6893-183								
B0WBJ3	N909088-09			7207-009	U		U	
B0WBJ4	N909088-10			7207-010	U		U	
B0WBJ5	N909088-11			7207-011	U		U	
B0WBJ8	N909088-12			7207-012	U		U	
B0WBJ9	N909088-13			7207-013	U		U	
B0WBJ2	N909088-08			7207-008	U		U	
BLK (QC ID=31980)	N909088-15			7207-015	U		U	
LCS (QC ID=31979)	N909088-14			7207-014	ok		ok	
Duplicate (N909088-08)	N909088-16			7207-016	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	
200 Area Source chrctztn-200-CW-1 OU								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-183	2σ prep error 5.0 %				Reference Lab Notebook 6893 pg.183											
B0WBJ3	N909088-09			0.045	0.500			83		944			53	10/27/99	11/01	SS-012
B0WBJ4	N909088-10			0.097	0.500			45		654			49	10/27/99	10/28	SS-047
B0WBJ5	N909088-11			0.055	0.500			87		654			49	10/27/99	10/28	SS-048
B0WBJ8	N909088-12			0.052	0.500			76		943			53	10/27/99	11/01	SS-013
B0WBJ9	N909088-13			0.028	0.500			86		918			49	10/27/99	10/28	SS-006
B0WBJ2	N909088-08			0.043	0.500			78		918			49	10/27/99	10/28	SS-005
BLK (QC ID=31980)	N909088-15			0.042	0.500			77		918				10/27/99	10/28	SS-008
LCS (QC ID=31979)	N909088-14			0.086	0.500			52		745				10/27/99	10/29	SS-056
Duplicate (N909088-08) (QC ID=31981)	N909088-16			0.026	0.500			99		910			49	10/27/99	10/28	SS-009
Nominal values and limits from method				1.0	0.500			20-105		10	100		180			

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Test	PU
Matrix	SOLID
SDG	7207
Contact	Kevin C. Johnson

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0528

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	0.053	±	0.048
FOR 9 SAMPLES	YIELD	76	±	34

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

Test TH Matrix SOLID
SDG 7207
Contact Kevin C. Johnson

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6893-183							
B0WBJ3	N909088-09			7207-009	0.456 J	0.300 J	0.507 J
B0WBJ4	N909088-10			7207-010	0.221 J	0.248 J	0.257 J
B0WBJ5	N909088-11			7207-011	0.292 J	0.440 J	0.259 J
B0WBJ8	N909088-12			7207-012	0.544 J	0.664 J	0.252 J
B0WBJ9	N909088-13			7207-013	0.261 J	1.04	0.471 J
B0WBJ2	N909088-08			7207-008	0.216 J	0.430 J	0.290 J
BLK (QC ID=31980)	N909088-15			7207-015	U	0.488 J	U
LCS (QC ID=31979)	N909088-14			7207-014		ok	
Duplicate (N909088-08)	N909088-16			7207-016	ok J	ok J	ok J
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0
200 Area Source chrctztn-200-CW-1 OU							

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-183 2σ prep error 5.0 % Reference Lab Notebook 6893 pg.183																
B0WBJ3	N909088-09			0.18	0.250			93		518			48	10/26/99	10/27	SS-038
B0WBJ4	N909088-10			0.21	0.250			95		520			48	10/26/99	10/27	SS-040
B0WBJ5	N909088-11			0.13	0.250			95		661			49	10/26/99	10/28	SS-027
B0WBJ8	N909088-12			0.18	0.250			89		519			48	10/26/99	10/27	SS-044
B0WBJ9	N909088-13			0.18	0.250			88		519			48	10/26/99	10/27	SS-045
B0WBJ2	N909088-08			0.22	0.250			88		518			48	10/26/99	10/27	SS-036
BLK (QC ID=31980)	N909088-15			0.31	0.250			42		519				10/26/99	10/27	SS-048
LCS (QC ID=31979)	N909088-14			0.18	0.250			87		519				10/26/99	10/27	SS-047
Duplicate (N909088-08) (QC ID=31981)	N909088-16			0.20	0.250			89		519			48	10/26/99	10/27	SS-049
Nominal values and limits from method				1.0	0.250			20-105		200			180			

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

Test	TH
Matrix	SOLID
SDG	7207
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0528

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

AVERAGES ± 2 SD	MDA	0.20	±	0.098
FOR 9 SAMPLES	YIELD	85	±	33

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

Test	SR
Matrix	SOLID
SDG	7207
Contact	Kevin C. Johnson

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0528

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 6893-183					
B0WBJ3	N909088-09			7207-009	0.713 J
B0WBJ4	N909088-10			7207-010	0.494 J
B0WBJ5	N909088-11			7207-011	9.18
B0WBJ8	N909088-12			7207-012	11.7
B0WBJ9	N909088-13			7207-013	11.1
B0WBJ2	N909088-08			7207-008	0.983 J
BLK (QC ID=31980)	N909088-15			7207-015	U
LCS (QC ID=31979)	N909088-14			7207-014	ok
Duplicate (N909088-08)	N909088-16			7207-016	ok J
Preparation batch 6893-184					
B0W9N0	N909088-01			7207-001	U
B0W9N1	N909088-02			7207-002	U
B0W9N2	N909088-03			7207-003	U
B0W9N3	N909088-04			7207-004	U
B0W9N4	N909088-05			7207-005	U
B0W9N5	N909088-06			7207-006	U
B0W9N6	N909088-07			7207-007	U
BLK (QC ID=32160)	N909088-20			7207-020	U
LCS (QC ID=32159)	N909088-19			7207-019	ok
Duplicate (N909088-01)	N909088-18			7207-018	- U

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

200 Area Source chrctztn-200-CW-1 OU

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

Test SR Matrix SOLID
SDG 7207
Contact Kevin C. Johnson

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-183 2σ prep error 10.0 % Reference Lab Notebook 6893 pg.183																
B0WBJ3	N909088-09			0.13	1.00			99		200			48	10/23/99	10/27	GRB-223
B0WBJ4	N909088-10			0.13	1.00			96		200			48	10/23/99	10/27	GRB-202
B0WBJ5	N909088-11			0.45	1.00			98		200			48	10/23/99	10/27	GRB-201
B0WBJ8	N909088-12			0.16	1.00			97		200			48	10/23/99	10/27	GRB-223
B0WBJ9	N909088-13			0.15	1.00			94		200			48	10/23/99	10/27	GRB-227
B0WBJ2	N909088-08			0.14	1.00			100		200			48	10/23/99	10/27	GRB-222
BLK (QC ID=31980)	N909088-15			0.19	1.00			78		400				10/23/99	10/27	GRB-230
LCS (QC ID=31979)	N909088-14			0.46	1.00			81		400				10/23/99	10/27	GRB-229
Duplicate (N909088-08) (QC ID=31981)	N909088-16			0.15	1.00			99		200			48	10/23/99	10/27	GRB-230
Preparation batch 6893-184 2σ prep error 10.0 % Reference Lab Notebook 6893 pg.184																
B0W9N0	N909088-01			0.15	1.00			84		400			64	11/13/99	11/13	GRB-219
B0W9N1	N909088-02			0.12	1.00			98		400			64	11/13/99	11/13	GRB-220
B0W9N2	N909088-03			0.13	1.00			99		400			64	11/13/99	11/13	GRB-221
B0W9N3	N909088-04			0.12	1.00			99		400			64	11/13/99	11/13	GRB-222
B0W9N4	N909088-05			0.13	1.00			97		400			64	11/13/99	11/13	GRB-223
B0W9N5	N909088-06			0.12	1.00			99		400			64	11/13/99	11/13	GRB-224
B0W9N6	N909088-07			0.15	1.00			98		400			64	11/13/99	11/13	GRB-225
BLK (QC ID=32160)	N909088-20			0.15	1.00			82		400				11/13/99	11/13	GRB-230
LCS (QC ID=32159)	N909088-19			0.15	1.00			83		400				11/13/99	11/13	GRB-228
Duplicate (N909088-01) (QC ID=32158)	N909088-18			0.13	1.00			95		400			64	11/13/99	11/13	GRB-227
Nominal values and limits from method				1.0	1.00					100			180			

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

AVERAGES ± 2 SD FOR 19 SAMPLES
MDA 0.17 ± 0.20
YIELD 93 ± 15

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

Test	TC
Matrix	SOLID
SDG	7207
Contact	Kevin C. Johnson

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0528

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6893-183						
B0WBJ8	N909088-12			7207-012	U	
B0WBJ9	N909088-13			7207-013	U	
BLK (QC ID=32081)	N909117-10			7212-010	U	
LCS (QC ID=32080)	N909117-09			7212-009	ok	
Duplicate (N909088-12)	N909088-17			7207-017	-	U

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

200 Area Source chrctztn-200-CW-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-183 2σ prep error 10.0 % Reference Lab Notebook 6893 pg.183																
B0WBJ8	N909088-12			0.41	1.02			85		101			44	10/19/99	10/23	GRB-223
B0WBJ9	N909088-13			0.39	1.02			84		101			44	10/19/99	10/23	GRB-224
BLK (QC ID=32081)	N909117-10			0.54	1.03			63		101				10/19/99	10/23	GRB-221
LCS (QC ID=32080)	N909117-09			0.60	1.03			56		101				10/19/99	10/22	GRB-220
Duplicate (N909088-12) (QC ID=31982)	N909088-17			0.38	1.02			90		101			43	10/19/99	10/22	GRB-232
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				
FOR 5 SAMPLES	MDA	0.46	±	0.20
	YIELD	76	±	30

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

Test GAM Matrix SOLID
SDG 7207
Contact Kevin C. Johnson

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6893-183						
B0W9N0	N909088-01			7207-001	U	0.054 J
B0W9N1	N909088-02			7207-002	U	U
B0W9N2	N909088-03			7207-003	U	U
B0W9N3	N909088-04			7207-004	U	U
B0W9N4	N909088-05			7207-005	U	0.026 J
B0W9N5	N909088-06			7207-006	U	0.083 J
B0W9N6	N909088-07			7207-007	U	U
B0WBJ3	N909088-09			7207-009	0.100	10.2
B0WBJ4	N909088-10			7207-010	U	312
B0WBJ5	N909088-11			7207-011	U	3.02
B0WBJ8	N909088-12			7207-012	U	4.87
B0WBJ9	N909088-13			7207-013	U	2.45
B0WBJ2	N909088-08			7207-008	0.047 J	426
BLK (QC ID=31980)	N909088-15			7207-015	U	U
LCS (QC ID=31979)	N909088-14			7207-014	ok	ok
Duplicate (N909088-08)	N909088-16			7207-016	ok	ok
Nominal values and limits from method				RDLs (pCi/g)	0.050	0.10
200 Area Source chrctztn-200-CW-1 OU						

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

Test GAM Matrix SOLID
SDG 7207
Contact Kevin C. Johnson

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-183	2σ prep error 15.0 %	Reference Lab Notebook 6893 pg.183														
B0W9N0	N909088-01			0.098	705					317			40	09/30/99	10/20	02,01,00
B0W9N1	N909088-02			0.061	859					317			40	09/30/99	10/20	02,03,00
B0W9N2	N909088-03			0.039	795					317			40	09/30/99	10/20	02,04,00
B0W9N3	N909088-04			0.054	896					317			40	09/30/99	10/20	MB,05,00
B0W9N4	N909088-05			0.043	820					318			40	09/30/99	10/20	MB,07,00
B0W9N5	N909088-06			0.084	755					220			40	09/30/99	10/20	02,03,00
B0W9N6	N909088-07			0.066	589					220			40	09/30/99	10/20	02,04,00
B0WBJ3	N909088-09			0.14	704					216			41	09/30/99	10/20	02,01,00
B0WBJ4	N909088-10			0.10	725					218			41	09/30/99	10/20	02,03,00
B0WBJ5	N909088-11			0.058	688					202			41	09/30/99	10/20	02,04,00
B0WBJ8	N909088-12			0.090	678					202			41	09/30/99	10/20	MB,05,00
B0WBJ9	N909088-13			0.099	774					239			41	09/30/99	10/20	02,01,00
B0WBJ2	N909088-08			0.10	653					216			41	09/30/99	10/20	MB,05,00
BLK (QC ID=31980)	N909088-15			0.022	741					201				09/30/99	10/20	MB,05,00
LCS (QC ID=31979)	N909088-14			0.012	741					201				09/30/99	10/20	01,04,00
Duplicate (N909088-08) (QC ID=31981)	N909088-16			0.10	653					331			42	09/30/99	10/21	02,01,00
Nominal values and limits from method				0.050	741					100			180			

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

AVERAGES ± 2 SD FOR 16 SAMPLES
MDA 0.073 ± 0.068
YIELD ____ ± ____

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

Test U T Matrix SOLID
SDG 7207
Contact Kevin C. Johnson

METHOD SUMMARY

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 6893-183					
B0WBJ3	N909088-09			7207-009	0.703 J
B0WBJ4	N909088-10			7207-010	0.618 J
B0WBJ5	N909088-11			7207-011	0.613 J
B0WBJ8	N909088-12			7207-012	0.904 J
B0WBJ9	N909088-13			7207-013	0.634 J
B0WBJ2	N909088-08			7207-008	0.894 J
BLK (QC ID=31980)	N909088-15			7207-015	U
LCS (QC ID=31979)	N909088-14			7207-014	ok
Duplicate (N909088-08)	N909088-16			7207-016	ok J
Nominal values and limits from method				RDLs (ug/g)	1.0
200 Area Source chrctztn-200-CW-1 OU					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-183	2σ prep error 9.0 %			Reference Lab Notebook 6893 pg.183												
B0WBJ3	N909088-09			0.007	0.0500								32	10/11/99	10/11	KPA-001
B0WBJ4	N909088-10			0.007	0.0500								32	10/11/99	10/11	KPA-001
B0WBJ5	N909088-11			0.007	0.0500								32	10/11/99	10/11	KPA-001
B0WBJ8	N909088-12			0.007	0.0500								32	10/11/99	10/11	KPA-001
B0WBJ9	N909088-13			0.007	0.0500								32	10/11/99	10/11	KPA-001
B0WBJ2	N909088-08			0.007	0.0500								32	10/11/99	10/11	KPA-001
BLK (QC ID=31980)	N909088-15			0.007	0.0500									10/11/99	10/11	KPA-001
LCS (QC ID=31979)	N909088-14			0.072	0.0500									10/11/99	10/11	KPA-001
Duplicate (N909088-08) (QC ID=31819)	N909088-16			0.007	0.0500								32	10/11/99	10/11	KPA-001
Nominal values and limits from method				1.0	0.0500								180			

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

Test U T	Matrix SOLID
SDG 7207	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0528	

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 0.014	± 0.043
FOR 9 SAMPLES	YIELD	±

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

Test H	Matrix SOLID
SDG 7207	
Contact Kevin C. Johnson	

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0528	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6893-183						
B0WBJ8	N909088-12			7207-012	U	
B0WBJ9	N909088-13			7207-013	U	
BLK (QC ID=31980)	N909088-15			7207-015	U	
LCS (QC ID=31979)	N909088-14			7207-014	ok	J
Duplicate (N909088-12)	N909088-17			7207-017	-	U

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

200 Area Source chrctztn-200-CW-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-183 2σ prep error 10.0 % Reference Lab Notebook 6893 pg.183																
B0WBJ8	N909088-12			0.085	20.3			100		120			54	10/15/99	11/02	LSC-004
B0WBJ9	N909088-13			0.085	20.1			100		120			54	10/15/99	11/02	LSC-004
BLK (QC ID=31980)	N909088-15			0.084	20.5			100		120				10/26/99	11/02	LSC-004
LCS (QC ID=31979)	N909088-14			0.21	20.5			100		20				10/26/99	11/02	LSC-004
Duplicate (N909088-12) (QC ID=31982)	N909088-17			0.087	20.2			100		120			54	10/15/99	11/02	LSC-004
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	MDA	0.11	± 0.11
FOR 5 SAMPLES	YIELD	100	± 0

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

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0528

Test NI L Matrix SOLID
SDG 7207
Contact Kevin C. Johnson

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6893-183						
B0WBJ8	N909088-12			7207-012	U	
B0WBJ9	N909088-13			7207-013	U	
BLK (QC ID=32081)	N909117-10			7212-010	U	
LCS (QC ID=32080)	N909117-09			7212-009	ok	
Duplicate (N909088-12)	N909088-17			7207-017	-	U

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

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-183	2σ prep error 10.0 % Reference Lab Notebook 6893 pg.183															
B0WBJ8	N909088-12			4.5	0.500			47		100			51	10/28/99	10/30	LSC-004
B0WBJ9	N909088-13			3.7	0.500			57		100			51	10/28/99	10/30	LSC-004
BLK (QC ID=32081)	N909117-10			2.1	0.500			96		100				10/28/99	10/30	LSC-004
LCS (QC ID=32080)	N909117-09			2.2	0.500			93		100				10/28/99	10/30	LSC-004
Duplicate (N909088-12) (QC ID=31982)	N909088-17			6.7	0.500			31		100			51	10/28/99	10/30	LSC-004
Nominal values and limits from method				30	0.500					10			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	3.8	±	3.8
	YIELD	65	±	57

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

SDG 7207
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

SAMPLE SUMMARY

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

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

The following notes apply to these reports:

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

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

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

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

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

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

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

SDG 7207
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

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

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

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

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

  These qualifiers should be reviewed as follows:

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

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

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

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

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

SDG 7207
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG_H0528

WORK SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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

SDG 7207
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

Lab id TMANC
Protocol Hanford
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DATA SHEET

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

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

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

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

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

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

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

P The RESULT is 'preliminary'.

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

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

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

The following values are underlined to indicate possible problems:

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

SDG 7207
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GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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

SDG 7207
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

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

SDG 7207
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

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

SDG 7207
Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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

SDG 7207
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

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

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

SDG 7207
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0528

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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

METHOD SUMMARY

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

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

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

  MDAs are underlined if greater than the printed RDL.

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

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

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

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

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

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

METHOD SUMMARY

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

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-110

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-7		SAF No.: B99-078
Ice Chest No.: SMIL-587	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ RJN 9/10/99 Federal Express
Shipped To: TMA/RECRA ThermoRetec	Offsite Property No.: A990251		Bill of Lading/Air Bill No.: RJN 9/10/99 4235795293 11
			COA: B2CW1671C

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	None									
	Type of Container	aG	aG									
	No. of Container(s)	1	1									
Special Handling and/or Storage	Volume	500mL	1000mL									
SAMPLE ANALYSIS		See item (1) in Special Instructions	See item (2) in Special Instructions									

Sample No.	Matrix *	Sample Date	Sample Time									
B0W9N0	Soil	9-10-99	0737		X							BOWLS
B0W9N1	Soil	9-10-99	0749		X							
B0W9N2	Soil	9-10-99	0758		X							
B0W9N3	Soil	9-10-99	0805		X							
B0W9N4	Soil	9-10-99	0830		X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	9-10-99 1330	FedEx	9-10-99
FedEx	9-11-99 10:00	TMI M. Goldzuberg	9-11-99 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) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

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

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

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-110

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-7		SAF No.: B99-078
Ice Chest No.: SML-587	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ RJN 9/10/99 Federal Express
Shipped To: TMA/RECRA Thermo Retec	Offsite Property No.: A990251		Bill of Lading/Air Bill No.: 423579529311
			COA B2CW1671C

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	None									
	Type of Container	aG	aG									
Special Handling and/or Storage	No. of Container(s)	1	1									
	Volume	500mL	1000mL									
SAMPLE ANALYSIS		See item (1) in Special Instructions	See item (2) in Special Instructions									

Sample No.	Matrix *	Sample Date	Sample Time									
B0W9N5	Soil	9-10-99	0849		X							B0W5L8
B0W9N6	Soil	9-10-99	0900		X							B0W5L8
~~B0W9N7~~	~~Soil~~											
~~B0W9N8~~	~~Soil~~	RJN 9/10/99										
~~B0W9N9~~	~~Soil~~											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: RJNielson/RNielson	Date/Time 1330 9-10-99	Received By: Fed Ex	Date/Time 9-10-99
Relinquished By: FedEx	Date/Time 9-11-99 10:00	Received By: TNV M. Goldenberg	Date/Time 10:00 9-11-99
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

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	B99-078-117	Page 1 of 2

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock — Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 CW1, B8757	SAF No.: B99-078	
Ice Chest No.: SML 596	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: TMA/RECRA Thermo Retec	Offsite Property No.: A990249	Bill of Lading/Air Bill No.: 4235 7952 9285	
		COA: B20 ~~[illegible]~~ CW1 9/10/99 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL		
SAMPLE ANALYSIS	Isotopic Uranium	Neptunium-237	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										
B0WBJ2	Soil	9-9-99	0724	X	X						X	BOW	8CO
B0WBJ3	Soil	9-9-99	0738	X	X						X	BOW	8CO
B0WBJ4	Soil	9-9-99	0748	X	X						X	BOW	8CO
B0WBJ5	Soil	9-9-99	0806	X	X						X	BOW	8CO
~~B0WBJ6~~	~~Soil~~ 9/9/99 RJN												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/9/99 11:00	Received By: Peter IB	Date/Time: 9/9/99 11:00
Relinquished By: Peter IB	Date/Time: 9/9/99 1300	Received By: Chris	Date/Time: 9/9/99 1300
Relinquished By: Chris	Date/Time: 9/10/99 1400	Received By: FEDEX	Date/Time: 9/10/99 1400
Relinquished By: FedEx	Date/Time: 9-11-99 10:00	Received By: TNV M. Goldenberg	Date/Time: 10:00 9-11-99

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 SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-118	Page 1 of 2

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 CW1, B8757		SAF No.: B99-078
Ice Chest No.: SML 127	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA Thermo Retec	Offsite Property No.: A 990249		Bill of Lading/Air Bill No.: 4235 7952 9296
			COA: B20 CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
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	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Neptunium-237	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.

Sample No.	Matrix *	Sample Date	Sample Time										
✓ B0WBJ8	Soil	9-9-99	0823	X	X	X	X	X			tie to	BOW	8CO
✓ B0WBJ9	Soil	9-9-99	0845	X	X	X	X	X				BOW	8CO
~~B0WBK0~~	~~Soil~~ 9/9/99 RUN												
~~B0WBK1~~	~~Soil~~ 9/9/99 RUN												

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By	Brent Porter	9/9/99 11:00
Received By	Peter IB	9/9/99 11:00
Relinquished By	Peter IB	9/9/99 1300
Received By	Chris	9/9/99 1300
Relinquished By	Chris	9/10/99 14 00
Received By	FEDEX	9/10/99 14 00
Relinquished By	Fed Ex	9-11-99 10:00
Received By	TNV McGoldenberg	9-11-99 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

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-118	Page 2 of 2

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 CW1, B8757		SAF No.: B99-078
Ice Chest No.: SMC 127	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA Thermo Retec	Offsite Property No.: A 990249		Bill of Lading/Air Bill No.: 4235 7952 9296
			COA: B20 CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None									
	Type of Container	aG									
Special Handling and/or Storage	No. of Container(s)	1									
	Volume	1000mL									
SAMPLE ANALYSIS		See item (1) in Special Instructions									

Sample No.	Matrix *	Sample Date	Sample Time									
B0WBJ8	Soil	9-9-99	0823	X*							tie to B0W8C0	
B0WBJ9	Soil	9-9-99	0845	X*								B0W8C0
~~B0WBK0~~	~~Soil~~ 9/9/99 RJN											
~~B0WBK1~~	~~Soil~~ 9/9/99 RJN											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/9/99 11:00	Received By: Peter JB	Date/Time: 9/9/99 11:00
Relinquished By: Peter JB	Date/Time: 9/9/99 1300	Received By: Peter JB	Date/Time: 9/9/99 1300
Relinquished By: Chris	Date/Time: 9/10/99 1400	Received By: Chris	Date/Time: 9/10/99 1400
Relinquished By: FedEx 9-11-99	Date/Time: 10:00	Received By: FEDEX TNU M. Goldenberg 9-11-99	Date/Time: 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) 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 SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 9-11-99 10:00

CoC No. B99-078-117, 118

Container I.D. No. SML 596 Requested TAT (Days) 45 P.O. Received Yes [ ] No [✓]

SML 127

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: 6
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: 9-11-99 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 _____

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 9-11-99 10:00

CoC No. B 99-078-110

Container I.D. No. SML-587 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: 1 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [✓] Appropriate sample labels [✓]
10. Samples are: In good condition [ ] Leaking [ ] Broken Container [✓] Missing [ ]
11. Describe any anomalies: Sample ID B0W9N2 bottle was broken.

13. Was P.M. notified of any anomalies? Yes [✓] No [ ] Date 9-11-99
14. Received by M. Goldenberg Date: 9-11-99 Time: 10:00

LOGIN

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

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L069
SDG/SAF #: H0528/ B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 09-11-99

GC/MS VOLATILE

Six (6) soil samples were collected on 09-09-99.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 09-20-99.

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

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

2. The required holding time for analysis was met.

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

4. All surrogate recoveries were within EPA QC limits.

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

6. All RPDs were within EPA QC limits.

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

8. All method blanks contained the common laboratory contaminant Methylene Chloride at a level less than 1x the CRQL. Method blank 99LVH358 also contained Acetone at a level less than 1x the CRQL.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-19-99
Date

som\group\data\ voa\tnu09069.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 14 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: 10/15/99 14:59

RFW Batch Number: **9909L069** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

004

	Cust ID:	B0WBJ2		B0WBJ3		B0WBJ4		B0WBJ5		B0WBJ8		B0WBJ9	
Sample Information	RFW#:	001		002		003		004		005		006	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.926		1.02		0.943		0.909		0.962		0.943	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	101	%	100	%	101	%	102	%	100	%	102	%
	Bromofluorobenzene	90	%	91	%	89	%	89	%	91	%	94	%
	1,2-Dichloroethane-d4	102	%	108	%	101	%	101	%	102	%	97	%
			fl		fl		fl		fl		fl		fl
Chloromethane		10	U	12	U	10	U	10	U	10	U	10	U
Bromomethane		10	U	12	U	10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	12	U	10	U	10	U	10	U	10	U
Chloroethane		10	U	12	U	10	U	10	U	10	U	10	U
Methylene Chloride		8	B	7	B	6	B	9	B	9	B	4	JB
Acetone		6	J	4	J	10	U	4	J	5	J	2	JB
Carbon Disulfide		5	U	6	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	6	U	5	U	5	U	5	U	5	U
1,1-Dichloroethane		5	U	6	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	6	U	5	U	5	U	5	U	5	U
Chloroform		5	U	6	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	6	U	5	U	5	U	5	U	5	U
2-Butanone		10	U	12	U	10	U	10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	6	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		5	U	6	U	5	U	5	U	5	U	5	U
Bromodichloromethane		5	U	6	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	6	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	6	U	5	U	5	U	5	U	5	U
Trichloroethene		5	U	6	U	5	U	5	U	5	U	5	U
Dibromochloromethane		5	U	6	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	6	U	5	U	5	U	5	U	5	U
Benzene		5	U	6	U	5	U	5	U	5	U	5	U
Trans-1,3-Dichloropropene		5	U	6	U	5	U	5	U	5	U	5	U
Bromoform		5	U	6	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	12	U	10	U	10	U	10	U	10	U
2-Hexanone		10	U	12	U	10	U	10	U	10	U	10	U
Tetrachloroethene		5	U	6	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	6	U	5	U	5	U	5	U	5	U
Toluene		5	U	6	U	5	U	5	U	5	U	5	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **9909L069** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1b

Cust ID:	B0WBJ2	B0WBJ3	B0WBJ4	B0WBJ5	B0WBJ8	B0WBJ9
RFW#:	001	002	003	004	005	006
Chlorobenzene	5 U	6 U	5 U	5 U	5 U	5 U
Ethylbenzene	5 U	6 U	5 U	5 U	5 U	5 U
Styrene	5 U	6 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	6 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

005

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 10/15/99 14:59

RFW Batch Number: **9909L069** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

006

	Cust ID:	B0WBJ9		B0WBJ9		VBLKSZ		VBLKSZ BS		VBLKTA		VBLKTA BS	
Sample Information	RFW#:	006 MS		006 MSD		99LVH356-MB1		99LVH356-MB1		99LVH358-MB1		99LVH358-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	101	%	100	%	101	%	103	%	103	%	103	%
	Bromofluorobenzene	94	%	95	%	90	%	92	%	95	%	96	%
	1,2-Dichloroethane-d4	94	%	98	%	95	%	93	%	99	%	99	%
Chloromethane		11	U	11	U	10	U	10	U	10	U	10	U
Bromomethane		11	U	11	U	10	U	10	U	10	U	10	U
Vinyl Chloride		11	U	11	U	10	U	10	U	10	U	10	U
Chloroethane		11	U	11	U	10	U	10	U	10	U	10	U
Methylene Chloride		4	JB	5	JB	5	J	3	JB	5	J	3	JB
Acetone		11	U	2	JB	10	U	10	U	3	J	10	U
Carbon Disulfide		6	U	6	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		93	%	85	%	5	U	99	%	5	U	86	%
1,1-Dichloroethane		6	U	6	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	5	U	5	U	5	U	5	U
Chloroform		6	U	6	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane		6	U	6	U	5	U	5	U	5	U	5	U
2-Butanone		11	U	11	U	10	U	10	U	10	U	10	U
1,1,1-Trichloroethane		6	U	6	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		6	U	6	U	5	U	5	U	5	U	5	U
Bromodichloromethane		6	U	6	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		6	U	6	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	5	U	5	U	5	U	5	U
Trichloroethene		89	%	87	%	5	U	96	%	5	U	85	%
Dibromochloromethane		6	U	6	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		6	U	6	U	5	U	5	U	5	U	5	U
Benzene		93	%	90	%	5	U	98	%	5	U	89	%
Trans-1,3-Dichloropropene		6	U	6	U	5	U	5	U	5	U	5	U
Bromoform		6	U	6	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		11	U	11	U	10	U	10	U	10	U	10	U
2-Hexanone		11	U	11	U	10	U	10	U	10	U	10	U
Tetrachloroethene		6	U	6	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	5	U	5	U	5	U	5	U
Toluene		95	%	91	%	5	U	101	%	5	U	90	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: **9909L069** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2b

Cust ID:	B0WBJ9		B0WBJ9		VBLKSZ		VBLKSZ BS		VBLKTA		VBLKTA BS	
RFW#:	006 MS		006 MSD		99LVH356-MB1		99LVH356-MB1		99LVH358-MB1		99LVH358-MB1	
Chlorobenzene	93	%	90	%	5	U	100	%	5	U	89	%
Ethylbenzene	6	U	6	U	5	U	5	U	5	U	5	U
Styrene	6	U	6	U	5	U	5	U	5	U	5	U
Xylene (total)	6	U	6	U	5	U	5	U	5	U	5	U

*= Outside of EPA CLP QC limits.

007

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBJ2	001	S	99LVH356	09/09/99	N/A	09/20/99
B0WBJ3	002	S	99LVH356	09/09/99	N/A	09/20/99
B0WBJ4	003	S	99LVH356	09/09/99	N/A	09/20/99
B0WBJ5	004	S	99LVH356	09/09/99	N/A	09/20/99
B0WBJ8	005	S	99LVH356	09/09/99	N/A	09/20/99
B0WBJ9	006	S	99LVH358	09/09/99	N/A	09/20/99
B0WBJ9	006 MS	S	99LVH358	09/09/99	N/A	09/20/99
B0WBJ9	006 MSD	S	99LVH358	09/09/99	N/A	09/20/99

LAB QC:

VBLKSZ	MB1	S	99LVH356	N/A	N/A	09/20/99
VBLKSZ	MB1 BS	S	99LVH356	N/A	N/A	09/20/99
VBLKTA	MB1	S	99LVH358	N/A	N/A	09/20/99
VBLKTA	MB1 BS	S	99LVH358	N/A	N/A	09/20/99

RECRA LabNet Use Only
9909L069

Custody Transfer Record/Lab Work Request

Page 1 of 2

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) qcms VOA BNA PCB pesticide wet schnee metals dry

Client: TNU - HANFORD B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: O. Johnson
QC: Del: TAT: 30day
Date Rec'd: 9-11-99 Date Due: 10-11-99
Account #:

Refrigerator #		1	6	1		6	1	6	6	6				
#/Type Container	Liquid													
	Solid	1G	1G	1		1G	1	1G	1G	1G				
Volume	Liquid													
	Solid	250	500	1		500	1	250	500	1000				
Preservatives														
ANALYSES REQUESTED →	ORGANIC: VOA								INORG: Metal					
	ORGANIC: BNA								INORG: CN					
	ORGANIC: Pest/PCB													
	ORGANIC: Herb													

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OG24H	OG25H	OPCB		OGCSC	ODRO	IPH	Met①	ICNTO	IN3N2	ISFD	INH3N	INORD
001	BOWBJ2			S	9-9-99	0724	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
002	3					0738													
003	4					0748													
004	5					0806													
005	8					0823													
006	9					0845													
007	9NO				9-10-99	0737													
008	1					0749													
009	2					0758													
010	3					0805													

Special Instructions:
SAF # = B99-078

COMPOSITE WASTE

ORIGINAL REWRITTEN

DATE/REVISIONS:
1. Met① = As, Ba, Be, Cd, Cr, Cu
2. Pb, Ni, Se, Ag, V, Zn, Hg, ICR6
3. Inor① = ICCL, ICFL, ICNO2,
4. ICNO3, ICPO4, ICSO4
5. OGCSC = ethanol & propanol
9/15/99 6. → Run Matrix QC

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package ✓ or N
2) Unbroken on Outer Package ✓ or N
3) Present on Sample ✓ or N
4) Unbroken on Sample ✓ or N
COC Record Present Upon Sample Rec't ✓ or N
Cooler Temp. 4.6 °C

Discrepancies Between Samples Labels and COC Record? Y or ✓
NOTES: 4235795 9263
FedEx 4235 7952 9274 Cooler SIZE 375 5.0
4235795 29322 96030 5.0

Relinquished by	Received by	Date	Time
FedEx	[illegible]	9-11-99	0945

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

RECRA LabNet Use Only

9909 1069

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client INU HANFORD B99-078

Est. Final Proj. Sampling Date

Project #

Project Contact/Phone #

RECRA Project Manager

QC Del TAT

Date Rec'd Date Due

Account #

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

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	RECRA LabNet Use Only													
													Metal							
011	BOWN4			S	9-10-99	0830							✓							
012	9N6					0849														
013	9N6					0900														

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 5 °C

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	9-11-99	0945T

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:
4235 7952 9322

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-117	Page 1 of 2

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 CW1, B8757		SAF No.: B99-078
Ice Chest No.: ERC 96-043	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA RECRA Cabinet	Offsite Property No.: A990250		Bill of Lading/Air Bill No.: 4235 7952 9263
			COA: B20 ~~CW~~ CW CT 9/10/99 C71C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None		
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
	No. of Container(s)	1	1	1	1	1	1	1	1		
Special Handling and/or Storage	Volume	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL		
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	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										
1	B0WBJ2	Soil	9-9-99	0724			X	X	X	X	X		B0W	8C0
2	B0WBJ3	Soil	9-9-99	0738			X	X	X	X	X		B0W	8C0
3	B0WBJ4	Soil	9-9-99	0748			X	X	X	X	X		B0W	8C0
4	B0WBJ5	Soil	9-9-99	0806			X	X	X	X	X		B0W	8C0
	~~B0WBJ6~~	~~Soil~~ RINSATE												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/9/99 11:00	Received By: Refer JB	Date/Time: 9/9/99 11:00
Relinquished By: Refer JB	Date/Time: 9/9/99 13:00	Received By: C Shue	Date/Time: 9/9/99 1300
Relinquished By: C Shue	Date/Time: 9/10/99 1400	Received By: FEDEX	Date/Time: 9/10/99 1400
Relinquished By: Ken Ep	Date/Time: 9-11-99 0945	Received By: Kathi Henry	Date/Time: 9-11-99 0945

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 SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Cont. 96043 Tank H-6

MOYLOOY

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-118	Page 1 of 1 9/9/99 RJB

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 CW1, B8757	SAF No.: B99-078	
Ice Chest No.: SML 395	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: TMA/RECRA Refer Lab net	Offsite Property No.: A99 0250	Bill of Lading/Air Bill No.: 4235 7952 9274	
		COA: B20 CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	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	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	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

	Sample No.	Matrix *	Sample Date	Sample Time										
5	B0WBJ8	Soil	9-9-99	0823						X	X	X	X	X
6	B0WBJ9	Soil	9-9-99	0845						X	X	X	X	X
	~~B0WBK0~~	~~Soil~~ 9/9/99 RJN												
	~~B0WBK1~~	~~Soil~~ 9/9/99 RJN												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter 9/9/99 11:00	Received By: Refer IB 9/9/99 11:00		
Relinquished By: Refer IB 9/9/99 1300	Received By: C Bruce 9/9/99 1300		
Relinquished By: C Bruce 9/10/99 1400	Received By: FEDEX 9/10/99 1400		
Relinquished By: Fed Ex 9-11-99 0945	Received By: Linda Hemming 9-11-99 0945		

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

COLLECTOR UNAVAILABLE TO SIGN COC

TIE TO B0W8C0

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

9909L061

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-110	Page 1 of 3

Collector Bowers/Porter/Nielson	**Company Contact** Chris Cearlock	**Telephone No.** 372-9574	**Project Coordinator** TRENT, SJ	**Price Code** 8N	**Data Turnaround** 45 Days
Project Designation 200 Area Source characterization - 200-CW-1 OU	**Sampling Location** GP-7		**SAF No.** B99-078		
Ice Chest No. ERC 96-030	**Field Logbook No.** EL-1511		**Method of Shipment** ~~gov vehicle~~ RJN 9/10/99 Fed. Ex		
Shipped To TMA/RECRA RECRA/LabNet	**Offsite Property No.** A990252		**Bill of Lading/Air Bill No.** 423579529322		
			COA B20C001671C		

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	None									
	Type of Container	aG	aG									
	No. of Container(s)	1	1									
Special Handling and/or Storage	**Volume**	500mL	1000mL									
SAMPLE ANALYSIS		See item (1) in Special Instructions	See item (2) in Special Instructions									

	Sample No.	Matrix *	Sample Date	Sample Time										
7	B0W9N0	Soil	9-10-99	0737	X									
8	B0W9N1	Soil	9-10-99	0749	X									
9	B0W9N2	Soil	9-10-99	0758	X									
10	B0W9N3	Soil	9-10-99	0805	X									
11	B0W9N4	Soil	9-10-99	0830	X									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By R Nielson	Date/Time 1330 R Nielson 9-10-99	Received By Fed Ex	Date/Time
Relinquished By Fed Ex	Date/Time 9-11-99 0945	Received By [illegible]	Date/Time 9-11-99 0945
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on *SAF B99-078*.

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

(2) *Gamma Spec - Complete* {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

9907L067

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-110	Page 2 of 3

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-7		SAF No.: B99-078
Ice Chest No.: ERC96-030	Field Logbook No.: EL-1511		Method of Shipment: gov vehicle
Shipped To: TMA/RECRA RECRA Labnet	Offsite Property No.: A99D252		Bill of Lading/Air Bill No.: 423579529322
			COA: B20CW1671C

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	None									
	Type of Container	aG	aG									
	No. of Container(s)	1	1									
Special Handling and/or Storage	Volume	500mL	1000mL									
SAMPLE ANALYSIS		See item (1) in Special Instructions	See item (2) in Special Instructions									

	Sample No.	Matrix *	Sample Date	Sample Time										
12	B0W9N5	Soil	9-10-99	0849	X									
13	B0W9N6	Soil	9-10-99	0900	X									
	~~B0W9N7~~	~~Soil~~												
	~~B0W9N8~~	~~Soil~~												
	~~B0W9N9~~	~~Soil~~												

BN 9/10/99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: [signature] / R. Nielson	Date/Time: 9-10-99 1330	Received By: Fed Ex.	Date/Time
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: [signature]	Date/Time: 9-11-99 0945
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

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# : 9909L069
SDG/SAF #: H0528/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 09-11-99

SEMIVOLATILE

Six (6) soil samples were collected on 09-09-99.

The samples and their associated QC samples were extracted on 09-17-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Methods 8270B for TCL Semivolatile target compounds on 09-30-99.

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

1. The cooler 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. These samples were spectrally searched for Butylated Hydroxytoluene; however, it was not identified in the samples.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-01-99
Date

som\gorup\data\bna\tnu09069.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 21 pages.

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

mmz\10-94\gloss.bna

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.bna

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 10/19/99 15:34

RFW Batch Number: **9909L069** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0WBJ2		B0WBJ2		B0WBJ2		B0WBJ3		B0WBJ4		B0WBJ5	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		004	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	77	%	62	%	76	%	77	%	78	%	78	%
	2-Fluorobiphenyl	76	%	61	%	75	%	76	%	76	%	75	%
	Terphenyl-d14	79	%	63	%	75	%	79	%	84	%	75	%
	Phenol-d5	71	%	59	%	71	%	69	%	69	%	73	%
	2-Fluorophenol	71	%	59	%	70	%	66	%	70	%	71	%
	2,4,6-Tribromophenol	70	%	60	%	71	%	56	%	64	%	61	%
Phenol		360	U	57	%	70	%	380	U	360	U	360	U
bis(2-Chloroethyl)ether		360	U	360	U	360	U	380	U	360	U	360	U
2-Chlorophenol		360	U	58	%	70	%	380	U	360	U	360	U
1,3-Dichlorobenzene		360	U	360	U	360	U	380	U	360	U	360	U
1,4-Dichlorobenzene		360	U	60	%	72	%	380	U	360	U	360	U
1,2-Dichlorobenzene		360	U	360	U	360	U	380	U	360	U	360	U
2-Methylphenol		360	U	360	U	360	U	380	U	360	U	360	U
2,2'-oxybis(1-Chloropropane)		360	U	360	U	360	U	380	U	360	U	360	U
4-Methylphenol		360	U	360	U	360	U	380	U	360	U	360	U
N-Nitroso-di-n-propylamine		360	U	68	%	86	%	380	U	360	U	360	U
Hexachloroethane		360	U	360	U	360	U	380	U	360	U	360	U
Nitrobenzene		360	U	360	U	360	U	380	U	360	U	360	U
Isophorone		360	U	360	U	360	U	380	U	360	U	360	U
2-Nitrophenol		360	U	360	U	360	U	380	U	360	U	360	U
2,4-Dimethylphenol		360	U	360	U	360	U	380	U	360	U	360	U
bis(2-Chloroethoxy)methane		360	U	360	U	360	U	380	U	360	U	360	U
2,4-Dichlorophenol		360	U	360	U	360	U	380	U	360	U	360	U
1,2,4-Trichlorobenzene		360	U	61	%	76	%	380	U	360	U	360	U
Naphthalene		360	U	360	U	360	U	380	U	360	U	360	U
4-Chloroaniline		360	U	360	U	360	U	380	U	360	U	360	U
Hexachlorobutadiene		360	U	360	U	360	U	380	U	360	U	360	U
4-Chloro-3-methylphenol		360	U	55	%	71	%	380	U	360	U	360	U
2-Methylnaphthalene		360	U	360	U	360	U	380	U	360	U	360	U
Hexachlorocyclopentadiene		360	U	360	U	360	U	380	U	360	U	360	U
2,4,6-Trichlorophenol		360	U	360	U	360	U	380	U	360	U	360	U
2,4,5-Trichlorophenol		900	U	900	U	900	U	940	U	900	U	890	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0WBJ2		B0WBJ2		B0WBJ2		B0WBJ3		B0WBJ4		B0WBJ5	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	360	U	360	U	360	U	380	U	360	U	360	U
2-Nitroaniline	900	U	900	U	900	U	940	U	900	U	890	U
Dimethylphthalate	360	U	360	U	360	U	380	U	360	U	360	U
Acenaphthylene	360	U	360	U	360	U	380	U	360	U	360	U
2,6-Dinitrotoluene	360	U	360	U	360	U	380	U	360	U	360	U
3-Nitroaniline	900	U	900	U	900	U	940	U	900	U	890	U
Acenaphthene	360	U	63	%	79	%	380	U	360	U	360	U
2,4-Dinitrophenol	900	U	900	U	900	U	940	U	900	U	890	U
4-Nitrophenol	900	U	46	%	68	%	940	U	900	U	890	U
Dibenzofuran	360	U	360	U	360	U	380	U	360	U	360	U
2,4-Dinitrotoluene	360	U	62	%	78	%	380	U	360	U	360	U
Diethylphthalate	360	U	360	U	360	U	380	U	360	U	360	U
4-Chlorophenyl-phenylether	360	U	360	U	360	U	380	U	360	U	360	U
Fluorene	360	U	360	U	360	U	380	U	360	U	360	U
4-Nitroaniline	900	U	900	U	900	U	940	U	900	U	890	U
4,6-Dinitro-2-methylphenol	900	U	900	U	900	U	940	U	900	U	890	U
N-Nitrosodiphenylamine (1)	360	U	360	U	360	U	380	U	360	U	360	U
4-Bromophenyl-phenylether	360	U	360	U	360	U	380	U	360	U	360	U
Hexachlorobenzene	360	U	360	U	360	U	380	U	360	U	360	U
Pentachlorophenol	900	U	61	%	77	%	940	U	900	U	890	U
Phenanthrene	360	U	360	U	360	U	380	U	360	U	360	U
Anthracene	360	U	360	U	360	U	380	U	360	U	360	U
Carbazole	360	U	360	U	360	U	380	U	360	U	360	U
Di-n-butylphthalate	360	U	360	U	360	U	380	U	360	U	360	U
Fluoranthene	360	U	360	U	360	U	380	U	360	U	360	U
Pyrene	360	U	64	%	78	%	380	U	360	U	360	U
Butylbenzylphthalate	360	U	360	U	360	U	380	U	360	U	360	U
3,3'-Dichlorobenzidine	360	U	360	U	360	U	380	U	360	U	360	U
Benzo(a)anthracene	360	U	360	U	360	U	380	U	360	U	360	U
Chrysene	360	U	360	U	360	U	380	U	360	U	360	U
bis(2-Ethylhexyl)phthalate	360	U	360	U	360	U	380	U	360	U	360	U
Di-n-octyl phthalate	360	U	360	U	360	U	380	U	360	U	360	U
Benzo(b)fluoranthene	360	U	360	U	360	U	380	U	360	U	360	U
Benzo(k)fluoranthene	360	U	360	U	360	U	380	U	360	U	360	U
Benzo(a)pyrene	360	U	360	U	360	U	380	U	360	U	360	U
Indeno(1,2,3-cd)pyrene	360	U	360	U	360	U	380	U	360	U	360	U
Dibenz(a,h)anthracene	360	U	360	U	360	U	380	U	360	U	360	U
Benzo(g,h,i)perylene	360	U	360	U	360	U	380	U	360	U	360	U

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

	Cust ID:	B0WBJ8		B0WBJ9		SBLKCW		SBLKCW BS	
Sample Information	RFW#:	005		006		99LE1131-MB1		99LE1131-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	51	%	74	%	74	%	78	%
	2-Fluorobiphenyl	61	%	69	%	72	%	77	%
	Terphenyl-d14	71	%	78	%	82	%	75	%
	Phenol-d5	55	%	68	%	69	%	71	%
	2-Fluorophenol	55	%	64	%	66	%	70	%
	2,4,6-Tribromophenol	62	%	49	%	58	%	69	%
Phenol		360	U	370	U	330	U	70	%
bis(2-Chloroethyl)ether		360	U	370	U	330	U	330	U
2-Chlorophenol		360	U	370	U	330	U	71	%
1,3-Dichlorobenzene		360	U	370	U	330	U	330	U
1,4-Dichlorobenzene		360	U	370	U	330	U	76	%
1,2-Dichlorobenzene		360	U	370	U	330	U	330	U
2-Methylphenol		360	U	370	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		360	U	370	U	330	U	330	U
4-Methylphenol		360	U	370	U	330	U	330	U
N-Nitroso-di-n-propylamine		360	U	370	U	330	U	86	%
Hexachloroethane		360	U	370	U	330	U	330	U
Nitrobenzene		360	U	370	U	330	U	330	U
Isophorone		360	U	370	U	330	U	330	U
2-Nitrophenol		360	U	370	U	330	U	330	U
2,4-Dimethylphenol		360	U	370	U	330	U	330	U
bis(2-Chloroethoxy)methane		360	U	370	U	330	U	330	U
2,4-Dichlorophenol		360	U	370	U	330	U	330	U
1,2,4-Trichlorobenzene		360	U	370	U	330	U	79	%
Naphthalene		360	U	370	U	330	U	330	U
4-Chloroaniline		360	U	370	U	330	U	330	U
Hexachlorobutadiene		360	U	370	U	330	U	330	U
4-Chloro-3-methylphenol		360	U	370	U	330	U	68	%
2-Methylnaphthalene		360	U	370	U	330	U	330	U
Hexachlorocyclopentadiene		360	U	370	U	330	U	330	U
2,4,6-Trichlorophenol		360	U	370	U	330	U	330	U
2,4,5-Trichlorophenol		900	U	920	U	840	U	840	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0WBJ8		B0WBJ9		SBLKCW		SBLKCW BS	
RFW#:	005		006		99LE1131-MB1		99LE1131-MB1	
2-Chloronaphthalene	360	U	370	U	330	U	330	U
2-Nitroaniline	900	U	920	U	840	U	840	U
Dimethylphthalate	360	U	370	U	330	U	330	U
Acenaphthylene	360	U	370	U	330	U	330	U
2,6-Dinitrotoluene	360	U	370	U	330	U	330	U
3-Nitroaniline	900	U	920	U	840	U	840	U
Acenaphthene	360	U	370	U	330	U	81	%
2,4-Dinitrophenol	900	U	920	U	840	U	840	U
4-Nitrophenol	900	U	920	U	840	U	66	%
Dibenzofuran	360	U	370	U	330	U	330	U
2,4-Dinitrotoluene	360	U	370	U	330	U	80	%
Diethylphthalate	360	U	370	U	330	U	330	U
4-Chlorophenyl-phenylether	360	U	370	U	330	U	330	U
Fluorene	360	U	370	U	330	U	330	U
4-Nitroaniline	900	U	920	U	840	U	840	U
4,6-Dinitro-2-methylphenol	900	U	920	U	840	U	840	U
N-Nitrosodiphenylamine (1)	360	U	370	U	330	U	330	U
4-Bromophenyl-phenylether	360	U	370	U	330	U	330	U
Hexachlorobenzene	360	U	370	U	330	U	330	U
Pentachlorophenol	900	U	920	U	840	U	71	%
Phenanthrene	360	U	370	U	330	U	330	U
Anthracene	360	U	370	U	330	U	330	U
Carbazole	360	U	370	U	330	U	330	U
Di-n-butylphthalate	360	U	370	U	330	U	330	U
Fluoranthene	360	U	370	U	330	U	330	U
Pyrene	360	U	370	U	330	U	76	%
Butylbenzylphthalate	360	U	370	U	330	U	330	U
3,3'-Dichlorobenzidine	360	U	370	U	330	U	330	U
Benzo(a)anthracene	360	U	370	U	330	U	330	U
Chrysene	360	U	370	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	360	U	370	U	330	U	330	U
Di-n-octyl phthalate	360	U	370	U	330	U	330	U
Benzo(b)fluoranthene	360	U	370	U	330	U	330	U
Benzo(k)fluoranthene	360	U	370	U	330	U	330	U
Benzo(a)pyrene	360	U	370	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	360	U	370	U	330	U	330	U
Dibenz(a,h)anthracene	360	U	370	U	330	U	330	U
Benzo(g,h,i)perylene	360	U	370	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.

B0WBJ2

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L069-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D093006

Level: (low/med) LOW Date Received: 09/11/99

% Moisture: 8 decanted: (Y/N) __ Date Extracted: 09/17/99

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

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	8.51	100	JB
2.	ALDOL CONDENSATE	9.05	200	JAB
3.	ALDOL CONDENSATE	9.83	200	JA
4.	ALDOL CONDENSATE	10.99	90	JA
5.	ALKANE	29.72	70	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WBJ3

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L069-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D093009

Level: (low/med) LOW Date Received: 09/11/99

% Moisture: 12 decanted: (Y/N) __ Date Extracted: 09/17/99

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

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	8.50	100	JB
2.	ALDOL CONDENSATE	9.05	200	JAB
3.	ALDOL CONDENSATE	9.82	100	JA

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WBJ4

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L069-003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D093010

Level: (low/med) LOW Date Received: 09/11/99

% Moisture: 8 decanted: (Y/N) __ Date Extracted: 09/17/99

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

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	8.50	90	JB
2.	ALDOL CONDENSATE	8.75	70	JA
3.	ALDOL CONDENSATE	9.04	100	JAB
4.	ALDOL CONDENSATE	9.82	100	JA

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WBJ5

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L069-004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D093011

Level: (low/med) LOW Date Received: 09/11/99

% Moisture: 6 decanted: (Y/N) __ Date Extracted: 09/17/99

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

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	8.50	100	JB
2.	ALDOL CONDENSATE	9.04	200	JAB
3.	ALDOL CONDENSATE	9.82	100	JA

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WBJ8

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L069-005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D093012

Level: (low/med) LOW Date Received: 09/11/99

% Moisture: 8 decanted: (Y/N) __ Date Extracted: 09/17/99

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

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	8.50	90	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WBJ9

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L069-006

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D093013

Level: (low/med) LOW Date Received: 09/11/99

% Moisture: 9 decanted: (Y/N) Date Extracted: 09/17/99

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

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH:

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	8.49	100	JB
2.	ALDOL CONDENSATE	9.03	200	JAB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKCW

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 99LE1131-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D093003

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

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 09/17/99

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

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	8.50	100	J
2.	ALDOL CONDENSATE	9.05	70	JA

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBJ2	001	S	99LE1131	09/09/99	09/17/99	09/30/99
B0WBJ2	001 MS	S	99LE1131	09/09/99	09/17/99	09/30/99
B0WBJ2	001 MSD	S	99LE1131	09/09/99	09/17/99	09/30/99
B0WBJ3	002	S	99LE1131	09/09/99	09/17/99	09/30/99
B0WBJ4	003	S	99LE1131	09/09/99	09/17/99	09/30/99
B0WBJ5	004	S	99LE1131	09/09/99	09/17/99	09/30/99
B0WBJ8	005	S	99LE1131	09/09/99	09/17/99	09/30/99
B0WBJ9	006	S	99LE1131	09/09/99	09/17/99	09/30/99

LAB QC:

SBLKCW	MB1	S	99LE1131	N/A	09/17/99	09/30/99
SBLKCW	MB1 BS	S	99LE1131	N/A	09/17/99	09/30/99

RECRA LabNet Use Only
9909L069

Custody Transfer Record/Lab Work Request

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) 4oz VOA, BNA, PCB, pesticide wet, Schnee metals diag

RECRA LabNet

Client: TNU - HANFORD B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: O. Johnson
QC: Del: TAT: 30day
Date Rec'd: 9-11-99 Date Due: 10-11-99
Account #:

Refrigerator #		1	6	⊣		6	⊣	6	6	6						
#/Type Container	Liquid															
	Solid	1G	1G	⊣		1G	⊣	1G	1G	1G						
Volume	Liquid															
	Solid	250	500	⊣		500	⊣	250	500	1000						
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
									RECRA LabNet Use Only							
		OG624H	OG625H	OPCB		OGCSC	ODRO	IPH	Met①	ICNTO	IN3N2	ISFD	IN43N	INORD		

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OG624H	OG625H	OPCB		OGCSC	ODRO	IPH	Met①	ICNTO	IN3N2	ISFD	IN43N	INORD
001	BOWBT2			S	9-9-99	0724	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
002	3					0738													
003	4					0748													
004	5					0806													
005	8					0823													
006	9					0845													
007	9NO				9-10-99	0737													
008	1					0749													
009	2					0758													
010	3					0805													

Special Instructions:
SAF # = B99-078

COMPOSITE WASTE

ORIGINAL REWRITTEN

DATE/REVISIONS:
1. Met① = As, Ba, Be, Cd, Cr, Cu
2. Pb, Ni, Se, Ag, V, Zn, Hg, ICRL6
3. Inor① = ICCL, ICFL, ICNO2,
4. ICNO3, ICPO4, ICSO4
5. OGCSC = ethanol & propanol
6. 9/15/99 → Run Matrix QC

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 4.6 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: 4235 7952 9263
Fed Ex 4235 7952 9274 Cooler SIN L 395 5.0
4235 7952 9303 91.030 5.0

Relinquished by	Received by	Date	Time
Fed Ex	V. Hernandez	9-11-99	0945

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

RECRA LabNet Use Only

9909C029

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client INW HANFORD B99-078

Est. Final Proj. Sampling Date

Project #

Project Contact/Phone #

RECRA Project Manager

QC Del TAT

Date Rec'd Date Due

Account #

Refrigerator #										6							
#/Type Container	Liquid																
	Solid									1G							
Volume	Liquid																
	Solid									500							
Preservatives																	
ANALYSES REQUESTED →		ORGANIC								INORG							
		VOA	BNA	Pest/ PCB	Herb					Metal	CN						
		RECRA LabNet Use Only															
										Met(1)							

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													
011	BOWN4			S	9-10-99	0830								✓					
012	9N5			↓	↓	0849								↓					
013	9N6			↓	↓	0900								↓					

Special Instructions:

DATE/REVISIONS:

1.
2.
3.
4.
5.
6.

RECRA LabNet Use Only

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

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

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 5° °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7952 9322

Relinquished by	Received by	Date	Time
Fed Ex	V. Newing	9-11-99	0945

Relinquished by	Received by	Date	Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-117	Page 1 of 2

Collector Bowers/Porter/Nielson	**Company Contact** Chris Cearlock	**Telephone No.** 372-9574	**Project Coordinator** TRENT, SJ
Price Code 8N	**Data Turnaround** 45 Days		
Project Designation 200 Area Source characterization - 200-CW-1 OU	**Sampling Location** 200 CW1, B8757		**SAF No.** B99-078
Ice Chest No. ERC 96-043	**Field Logbook No.** EL-1511		**Method of Shipment** FED EX
Shipped To TMA/RECRA RECRA Labnet	**Offsite Property No.** A990250		**Bill of Lading/Air Bill No.** 4235 7952 9263
			COA B20 ~~CW1~~ CW1 C71C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None		
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
	No. of Container(s)	1	1	1	1	1	1	1	1		
Special Handling and/or Storage	**Volume**	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL		
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	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										
1	B0WBJ2	Soil	9-9-99	0724			X	X	X	X	X		BOW	BCO
2	B0WBJ3	Soil	9-9-99	0738			X	X	X	X	X		BOW	BCO
3	B0WBJ4	Soil	9-9-99	0748			X	X	X	X	X		BOW	BCO
4	B0WBJ5	Soil	9-9-99	0806			X	X	X	X	X		BOW	BCO
	~~B0WBJ6~~	~~Soil~~ RINSHATE												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/9/99 11:00	Received By: Refer JB	Date/Time: 9/9/99 11:00
Relinquished By: Refer JB	Date/Time: 9/9/99 13:00	Received By: C Shue	Date/Time: 9/9/99 13:00
Relinquished By: C Shue	Date/Time: 9/10/99 1400	Received By: FEDEX	Date/Time: 9/10/99 1400
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: Kristi Henry	Date/Time: 9-11-99 0945

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 SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

1101L001

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-118	Page 1 of 2 9/9/99 RUN

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 CW1, B8757		SAF No.: B99-078
Ice Chest No.: SML 395	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA Rebra Lebret	Offsite Property No.: A99 0250		Bill of Lading/Air Bill No.: 4235 7952 9274
			COA: B20 CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
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	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Neptunium-237	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
Sample No. / Matrix * / Sample Date / Sample Time										
5 B0WBJ8 / Soil / 9-9-99 / 0823						X	X	X	X	X
6 B0WBJ9 / Soil / 9-9-99 / 0845						X	X	X	X	X
~~B0WBK0~~ / Soil / 9/9/99 RUN										
~~B0WBK1~~ / ~~Soil~~ / 9/9/99 RUN										

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	Brent Porter	9/9/99 11:00	Refer 1B	9/9/99 11:00
Relinquished By	Refer 1B	9/9/99 1300	C Bruce	9/9/99 1300
Relinquished By	C Bruce	9/10/99 1400	FEDEX	9/10/99 1400
Relinquished By	Fed Ex	9-11-99 0945	[illegible]	9-11-99 0945

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

COLLECTOR UNAVAILABLE TO SIGN COC

TIE TO B0W8C0

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

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

970 12-061

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-110	Page 1 of 3

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-7		SAF No.: B99-078
Ice Chest No.: ERC 96-030	Field Logbook No.: EL-1511		Method of Shipment: ~~Gov vehicle~~ RJN 9/10/99 Fed. Ex
Shipped To: TMA/RECRA RECRA Labnet	Offsite Property No.: A990252		Bill of Lading/Air Bill No.: 423579529322
			COA: B20CW01671C

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	None									
	Type of Container	aG	aG									
Special Handling and/or Storage	No. of Container(s)	1	1									
	Volume	500mL	1000mL									
SAMPLE ANALYSIS		See item (1) in Special Instructions	See item (2) in Special Instructions									

	Sample No.	Matrix *	Sample Date	Sample Time										
7	B0W9N0	Soil	9-10-99	0737	X									
8	B0W9N1	Soil	9-10-99	0749	X									
9	B0W9N2	Soil	9-10-99	0758	X									
10	B0W9N3	Soil	9-10-99	0805	X									
11	B0W9N4	Soil	9-10-99	0830	X									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R Nielson	Date/Time: 1370 9-10-99	Received By: Fed Ex	Date/Time
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: [illegible]	Date/Time: 9-11-99 0945
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) Gamma Spec - Complete (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

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	B99-078-110	Page 2 of 3

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-7	SAF No.: B99-078	
Ice Chest No.: ERC96-030	Field Logbook No.: EL-1511	Method of Shipment: gov vehicle	
Shipped To: TMA/RECRA RECRA Labnet	Offsite Property No.: A990252	Bill of Lading/Air Bill No.: 423579529322	
		COA: B20CW167IC	

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	None									
	Type of Container	aG	aG									
Special Handling and/or Storage	No. of Container(s)	1	1									
	Volume	500mL	1000mL									
SAMPLE ANALYSIS		See item (1) in Special Instructions	See item (2) in Special Instructions									

	Sample No.	Matrix *	Sample Date	Sample Time										
12	B0W9N5	Soil	9-10-99	0849	X									
13	B0W9N6	Soil	9-10-99	0900	X									
	~~B0W9N7~~	~~Soil~~												
	~~B0W9N8~~	~~Soil~~	BN 9/10/99											
	~~B0W9N9~~	~~Soil~~												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Nielson / R. Nielson	Date/Time: 9-10-99 1330	Received By: Fed Ex.	Date/Time
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: [signature]	Date/Time: 9-11-99 0945
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

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#: 9909L069
SDG/SAF#: H0528/B99-078

W.O.#: 10985-001-001-9999-00
Date Received: 09-11-99

PCB

The set of samples consisted of six (6) soil samples collected on 09-09-99.

The samples and their associated QC samples were extracted on 09-15-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 09-24,25-99. 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.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-15-99
Date

pef\r:\group\data\pest\09L-069.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 11 pages.

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

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

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

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

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

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 10/07/99 10:43

RFW Batch Number: 9909L069 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1

004

	Cust ID:	B0WBJ2	B0WBJ2	B0WBJ2	B0WBJ3	B0WBJ4	B0WBJ5
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	110 %	102 %	100 %	108 %	105 %	105 %
	Decachlorobiphenyl	102 %	99 %	93 %	102 %	107 %	99 %
Aroclor-1016		36 U	36 U	35 U	37 U	35 U	35 U
Aroclor-1221		72 U	71 U	71 U	75 U	71 U	69 U
Aroclor-1232		36 U	36 U	35 U	37 U	35 U	35 U
Aroclor-1242		36 U	36 U	35 U	37 U	35 U	35 U
Aroclor-1248		36 U	36 U	35 U	37 U	35 U	35 U
Aroclor-1254		36 U	81 %	79 %	37 U	35 U	35 U
Aroclor-1260		36 U	36 U	35 U	37 U	35 U	35 U

	Cust ID:	B0WBJ8	B0WBJ9	PBLKUR	PBLKUR BS
Sample Information	RFW#:	005	006	99LE1122-MB1	99LE1122-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	102 %	108 %	100 %	112 %
	Decachlorobiphenyl	96 %	105 %	99 %	106 %
Aroclor-1016		36 U	36 U	33 U	33 U
Aroclor-1221		71 U	72 U	67 U	67 U
Aroclor-1232		36 U	36 U	33 U	33 U
Aroclor-1242		36 U	36 U	33 U	33 U
Aroclor-1248		36 U	36 U	33 U	33 U
Aroclor-1254		36 U	36 U	33 U	85 %
Aroclor-1260		36 U	36 U	33 U	33 U

10-08-99

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

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBJ2	001	S	99LE1122	09/09/99	09/15/99	09/24/99
B0WBJ2	001 MS	S	99LE1122	09/09/99	09/15/99	09/24/99
B0WBJ2	001 MSD	S	99LE1122	09/09/99	09/15/99	09/24/99
B0WBJ3	002	S	99LE1122	09/09/99	09/15/99	09/25/99
B0WBJ4	003	S	99LE1122	09/09/99	09/15/99	09/25/99
B0WBJ5	004	S	99LE1122	09/09/99	09/15/99	09/25/99
B0WBJ8	005	S	99LE1122	09/09/99	09/15/99	09/25/99
B0WBJ9	006	S	99LE1122	09/09/99	09/15/99	09/25/99

LAB QC:

PBLKUR	MB1	S	99LE1122	N/A	09/15/99	09/25/99
PBLKUR	MB1 BS	S	99LE1122	N/A	09/15/99	09/25/99

JW 10-08-99

RECRA LabNet Use Only

9909L069

Custody Transfer Record/Lab Work Request

Page 1 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) qcms VOA BNA PCB pesticide Schneele metals diesel

RECRA LabNet

Client: TNU - HANFORD B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: O. Johnson

QC: Del: TAT: 30day

Date Rec'd: 9-11-99 Date Due: 10-11-99

Account #:

Refrigerator #		1	6	1		6	1	6	6	6						006
#/Type Container	Liquid															
	Solid	1G	1G	1		1G	1	1G	1G	1G						
Volume	Liquid															
	Solid	250	500	1		500	1	250	500	1000						
Preservatives																

ANALYSES REQUESTED →

ORGANIC				INORG	
VOA	BNA	Pest/PCB	Herb	Metal	CN

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OG624H	OG625H	OPCB	OGC5C	ODRO	IPH	Met①	ICNTO	INSN2	ISFD	INH3N	INO2D
001	BOWBJ2			S	9-9-99	0724	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
002	3					0738												
003	4					0748												
004	5					0806												
005	8					0823												
006	9					0845												
007	9NO				9-10-99	0737												
008	1					0749												
009	2					0758												
010	3					0805												

Special Instructions:

SAF # = B99-078

COMPOSITE WASTE

ORIGINAL REWRITTEN

DATE/REVISIONS:

1. Met① = As, Ba, Be, Cd, Cr, Cu
2. Pb, Ni, Se, Ag, V, Zn, Hg, ICR6
3. Inor① = ICCL, ICFL, ICNO2,
4. ICNO3, ICPO4, ICSO4
5. OGCSC = ethanol & propanol

9/15/99 6. → Run Matrix QC

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered

Airbill # See Below

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Labels Indicate Properly Preserved Y or N

5) Received Within Holding Times Y or N

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

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 4.6 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7952 9263 96043

Fed Ex 4235 7952 9274 Cooler 5 IAL 3.5 5.0

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	9-11-99	0945

Relinquished by	Received by	Date	Time

ORIGINAL

RECRA LabNet Use Only

9909 1069

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client INW HANFORD B99-078

Est. Final Proj. Sampling Date

Project #

Project Contact/Phone #

RECRA Project Manager

QC Del TAT

Date Rec'd Date Due

Account #

Refrigerator #												6							
#/Type Container	Liquid																		
	Solid											1G							
Volume	Liquid																		
	Solid											500							
Preservatives																			
ANALYSES REQUESTED →		ORGANIC										INORG							
		VOA	BNA	Pest/ PCB	Herb							Metal	CN						
		RECRA LabNet Use Only																	
												Meth							

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													
011	BOWN4			S	9-10-99	0830							✓						
012	9N5					0849													
013	9N6					0900													

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 5° °C

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	9-11-99	0945

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:
4235 7952 9322

9909C061

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-117	Page 1 of 2

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 CW1, B8757	SAF No.: B99-078	
Ice Chest No.: ERC 96-043	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: TMA/RECRA RECRA Labnet	Offsite Property No.: A990250	Bill of Lading/Air Bill No.: 4235 7952 9263	
		COA: B20 ~~CW1~~ CW1 CT 9/10/99 C71C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL		
SAMPLE ANALYSIS	Isotopic Uranium	Neptunium-237	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										
1	B0WBJ2	Soil	9-9-99	0724			X	X	X	X	X		B0W	BCO
2	B0WBJ3	Soil	9-9-99	0738			X	X	X	X	X		B0W	BCO
3	B0WBJ4	Soil	9-9-99	0748			X	X	X	X	X		B0W	BCO
4	B0WBJ5	Soil	9-9-99	0806			X	X	X	X	X		B0W	BCO
	~~B0WBJ6~~	~~Soil~~ RINSE												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/9/99 11:00	Received By: Peter HB	Date/Time: 9/9/99 11:00
Relinquished By: Peter HB	Date/Time: 9/9/99 13:00	Received By: C Drie	Date/Time: 9/9/99 1300
Relinquished By: C Drie	Date/Time: 9/10/99 1400	Received By: FEDEX	Date/Time: 9/10/99 1400
Relinquished By: [illegible]	Date/Time: 9-11-99 0945	Received By: [illegible]	Date/Time: 9-11-99 0945

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 SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

4046064

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-118	Page 1 of 1 9/9/99 RJN

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 CW1, B8757		SAF No.: B99-078
Ice Chest No.: SML 395	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA RCRA Lubnet	Offsite Property No.: A99 0250		Bill of Lading/Air Bill No.: 4235 7952 9274
			COA B20 CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	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	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	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

	Sample No.	Matrix *	Sample Date	Sample Time										
5	B0WBJ8	Soil	9-9-99	0823						X	X	X	X	X
6	B0WBJ9	Soil	9-9-99	0845						X	X	X	X	X
	~~B0WBK0~~	~~Soil~~ 9/9/99 RJN												
	~~B0WBK1~~	~~Soil~~ 9/9/99 RJN												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/9/99 11:00	Received By: Refer 1B	Date/Time: 9/9/99 11:00
Relinquished By: Refer 1B	Date/Time: 9/9/99 1300	Received By: C Bruce	Date/Time: 9/9/99 1300
Relinquished By: C Bruce	Date/Time: 9/10/99 1400	Received By: FEDEX	Date/Time: 9/10/99 1400
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: Linda Newsome	Date/Time: 9-11-99 0945

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

COLLECTOR UNAVAILABLE TO SIGN COC

TIE TO BOWBCO

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

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

9909L064

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-110	Page 1 of 3

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-7		SAF No.: B99-078
Ice Chest No.: ERC 96-030	Field Logbook No.: EL-1511		Method of Shipment: ~~Gov vehicle~~ RJN 9/10/99 Fed. Ex
Shipped To: TMA/RECRA RECRA/labNet	Offsite Property No.: A990252		Bill of Lading/Air Bill No.: 423579529322
			COA: B20CW01671C

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	None									
	Type of Container	aG	aG									
Special Handling and/or Storage	No. of Container(s)	1	1									
	Volume	500mL	1000mL									
SAMPLE ANALYSIS		See item (1) in Special Instructions.	See item (2) in Special Instructions.									

	Sample No.	Matrix *	Sample Date	Sample Time										
7	B0W9N0	Soil	9-10-99	0737	X									
8	B0W9N1	Soil	9-10-99	0749	X									
9	B0W9N2	Soil	9-10-99	0758	X									
10	B0W9N3	Soil	9-10-99	0805	X									
11	B0W9N4	Soil	9-10-99	0830	X									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R Nielson	Date/Time: 1330 9-10-99	Received By: Fed Ex	Date/Time
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: Kitty McNeady	Date/Time: 9-11-99 0945
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

4-1047C067

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-110	Page 2 of 3

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-7		SAF No.: B99-078
Ice Chest No.: ERC96-030	Field Logbook No.: EL-1511		Method of Shipment: gov vehicle
Shipped To: TMA/RECRA RECRA Labnet	Offsite Property No.: A990252		Bill of Lading/Air Bill No.: 423579529322
			COA: B20CW1671C

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	None									
	Type of Container	aG	aG									
Special Handling and/or Storage	No. of Container(s)	1	1									
	Volume	500mL	1000mL									
SAMPLE ANALYSIS		See item (1) in Special Instructions.	See item (2) in Special Instructions									

	Sample No.	Matrix *	Sample Date	Sample Time										
12	B0W9N5	Soil	9-10-99	0849	X									
13	B0W9N6	Soil	9-10-99	0900	X									
	~~B0W9N7~~	~~Soil~~												
	~~B0W9N8~~	~~Soil~~												
	~~B0W9N9~~	~~Soil~~												

BN 9/10/99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Nielson / R. Nielson	Date/Time: 9-10-99 1330	Received By: Fed Ex.	Date/Time
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: Victor Hernandez	Date/Time: 9-11-99 0945
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

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 #: 9909L069
SDG/SAF#: H0528/B99-078

W.O. #: #: 10985-001-001-9999-00
Date Received: 09-11-99

GC SCAN

The set of samples consisted of six (6) soil samples collected on 09-09-99.

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

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

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

2. The required holding time for analysis was met.

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

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

5. Surrogates were not used for this analysis.

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

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

Pat EC

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-15-99
Date

r:\share\lc\gcscan\09-069.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 10 pages.

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

GLOSSARY OF OGCSC DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Recra LabNet - Lionville Laboratory

GC SCAN

Report Date: 10/04/99 12:37

RFW Batch Number: 9909L069 Client: TNU-HANFORD B99-078 Work Order: 10985-001-001-9999-00 Page 1

	Cust ID:	B0WBJ2	B0WBJ2	B0WBJ2	B0WBJ3	B0WBJ4	B0WBJ5
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		4.8 U	113 %	95 %	4.6 U	4.6 U	4.5 U
Ethanol		4.8 U	5.0 U	5.5 U	4.6 U	4.6 U	4.5 U

	Cust ID:	B0WBJ8	B0WBJ9	BLK	BLK BS
Sample Information	RFW#:	005	006	99LLC143-MB1	99LLC143-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg
n-Propyl Alcohol		5.0 U	4.6 U	5.0 U	89 %
Ethanol		5.0 U	4.6 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.

10/4/99 PM 10/13/99

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBJ2	001	S	99LLC143	09/09/99	09/23/99	09/24/99
B0WBJ2	001 MS	S	99LLC143	09/09/99	09/23/99	09/24/99
B0WBJ2	001 MSD	S	99LLC143	09/09/99	09/23/99	09/24/99
B0WBJ3	002	S	99LLC143	09/09/99	09/23/99	09/24/99
B0WBJ4	003	S	99LLC143	09/09/99	09/23/99	09/24/99
B0WBJ5	004	S	99LLC143	09/09/99	09/23/99	09/24/99
B0WBJ8	005	S	99LLC143	09/09/99	09/23/99	09/24/99
B0WBJ9	006	S	99LLC143	09/09/99	09/23/99	09/24/99

LAB QC:

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

10/13/99

RECRA LabNet Use Only

9909L069

Custody Transfer Record/Lab Work Request

Page 1 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) qcms VOA BNA PCB pesticide wet Schnell metals diag

RECRA LabNet

Client TNU - HANFORD B99-078

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager O. Johnson

QC ____ Del ____ TAT 30day

Date Rec'd 9-11-99 Date Due 10-11-99

Account #

Refrigerator #		1	6	—		6	—	6	6	6							
#/Type Container	Liquid																
	Solid	1G	1G	—		1G	—	1G	1G	1G							
Volume	Liquid																
	Solid	250	500	—		500	—	250	500	1000							
Preservatives																	
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN							
		RECRA LabNet Use Only															
		OGC24H	OGC25H	OPCB		OGCSC	ODRO	IPH	Met①	ICNTO	IN3N2	ISFD	INH3N	INORD			

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	OGC24H	OGC25H	OPCB		OGCSC	ODRO	IPH	Met①	ICNTO	IN3N2	ISFD	INH3N	INORD
001	BOWBT2			S	9-9-99	0724	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
002	3					0738													
003	4					0748													
004	5					0806													
005	8					0823													
006	9					0845													
007	9NO				9-10-99	0737													
008	1					0749													
009	2					0758													
010	3					0805													

Special Instructions:

SAF # = B99-078

COMPOSITE WASTE

ORIGINAL REWRITTEN

DATE/REVISIONS:

1. Met① = As, Ba, Be, Cd, Cr, Cu
2. Pb, Ni, Se, Ag, V, Zn, Hg, ICR6
3. Inor① = ICCL, ICFL, ICNO2,
4. ICNO3, ICPO4, ICSO4
5. OGCSC = ethanol & propanol

9/15/99 → Run Matrix QC

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ____

Airbill # See Below

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Labels Indicate Properly Preserved Y or N

5) Received Within Holding Times Y or N

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

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 4.6 °C

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	9-11-99	0945

Relinquished by	Received by	Date	Time

ORIGINAL

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7952 9263 96043

4235 7952 9274 Cooler SINC 375 5.0

RECRA LabNet Use Only

9909L069

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU HANFORD B99-078

Est. Final Proj. Sampling Date

Project #

Project Contact/Phone #

RECRA Project Manager

QC Del TAT

Date Rec'd Date Due

Account #

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

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected															
																					Meth
011	BOWN4			S	9-10-99	0830															✓
012	9N6					0849															
013	9N6					0900															

Special Instructions:

DATE/REVISIONS:

1.
2.
3.
4.
5.
6.

RECRA LabNet Use Only

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

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

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 5 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7952 9322

Relinquished by	Received by	Date	Time
Fed Ex	V. Nemy	9-11-99	0945

Relinquished by	Received by	Date	Time

9909C061

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-117	Page 1 of 2

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 CW1, B8757	SAF No.: B99-078	
Ice Chest No.: ERC 96-043	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: TMA/RECRA RECRA Lubnet	Offsite Property No.: A990250	Bill of Lading/Air Bill No.: 4235 7952 9263	
		COA: B20 ~~CW1~~ CW1 C71C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL		
SAMPLE ANALYSIS	Isotopic Uranium	Neptunium-237	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										
1	B0WBJ2	Soil	9-9-99	0724			X	X	X	X	X		B0W	BCO
2	B0WBJ3	Soil	9-9-99	0738			X	X	X	X	X		B0W	BCO
3	B0WBJ4	Soil	9-9-99	0748			X	X	X	X	X		B0W	BCO
4	B0WBJ5	Soil	9-9-99	0806			X	X	X	X	X		B0W	BCO
	~~B0WBJ6~~	~~Soil~~ RINSE												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/9/99 11:00	Received By: Peter HB	Date/Time: 9/9/99 11:00
Relinquished By: Peter HB	Date/Time: 9/9/99 13:00	Received By: C Shue	Date/Time: 9/9/99 1300
Relinquished By: C Shue	Date/Time: 9/10/99 1400	Received By: FEDEX	Date/Time: 9/10/99 1400
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: [illegible]	Date/Time: 9-11-99 0945

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 SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

4046004

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-118	Page 1 of ~~2~~ 1 9/9/99 RJN

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 CW1, B8757		SAF No.: B99-078
Ice Chest No.: SML 395	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA RCRA Lubret	Offsite Property No.: A99 0250		Bill of Lading/Air Bill No.: 4235 7952 9274
			COA: B20 CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
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	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Neptunium-237	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.

	Sample No.	Matrix *	Sample Date	Sample Time										
5	B0WBJ8	Soil	9-9-99	0823						X	X	X	X	X
6	B0WBJ9	Soil	9-9-99	0845						X	X	X	X	X
	~~B0WBK0~~	~~Soil~~ 9/9/99 RJN												
	~~B0WBK1~~	~~Soil~~ 9/9/99 RJN												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/9/99 11:00	Received By: Refer IB	Date/Time: 9/9/99 11:00
Relinquished By: Refer IB	Date/Time: 9/9/99 1300	Received By: C Bruce	Date/Time: 9/9/99 1300
Relinquished By: C Bruce	Date/Time: 9/10/99 1400	Received By: FEDEX	Date/Time: 9/10/99 1400
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: Vicki Newman	Date/Time: 9-11-99 0945

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

COLLECTOR UNAVAILABLE TO SIGN COC

TIE TO BOWBCO

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

9904L064

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-110	Page 1 of 8

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-7		SAF No.: B99-078
Ice Chest No.: ERC 96-030	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ RN 9/10/99 Fed. Ex
Shipped To: TMA/RECRA RECRA labNet	Offsite Property No.: A990252		Bill of Lading/Air Bill No.: 423579529322
			COA: B20C401671C

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	None									
	Type of Container	aG	aG									
Special Handling and/or Storage	No. of Container(s)	1	1									
	Volume	500mL	1000mL									
SAMPLE ANALYSIS		See item (1) in Special Instructions	See item (2) in Special Instructions									

	Sample No.	Matrix *	Sample Date	Sample Time										
7	B0W9N0	Soil	9-10-99	0737	X									
8	B0W9N1	Soil	9-10-99	0749	X									
9	B0W9N2	Soil	9-10-99	0758	X									
10	B0W9N3	Soil	9-10-99	0805	X									
11	B0W9N4	Soil	9-10-99	0830	X									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Nielson	Date/Time: 1330 9-10-99	Received By: Fed Ex	Date/Time
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: [illegible]	Date/Time: 9-11-99 0945
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

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

9-1096067

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-110	Page 2 of 3

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-7		SAF No.: B99-078
Ice Chest No.: ERC96-030	Field Logbook No.: EL-1511		Method of Shipment: gov vehicle
Shipped To: TMA/RECRA RECRA Labnet	Offsite Property No.: A990252		Bill of Lading/Air Bill No.: 423579529322
			COA: B20CW167IC

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	None									
	Type of Container	aG	aG									
Special Handling and/or Storage	No. of Container(s)	1	1									
	Volume	500mL	1000mL									
SAMPLE ANALYSIS		See item (1) in Special Instructions.	See item (2) in Special Instructions									

	Sample No.	Matrix *	Sample Date	Sample Time										
12	B0W9N5	Soil	9-10-99	0849	X									
13	B0W9N6	Soil	9-10-99	0900	X									
	~~B0W9N7~~	~~Soil~~												
	~~B0W9N8~~	~~Soil~~												
	~~B0W9N9~~	~~Soil~~												

RN 9/10/99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Nielson / R. Nielson	Date/Time: 9-10-99 1330	Received By: Fed Ex.	Date/Time
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: Richard Hennessy	Date/Time: 9-11-99 0945
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

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# : 9909L069
SDG/SAF#: H0528/B99-078

W.O #: 10985-001-001-9999-00
Date Received: 09-11-99

DIESEL RANGE ORGANICS

The set of samples consisted of six (6) soil samples collected on 09-09-99.

The samples and their associated QC samples were prepared on 09-16-99 and analyzed by methodology based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 09-18,19-99. The analysis met the intent of method WTPH-D.

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

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

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

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

5. All surrogate recoveries were within acceptance criteria.

6. All blank spike recoveries were within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-30-99
Date

R:\SHARE\LC\GCSCAN\09-069d.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 10 pages.

GLOSSARY OF DIESEL DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Recra LabNet - Lionville Laboratory

DIESEL RANGE ORGANICS BY GC

Report Date: 09/22/99 12:54

RFW Batch Number: **9909L069** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

003

	Cust ID:	B0WBJ2	B0WBJ2	B0WBJ2	B0WBJ3	B0WBJ4	B0WBJ5
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	82 %	88 %	89 %	79 %	82 %	79 %
Diesel Range Organics		4.3 U	79 %	79 %	4.5 U	4.2 U	4.3 U

	Cust ID:	B0WBJ8	B0WBJ9	BLK	BLK BS
Sample Information	RFW#:	005	006	99LE1127-MB1	99LE1127-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg
Surrogate:	p-Terphenyl	79 %	83 %	50 %	68 %
Diesel Range Organics		4.3 U	4.4 U	4.0 U	72 %

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

9/22/99

9/22/99

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBJ2	001	S	99LE1127	09/09/99	09/16/99	09/18/99
B0WBJ2	001 MS	S	99LE1127	09/09/99	09/16/99	09/18/99
B0WBJ2	001 MSD	S	99LE1127	09/09/99	09/16/99	09/18/99
B0WBJ3	002	S	99LE1127	09/09/99	09/16/99	09/18/99
B0WBJ4	003	S	99LE1127	09/09/99	09/16/99	09/18/99
B0WBJ5	004	S	99LE1127	09/09/99	09/16/99	09/19/99
B0WBJ8	005	S	99LE1127	09/09/99	09/16/99	09/19/99
B0WBJ9	006	S	99LE1127	09/09/99	09/16/99	09/19/99

LAB QC:

BLK	MB1	S	99LE1127	N/A	09/16/99	09/18/99
BLK	MB1 BS	S	99LE1127	N/A	09/16/99	09/18/99

9/24/99

RECRA LabNet Use Only

9909L069

Custody Transfer Record/Lab Work Request

Page 1 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) gcms VOA BNA PCB pesticide wet schnell metals diag

RECRA LabNet

Client TNU - HANFORD B99-078

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager O. Johnson

QC ____ Del ____ TAT 30day

Date Rec'd 9-11-99 Date Due 10-11-99

Account #

Refrigerator #		1	6	1		6	1	6	6	6						
#/Type Container	Liquid															
	Solid	1G	1G	1		1G	1	1G	1G	1G						
Volume	Liquid															
	Solid	250	500	1		500	1	250	500	1000						
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
									RECRA LabNet Use Only							
		OG624H	OG625H	OPCB		OGCSC	ODRO	IPH	Met①	ICNTO	INSN2	ISFD	INHSN	INORD		

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OG624H	OG625H	OPCB		OGCSC	ODRO	IPH	Met①	ICNTO	INSN2	ISFD	INHSN	INORD		
S - Soil	001	BOWBT2			S	9-9-99	0724	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		
SE - Sediment	002	3					0738															
SO - Solid	003	4					0748															
SL - Sludge	004	5					0806															
W - Water	005	8					0823															
O - Oil	006	9					0845															
A - Air	007	9NO				9-10-99	0737															
DS - Drum Solids	008	1					0749															
DL - Drum Liquids	009	2					0758															
L - EP/TCLP Leachate	010	3					0805															
WI - Wipe																						
X - Other																						
F - Fish																						

Special Instructions:

SAF # = B99-078

COMPOSITE WASTE

ORIGINAL REWRITTEN

DATE/REVISIONS:

1. Met① = As, Ba, Be, Cd, Cr, Cu
2. Pb, Ni, Se, Ag, V, Zn, Hg, ICR6
3. Inor① = ICCL, ICFL, ICNO2,
4. ICNO3, ICPO4, ICSO4
5. OGCSC = ethanol & propanol

9/15/99 6. → Run Matrix QC

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package ✓ or N
2) Unbroken on Outer Package ✓ or N
3) Present on Sample ✓ or N
4) Unbroken on Sample ✓ or N
COC Record Present Upon Sample Rec't ✓ or N
Cooler Temp. 4.6 °C

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

NOTES: 4235795 29263 96043
E&E 4235795 29274 Cooler SDL 395 5.0
4235795 29322 96030 5.0

Relinquished by	Received by	Date	Time
E&E	[illegible]	9-11-99	0945

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

RECRA LabNet Use Only

9909L069

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU HANFORD B99-078

Est. Final Proj. Sampling Date

Project #

Project Contact/Phone #

RECRA Project Manager

QC Del TAT

Date Rec'd Date Due

Account #

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

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	RECRA LabNet Use Only												
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																				Metal
	011	BOWN4			S	9-10-99	0830													✓
	012	9N5					0849													
	013	9N6					0900													

Special Instructions:

DATE/REVISIONS:

1.
2.
3.
4.
5.
6.

RECRA LabNet Use Only

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

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

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 5° °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7952 9322

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	9-11-99	0945

Relinquished by	Received by	Date	Time

44070 001

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-117	Page 1 of 2

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 CW1, B8757		SAF No.: B99-078
Ice Chest No.: ERC 96-043	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA RECRA Labnet	Offsite Property No.: A990250		Bill of Lading/Air Bill No.: 4235 7952 9263
			COA: B20 ~~CWI~~ CWI 9/10/99 C71C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None		
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1	1		
	Volume	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL		
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	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										
1	B0WBJ2	Soil	9-9-99	0724			X	X	X	X	X		BOW	BCO
2	B0WBJ3	Soil	9-9-99	0738			X	X	X	X	X		BOW	BCO
3	B0WBJ4	Soil	9-9-99	0748			X	X	X	X	X		BOW	BCO
4	B0WBJ5	Soil	9-9-99	0806			X	X	X	X	X		BOW	BCO
	~~B0WBJ6~~	~~Soil~~ RINSATE												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/9/99 11:00	Received By: Peter JB	Date/Time: 9/9/99 11:00
Relinquished By: Peter JB	Date/Time: 9/9/99 13:00	Received By: C Chin	Date/Time: 9/9/99 1300
Relinquished By: C Chin	Date/Time: 9/10/99 1400	Received By: FEDEX	Date/Time: 9/10/99 1400
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: Kathi Henry	Date/Time: 9-11-99 0945

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 SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

7707L061

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-118	Page 1 of ~~2~~ 1 9/9/99 RJN

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 CW1, B8757		SAF No.: B99-078
Ice Chest No.: SML 395	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA RCRA Lubnet	Offsite Property No.: A99 0250		Bill of Lading/Air Bill No.: 4235 7952 9274
			COA: B20 CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	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	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	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

	Sample No.	Matrix *	Sample Date	Sample Time										
5	B0WBJ8	Soil	9-9-99	0823						X	X	X	X	X
6	B0WBJ9	Soil	9-9-99	0845						X	X	X	X	X
	~~B0WBK0~~	Soil 9/9/99 RJN												
	~~B0WBK1~~	~~Soil~~ 9/9/99 RJN												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/9/99 11:00	Received By: Refer 1B	Date/Time: 9/9/99 11:00
Relinquished By: Refer 1B	Date/Time: 9/9/99 1300	Received By: C Bruce	Date/Time: 9/9/99 1300
Relinquished By: C Bruce	Date/Time: 9/10/99 1400	Received By: FEDEX	Date/Time: 9/10/99 1400
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: [illegible]	Date/Time: 9-11-99 0945

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

COLLECTOR UNAVAILABLE TO SIGN COC

TIE TO B0W8C0

Matrix *
- Soil
- Water
- Vapor
- Other Solid
- Other Liquid

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

9904L064

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-110	Page 1 of 3

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-7	SAF No.: B99-078	
Ice Chest No.: ERC 96-030	Field Logbook No.: EL-1511	Method of Shipment: ~~Gov. vehicle~~ RIN 9/10/99 Fed. Ex	600
Shipped To: TMA/RECRA RECRA labNet	Offsite Property No.: A990252	Bill of Lading/Air Bill No.: 423579529322	
		COA: B20CW01671C	

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	None									
	Type of Container	aG	aG									
Special Handling and/or Storage	No. of Container(s)	1	1									
	Volume	500mL	1000mL									
SAMPLE ANALYSIS		See item (1) in Special Instructions	See item (2) in Special Instructions									

	Sample No.	Matrix *	Sample Date	Sample Time											
7	B0W9N0	Soil	9-10-99	0737	X										
8	B0W9N1	Soil	9-10-99	0749	X										
9	B0W9N2	Soil	9-10-99	0758	X										
10	B0W9N3	Soil	9-10-99	0805	X										
11	B0W9N4	Soil	9-10-99	0830	X										

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R Nielson	Date/Time: 1330 9-10-99	Received By: Fed Ex	Date/Time
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: [illegible signature]	Date/Time: 9-11-99 0945
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

7-1076067

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-110	Page 2 of 3

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-7		SAF No.: B99-078
Ice Chest No.: ERC96-030	Field Logbook No.: EL-1511		Method of Shipment: gov vehicle
Shipped To: TMA/RECRA RECRA Labnet	Offsite Property No.: A990252		Bill of Lading/Air Bill No.: 423579529322
			COA: B20CW1671C

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	None									
	Type of Container	aG	aG									
Special Handling and/or Storage	No. of Container(s)	1	1									
	Volume	500mL	1000mL									
SAMPLE ANALYSIS		See item (1) in Special Instructions	See item (2) in Special Instructions									

	Sample No.	Matrix *	Sample Date	Sample Time										
12	B0W9N5	Soil	9-10-99	0849	X									
13	B0W9N6	Soil	9-10-99	0900	X									
	~~B0W9N7~~	~~Soil~~												
	~~B0W9N8~~	~~Soil~~												
	~~B0W9N9~~	~~Soil~~												

BN 9/10/99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Nielson / R. Nielson	Date/Time: 9-10-99 1330	Received By: Fed Ex.	Date/Time
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: [illegible]	Date/Time: 9-11-99 0945
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

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# : 9909L069
SDG/SAF# : H0528/B99-078

W.O.# : 10985-001-001-9999-00
Date Received: 09-11-99

REVISION

METALS CASE NARRATIVE

This package has been revised to include the addition of Antimony and Thallium.

1. This narrative covers the analyses of 13 soil samples.

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

3. All analyses were performed within the required holding times.

4. The cooler temperature has been recorded on the Chain of Custody.

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

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

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

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

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

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

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 029 pages.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B0WBJ2	Antimony	500	98.5

12. The duplicate analyses for 4 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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-11-99
Date

mld/m09-069r

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9909L069

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

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

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	✓6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	✓6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	✓6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	__7470A [3]	✓7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	✓6010B	__7841 [5]	__200.7	__279.2__200.9			__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	✓6010B		__200.7				__99
Zinc	✓6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

L-WI-033/M-03/98

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/11/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WBJ2	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.5	MG/KG	0.31	1.0
		Barium, Total	60.0	MG/KG	0.03	1.0
		Beryllium, Total	0.15	MG/KG	0.02	1.0
		Cadmium, Total	0.72	MG/KG	0.03	1.0
		Chromium, Total	7.0	MG/KG	0.08	1.0
		Copper, Total	18.0	MG/KG	0.11	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.9	MG/KG	0.11	1.0
		Lead, Total	6.3	MG/KG	0.20	1.0
		Antimony, Total	0.24 u	MG/KG	0.24	1.0
		Selenium, Total	0.42	MG/KG	0.35	1.0
		Thallium, Total	1.3	MG/KG	0.50	1.0
		Vanadium, Total	64.6	MG/KG	0.06	1.0
		Zinc, Total	105	MG/KG	0.08	1.0
-002	B0WBJ3	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	1.7	MG/KG	0.34	1.0
		Barium, Total	79.6	MG/KG	0.03	1.0
		Beryllium, Total	0.29	MG/KG	0.02	1.0
		Cadmium, Total	1.2	MG/KG	0.03	1.0
		Chromium, Total	9.5	MG/KG	0.08	1.0
		Copper, Total	15.4	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	10.3	MG/KG	0.12	1.0
		Lead, Total	4.8	MG/KG	0.22	1.0
		Antimony, Total	0.26 u	MG/KG	0.26	1.0
		Selenium, Total	0.89	MG/KG	0.38	1.0
		Thallium, Total	0.75	MG/KG	0.55	1.0
		Vanadium, Total	63.4	MG/KG	0.06	1.0
		Zinc, Total	142	MG/KG	0.08	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/11/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0WBJ4	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.4	MG/KG	0.30	1.0
		Barium, Total	58.7	MG/KG	0.03	1.0
		Beryllium, Total	0.14	MG/KG	0.02	1.0
		Cadmium, Total	0.22	MG/KG	0.03	1.0
		Chromium, Total	5.3	MG/KG	0.07	1.0
		Copper, Total	17.6	MG/KG	0.11	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	7.7	MG/KG	0.11	1.0
		Lead, Total	4.5	MG/KG	0.19	1.0
		Antimony, Total	0.23 u	MG/KG	0.23	1.0
		Selenium, Total	0.40	MG/KG	0.34	1.0
		Thallium, Total	0.58	MG/KG	0.49	1.0
		Vanadium, Total	62.9	MG/KG	0.06	1.0
		Zinc, Total	62.3	MG/KG	0.07	1.0
-004	B0WBJ5	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	3.1	MG/KG	0.24	1.0
		Barium, Total	88.7	MG/KG	0.02	1.0
		Beryllium, Total	0.22	MG/KG	0.01	1.0
		Cadmium, Total	0.07	MG/KG	0.02	1.0
		Chromium, Total	6.0	MG/KG	0.06	1.0
		Copper, Total	19.1	MG/KG	0.09	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	9.4	MG/KG	0.09	1.0
		Lead, Total	4.0	MG/KG	0.16	1.0
		Antimony, Total	0.19 u	MG/KG	0.19	1.0
		Selenium, Total	0.51	MG/KG	0.27	1.0
		Thallium, Total	0.72	MG/KG	0.39	1.0
		Vanadium, Total	64.0	MG/KG	0.04	1.0
		Zinc, Total	49.0	MG/KG	0.06	1.0

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Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/11/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B0WBJ8	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	2.3	MG/KG	0.33	1.0
		Barium, Total	74.7	MG/KG	0.03	1.0
		Beryllium, Total	0.22	MG/KG	0.02	1.0
		Cadmium, Total	0.09	MG/KG	0.03	1.0
		Chromium, Total	6.6	MG/KG	0.08	1.0
		Copper, Total	21.7	MG/KG	0.12	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	9.6	MG/KG	0.12	1.0
		Lead, Total	4.9	MG/KG	0.21	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.44	MG/KG	0.37	1.0
		Thallium, Total	0.55	MG/KG	0.54	1.0
		Vanadium, Total	59.8	MG/KG	0.06	1.0
		Zinc, Total	52.5	MG/KG	0.08	1.0
-006	B0WBJ9	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	1.9	MG/KG	0.34	1.0
		Barium, Total	62.6	MG/KG	0.03	1.0
		Beryllium, Total	0.16	MG/KG	0.02	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	4.7	MG/KG	0.08	1.0
		Copper, Total	18.7	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.1	MG/KG	0.12	1.0
		Lead, Total	3.9	MG/KG	0.22	1.0
		Antimony, Total	0.26 u	MG/KG	0.26	1.0
		Selenium, Total	0.44	MG/KG	0.38	1.0
		Thallium, Total	0.55 u	MG/KG	0.55	1.0
		Vanadium, Total	63.2	MG/KG	0.06	1.0
		Zinc, Total	46.8	MG/KG	0.08	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/11/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B0W9N0	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Arsenic, Total	3.0	MG/KG	0.35	1.0
		Barium, Total	93.8	MG/KG	0.03	1.0
		Beryllium, Total	0.27	MG/KG	0.02	1.0
		Cadmium, Total	0.07	MG/KG	0.03	1.0
		Chromium, Total	10.4	MG/KG	0.08	1.0
		Copper, Total	16.3	MG/KG	0.13	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	11.4	MG/KG	0.13	1.0
		Lead, Total	5.2	MG/KG	0.22	1.0
		Antimony, Total	0.42	MG/KG	0.26	1.0
		Selenium, Total	0.50	MG/KG	0.39	1.0
		Thallium, Total	0.56 u	MG/KG	0.56	1.0
		Vanadium, Total	66.6	MG/KG	0.06	1.0
		Zinc, Total	54.0	MG/KG	0.08	1.0
-008	B0W9N1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	1.8	MG/KG	0.33	1.0
		Barium, Total	44.9	MG/KG	0.03	1.0
		Beryllium, Total	0.13	MG/KG	0.02	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	4.2	MG/KG	0.08	1.0
		Copper, Total	16.8	MG/KG	0.12	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	9.9	MG/KG	0.12	1.0
		Lead, Total	3.0	MG/KG	0.21	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.76	MG/KG	0.37	1.0
		Thallium, Total	0.54 u	MG/KG	0.54	1.0
		Vanadium, Total	69.2	MG/KG	0.06	1.0
		Zinc, Total	47.2	MG/KG	0.08	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/11/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	B0W9N2	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	2.1	MG/KG	0.33	1.0
		Barium, Total	33.5	MG/KG	0.03	1.0
		Beryllium, Total	0.13	MG/KG	0.02	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	3.7	MG/KG	0.08	1.0
		Copper, Total	15.9	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	6.6	MG/KG	0.12	1.0
		Lead, Total	2.5	MG/KG	0.21	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.76	MG/KG	0.37	1.0
		Thallium, Total	0.53 u	MG/KG	0.53	1.0
		Vanadium, Total	62.8	MG/KG	0.06	1.0
		Zinc, Total	44.9	MG/KG	0.08	1.0
-010	B0W9N3	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	2.3	MG/KG	0.32	1.0
		Barium, Total	34.8	MG/KG	0.03	1.0
		Beryllium, Total	0.17	MG/KG	0.02	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	3.9	MG/KG	0.08	1.0
		Copper, Total	15.8	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	9.3	MG/KG	0.12	1.0
		Lead, Total	2.7	MG/KG	0.20	1.0
		Antimony, Total	0.24 u	MG/KG	0.24	1.0
		Selenium, Total	0.82	MG/KG	0.36	1.0
		Thallium, Total	0.80	MG/KG	0.52	1.0
		Vanadium, Total	64.8	MG/KG	0.06	1.0
		Zinc, Total	46.9	MG/KG	0.08	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/11/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	B0W9N4	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	2.3	MG/KG	0.32	1.0
		Barium, Total	51.6	MG/KG	0.03	1.0
		Beryllium, Total	0.20	MG/KG	0.02	1.0
		Cadmium, Total	0.04	MG/KG	0.03	1.0
		Chromium, Total	4.6	MG/KG	0.08	1.0
		Copper, Total	15.7	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.4	MG/KG	0.12	1.0
		Lead, Total	3.4	MG/KG	0.20	1.0
		Antimony, Total	0.24 u	MG/KG	0.24	1.0
		Selenium, Total	0.87	MG/KG	0.36	1.0
		Thallium, Total	0.51 u	MG/KG	0.51	1.0
		Vanadium, Total	68.5	MG/KG	0.06	1.0
		Zinc, Total	48.6	MG/KG	0.08	1.0
-012	B0W9N5	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	2.4	MG/KG	0.32	1.0
		Barium, Total	48.2	MG/KG	0.03	1.0
		Beryllium, Total	0.17	MG/KG	0.02	1.0
		Cadmium, Total	0.03	MG/KG	0.03	1.0
		Chromium, Total	4.2	MG/KG	0.08	1.0
		Copper, Total	15.3	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	6.5	MG/KG	0.12	1.0
		Lead, Total	3.4	MG/KG	0.20	1.0
		Antimony, Total	0.24 u	MG/KG	0.24	1.0
		Selenium, Total	0.63	MG/KG	0.35	1.0
		Thallium, Total	0.51 u	MG/KG	0.51	1.0
		Vanadium, Total	49.7	MG/KG	0.06	1.0
		Zinc, Total	41.8	MG/KG	0.08	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/11/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-013	B0W9N6	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Arsenic, Total	4.6	MG/KG	0.35	1.0
		Barium, Total	72.1	MG/KG	0.03	1.0
		Beryllium, Total	0.32	MG/KG	0.02	1.0
		Cadmium, Total	0.03	MG/KG	0.03	1.0
		Chromium, Total	7.9	MG/KG	0.09	1.0
		Copper, Total	18.8	MG/KG	0.13	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	9.9	MG/KG	0.13	1.0
		Lead, Total	6.8	MG/KG	0.22	1.0
		Antimony, Total	0.27 u	MG/KG	0.27	1.0
		Selenium, Total	0.89	MG/KG	0.39	1.0
		Thallium, Total	0.92	MG/KG	0.57	1.0
		Vanadium, Total	49.3	MG/KG	0.06	1.0
		Zinc, Total	48.7	MG/KG	0.09	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/11/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0657-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Barium, Total	0.11	MG/KG	0.03	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.11	MG/KG	0.08	1.0
		Copper, Total	0.12 u	MG/KG	0.12	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Lead, Total	0.21 u	MG/KG	0.21	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Thallium, Total	0.53 u	MG/KG	0.53	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.15	MG/KG	0.08	1.0
BLANK1	99C0283-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/11/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WBJ2	Silver, Total	4.6	0.09u	4.8	95.8	1.0
		Arsenic, Total	185	2.5	192	95.3	1.0
		Barium, Total	253	60.0	192	100.6	1.0
		Beryllium, Total	4.8	0.15	4.8	96.8	1.0
		Cadmium, Total	5.1	0.72	4.8	91.2	1.0
		Chromium, Total	26.0	7.0	19.2	99.0	1.0
		Copper, Total	43.2	18.0	23.9	105.4	1.0
		Mercury, Total	0.20	0.02u	0.17	120.1	1.0
		Nickel, Total	54.0	8.9	47.9	94.2	1.0
		Lead, Total	50.8	6.3	47.9	92.9	1.0
		Antimony, Total	25.3	0.24u	47.9	52.8	1.0
		Selenium, Total	178	0.42	192	92.4	1.0
		Thallium, Total	183	1.3	192	94.7	1.0
		Vanadium, Total	111	64.6	47.9	96.0	1.0
		Zinc, Total	153	105	47.9	99.9	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/11/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WBJ2	Silver, Total	0.09u	0.11u	NC	1.0
		Arsenic, Total	2.5	3.0	18.2	1.0
		Barium, Total	60.0	75.9	23.4	1.0
		Beryllium, Total	0.15	0.17	12.5	1.0
		Cadmium, Total	0.72	0.94	25.9	1.0
		Chromium, Total	7.0	7.9	12.1	1.0
		Copper, Total	18.0	20.8	14.4	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	8.9	10.4	15.5	1.0
		Lead, Total	6.3	9.4	39.5	1.0
		Antimony, Total	0.24u	0.27u	NC	1.0
		Selenium, Total	0.42	0.45	6.5	1.0
		Thallium, Total	1.3	1.4	7.4	1.0
		Vanadium, Total	64.6	69.0	6.6	1.0
		Zinc, Total	105	139	28.0	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/11/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0657-LC1	Silver, LCS	49.5	50.0	MG/KG	99.0
		Arsenic, LCS	972	1000	MG/KG	97.2
		Barium, LCS	494	500	MG/KG	98.8
		Beryllium, LCS	24.2	25.0	MG/KG	96.8
		Cadmium, LCS	24.5	25.0	MG/KG	98.0
		Chromium, LCS	50.0	50.0	MG/KG	100
		Copper, LCS	124	125	MG/KG	98.9
		Nickel, LCS	196	200	MG/KG	98.0
		Lead, LCS	244	250	MG/KG	97.5
		Antimony, LCS	294	300	MG/KG	97.9
		Selenium, LCS	948	1000	MG/KG	94.8
		Thallium, LCS	983	1000	MG/KG	98.3
		Vanadium, LCS	254	250	MG/KG	101.8
		Zinc, LCS	96.1	100	MG/KG	96.1
LCS1	99C0283-LC1	Mercury, LCS	1.0	1.0	MG/KG	101.8

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBJ2						
SILVER, TOTAL	001	S	99L0657	09/09/99	09/28/99	10/05/99
SILVER, TOTAL	001 REP	S	99L0657	09/09/99	09/28/99	10/05/99
SILVER, TOTAL	001 MS	S	99L0657	09/09/99	09/28/99	10/06/99
ARSENIC, TOTAL	001	S	99L0657	09/09/99	09/28/99	10/05/99
ARSENIC, TOTAL	001 REP	S	99L0657	09/09/99	09/28/99	10/05/99
ARSENIC, TOTAL	001 MS	S	99L0657	09/09/99	09/28/99	10/06/99
BARIUM, TOTAL	001	S	99L0657	09/09/99	09/28/99	10/05/99
BARIUM, TOTAL	001 REP	S	99L0657	09/09/99	09/28/99	10/05/99
BARIUM, TOTAL	001 MS	S	99L0657	09/09/99	09/28/99	10/06/99
BERYLLIUM, TOTAL	001	S	99L0657	09/09/99	09/28/99	10/05/99
BERYLLIUM, TOTAL	001 REP	S	99L0657	09/09/99	09/28/99	10/05/99
BERYLLIUM, TOTAL	001 MS	S	99L0657	09/09/99	09/28/99	10/05/99
CADMIUM, TOTAL	001	S	99L0657	09/09/99	09/28/99	10/05/99
CADMIUM, TOTAL	001 REP	S	99L0657	09/09/99	09/28/99	10/05/99
CADMIUM, TOTAL	001 MS	S	99L0657	09/09/99	09/28/99	10/06/99
CHROMIUM, TOTAL	001	S	99L0657	09/09/99	09/28/99	10/05/99
CHROMIUM, TOTAL	001 REP	S	99L0657	09/09/99	09/28/99	10/05/99
CHROMIUM, TOTAL	001 MS	S	99L0657	09/09/99	09/28/99	10/06/99
COPPER, TOTAL	001	S	99L0657	09/09/99	09/28/99	10/05/99
COPPER, TOTAL	001 REP	S	99L0657	09/09/99	09/28/99	10/05/99
COPPER, TOTAL	001 MS	S	99L0657	09/09/99	09/28/99	10/06/99
MERCURY, TOTAL	001	S	99C0283	09/09/99	09/30/99	10/01/99
MERCURY, TOTAL	001 REP	S	99C0283	09/09/99	09/30/99	10/01/99
MERCURY, TOTAL	001 MS	S	99C0283	09/09/99	09/30/99	10/01/99
NICKEL, TOTAL	001	S	99L0657	09/09/99	09/28/99	10/05/99
NICKEL, TOTAL	001 REP	S	99L0657	09/09/99	09/28/99	10/05/99
NICKEL, TOTAL	001 MS	S	99L0657	09/09/99	09/28/99	10/06/99
LEAD, TOTAL	001	S	99L0657	09/09/99	09/28/99	10/05/99
LEAD, TOTAL	001 REP	S	99L0657	09/09/99	09/28/99	10/05/99
LEAD, TOTAL	001 MS	S	99L0657	09/09/99	09/28/99	10/06/99
ANTIMONY, TOTAL	001	S	99L0657	09/09/99	09/28/99	10/05/99
ANTIMONY, TOTAL	001 REP	S	99L0657	09/09/99	09/28/99	10/05/99
ANTIMONY, TOTAL	001 MS	S	99L0657	09/09/99	09/28/99	10/05/99
SELENIUM, TOTAL	001	S	99L0657	09/09/99	09/28/99	10/05/99
SELENIUM, TOTAL	001 REP	S	99L0657	09/09/99	09/28/99	10/05/99

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001 MS	S	99L0657	09/09/99	09/28/99	10/06/99
THALLIUM, TOTAL	001	S	99L0657	09/09/99	09/28/99	10/05/99
THALLIUM, TOTAL	001 REP	S	99L0657	09/09/99	09/28/99	10/05/99
THALLIUM, TOTAL	001 MS	S	99L0657	09/09/99	09/28/99	10/06/99
VANADIUM, TOTAL	001	S	99L0657	09/09/99	09/28/99	10/05/99
VANADIUM, TOTAL	001 REP	S	99L0657	09/09/99	09/28/99	10/05/99
VANADIUM, TOTAL	001 MS	S	99L0657	09/09/99	09/28/99	10/06/99
ZINC, TOTAL	001	S	99L0657	09/09/99	09/28/99	10/05/99
ZINC, TOTAL	001 REP	S	99L0657	09/09/99	09/28/99	10/05/99
ZINC, TOTAL	001 MS	S	99L0657	09/09/99	09/28/99	10/06/99
B0WBJ3						
SILVER, TOTAL	002	S	99L0657	09/09/99	09/28/99	10/06/99
ARSENIC, TOTAL	002	S	99L0657	09/09/99	09/28/99	10/06/99
BARIUM, TOTAL	002	S	99L0657	09/09/99	09/28/99	10/06/99
BERYLLIUM, TOTAL	002	S	99L0657	09/09/99	09/28/99	10/05/99
CADMIUM, TOTAL	002	S	99L0657	09/09/99	09/28/99	10/06/99
CHROMIUM, TOTAL	002	S	99L0657	09/09/99	09/28/99	10/06/99
COPPER, TOTAL	002	S	99L0657	09/09/99	09/28/99	10/06/99
MERCURY, TOTAL	002	S	99C0283	09/09/99	09/30/99	10/01/99
NICKEL, TOTAL	002	S	99L0657	09/09/99	09/28/99	10/06/99
LEAD, TOTAL	002	S	99L0657	09/09/99	09/28/99	10/06/99
ANTIMONY, TOTAL	002	S	99L0657	09/09/99	09/28/99	10/05/99
SELENIUM, TOTAL	002	S	99L0657	09/09/99	09/28/99	10/06/99
THALLIUM, TOTAL	002	S	99L0657	09/09/99	09/28/99	10/06/99
VANADIUM, TOTAL	002	S	99L0657	09/09/99	09/28/99	10/06/99
ZINC, TOTAL	002	S	99L0657	09/09/99	09/28/99	10/06/99
B0WBJ4						
SILVER, TOTAL	003	S	99L0657	09/09/99	09/28/99	10/06/99
ARSENIC, TOTAL	003	S	99L0657	09/09/99	09/28/99	10/06/99
BARIUM, TOTAL	003	S	99L0657	09/09/99	09/28/99	10/06/99
BERYLLIUM, TOTAL	003	S	99L0657	09/09/99	09/28/99	10/05/99
CADMIUM, TOTAL	003	S	99L0657	09/09/99	09/28/99	10/06/99
CHROMIUM, TOTAL	003	S	99L0657	09/09/99	09/28/99	10/06/99
COPPER, TOTAL	003	S	99L0657	09/09/99	09/28/99	10/06/99

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	003	S	99C0283	09/09/99	09/30/99	10/01/99
NICKEL, TOTAL	003	S	99L0657	09/09/99	09/28/99	10/06/99
LEAD, TOTAL	003	S	99L0657	09/09/99	09/28/99	10/06/99
ANTIMONY, TOTAL	003	S	99L0657	09/09/99	09/28/99	10/05/99
SELENIUM, TOTAL	003	S	99L0657	09/09/99	09/28/99	10/06/99
THALLIUM, TOTAL	003	S	99L0657	09/09/99	09/28/99	10/06/99
VANADIUM, TOTAL	003	S	99L0657	09/09/99	09/28/99	10/06/99
ZINC, TOTAL	003	S	99L0657	09/09/99	09/28/99	10/06/99
B0WBJ5						
SILVER, TOTAL	004	S	99L0657	09/09/99	09/28/99	10/06/99
ARSENIC, TOTAL	004	S	99L0657	09/09/99	09/28/99	10/06/99
BARIUM, TOTAL	004	S	99L0657	09/09/99	09/28/99	10/06/99
BERYLLIUM, TOTAL	004	S	99L0657	09/09/99	09/28/99	10/05/99
CADMIUM, TOTAL	004	S	99L0657	09/09/99	09/28/99	10/06/99
CHROMIUM, TOTAL	004	S	99L0657	09/09/99	09/28/99	10/06/99
COPPER, TOTAL	004	S	99L0657	09/09/99	09/28/99	10/06/99
MERCURY, TOTAL	004	S	99C0283	09/09/99	09/30/99	10/01/99
NICKEL, TOTAL	004	S	99L0657	09/09/99	09/28/99	10/06/99
LEAD, TOTAL	004	S	99L0657	09/09/99	09/28/99	10/06/99
ANTIMONY, TOTAL	004	S	99L0657	09/09/99	09/28/99	10/05/99
SELENIUM, TOTAL	004	S	99L0657	09/09/99	09/28/99	10/06/99
THALLIUM, TOTAL	004	S	99L0657	09/09/99	09/28/99	10/06/99
VANADIUM, TOTAL	004	S	99L0657	09/09/99	09/28/99	10/06/99
ZINC, TOTAL	004	S	99L0657	09/09/99	09/28/99	10/06/99
B0WBJ8						
SILVER, TOTAL	005	S	99L0657	09/09/99	09/28/99	10/06/99
ARSENIC, TOTAL	005	S	99L0657	09/09/99	09/28/99	10/06/99
BARIUM, TOTAL	005	S	99L0657	09/09/99	09/28/99	10/06/99
BERYLLIUM, TOTAL	005	S	99L0657	09/09/99	09/28/99	10/05/99
CADMIUM, TOTAL	005	S	99L0657	09/09/99	09/28/99	10/06/99
CHROMIUM, TOTAL	005	S	99L0657	09/09/99	09/28/99	10/06/99
COPPER, TOTAL	005	S	99L0657	09/09/99	09/28/99	10/06/99
MERCURY, TOTAL	005	S	99C0283	09/09/99	09/30/99	10/01/99
NICKEL, TOTAL	005	S	99L0657	09/09/99	09/28/99	10/06/99

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TOTAL	005	S	99L0657	09/09/99	09/28/99	10/06/99
ANTIMONY, TOTAL	005	S	99L0657	09/09/99	09/28/99	10/05/99
SELENIUM, TOTAL	005	S	99L0657	09/09/99	09/28/99	10/06/99
THALLIUM, TOTAL	005	S	99L0657	09/09/99	09/28/99	10/06/99
VANADIUM, TOTAL	005	S	99L0657	09/09/99	09/28/99	10/06/99
ZINC, TOTAL	005	S	99L0657	09/09/99	09/28/99	10/06/99
B0WBJ9						
SILVER, TOTAL	006	S	99L0657	09/09/99	09/28/99	10/06/99
ARSENIC, TOTAL	006	S	99L0657	09/09/99	09/28/99	10/06/99
BARIUM, TOTAL	006	S	99L0657	09/09/99	09/28/99	10/06/99
BERYLLIUM, TOTAL	006	S	99L0657	09/09/99	09/28/99	10/05/99
CADMIUM, TOTAL	006	S	99L0657	09/09/99	09/28/99	10/06/99
CHROMIUM, TOTAL	006	S	99L0657	09/09/99	09/28/99	10/06/99
COPPER, TOTAL	006	S	99L0657	09/09/99	09/28/99	10/06/99
MERCURY, TOTAL	006	S	99C0283	09/09/99	09/30/99	10/01/99
NICKEL, TOTAL	006	S	99L0657	09/09/99	09/28/99	10/06/99
LEAD, TOTAL	006	S	99L0657	09/09/99	09/28/99	10/06/99
ANTIMONY, TOTAL	006	S	99L0657	09/09/99	09/28/99	10/05/99
SELENIUM, TOTAL	006	S	99L0657	09/09/99	09/28/99	10/06/99
THALLIUM, TOTAL	006	S	99L0657	09/09/99	09/28/99	10/06/99
VANADIUM, TOTAL	006	S	99L0657	09/09/99	09/28/99	10/06/99
ZINC, TOTAL	006	S	99L0657	09/09/99	09/28/99	10/06/99
B0W9N0						
SILVER, TOTAL	007	S	99L0657	09/10/99	09/28/99	10/06/99
ARSENIC, TOTAL	007	S	99L0657	09/10/99	09/28/99	10/06/99
BARIUM, TOTAL	007	S	99L0657	09/10/99	09/28/99	10/06/99
BERYLLIUM, TOTAL	007	S	99L0657	09/10/99	09/28/99	10/05/99
CADMIUM, TOTAL	007	S	99L0657	09/10/99	09/28/99	10/06/99
CHROMIUM, TOTAL	007	S	99L0657	09/10/99	09/28/99	10/06/99
COPPER, TOTAL	007	S	99L0657	09/10/99	09/28/99	10/06/99
MERCURY, TOTAL	007	S	99C0283	09/10/99	09/30/99	10/01/99
NICKEL, TOTAL	007	S	99L0657	09/10/99	09/28/99	10/06/99
LEAD, TOTAL	007	S	99L0657	09/10/99	09/28/99	10/06/99
ANTIMONY, TOTAL	007	S	99L0657	09/10/99	09/28/99	10/05/99

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	007	S	99L0657	09/10/99	09/28/99	10/06/99
THALLIUM, TOTAL	007	S	99L0657	09/10/99	09/28/99	10/06/99
VANADIUM, TOTAL	007	S	99L0657	09/10/99	09/28/99	10/06/99
ZINC, TOTAL	007	S	99L0657	09/10/99	09/28/99	10/06/99
B0W9N1						
SILVER, TOTAL	008	S	99L0657	09/10/99	09/28/99	10/06/99
ARSENIC, TOTAL	008	S	99L0657	09/10/99	09/28/99	10/06/99
BARIUM, TOTAL	008	S	99L0657	09/10/99	09/28/99	10/06/99
BERYLLIUM, TOTAL	008	S	99L0657	09/10/99	09/28/99	10/05/99
CADMIUM, TOTAL	008	S	99L0657	09/10/99	09/28/99	10/06/99
CHROMIUM, TOTAL	008	S	99L0657	09/10/99	09/28/99	10/06/99
COPPER, TOTAL	008	S	99L0657	09/10/99	09/28/99	10/06/99
MERCURY, TOTAL	008	S	99C0283	09/10/99	09/30/99	10/01/99
NICKEL, TOTAL	008	S	99L0657	09/10/99	09/28/99	10/06/99
LEAD, TOTAL	008	S	99L0657	09/10/99	09/28/99	10/06/99
ANTIMONY, TOTAL	008	S	99L0657	09/10/99	09/28/99	10/05/99
SELENIUM, TOTAL	008	S	99L0657	09/10/99	09/28/99	10/06/99
THALLIUM, TOTAL	008	S	99L0657	09/10/99	09/28/99	10/06/99
VANADIUM, TOTAL	008	S	99L0657	09/10/99	09/28/99	10/06/99
ZINC, TOTAL	008	S	99L0657	09/10/99	09/28/99	10/06/99
B0W9N2						
SILVER, TOTAL	009	S	99L0657	09/10/99	09/28/99	10/06/99
ARSENIC, TOTAL	009	S	99L0657	09/10/99	09/28/99	10/06/99
BARIUM, TOTAL	009	S	99L0657	09/10/99	09/28/99	10/06/99
BERYLLIUM, TOTAL	009	S	99L0657	09/10/99	09/28/99	10/05/99
CADMIUM, TOTAL	009	S	99L0657	09/10/99	09/28/99	10/06/99
CHROMIUM, TOTAL	009	S	99L0657	09/10/99	09/28/99	10/06/99
COPPER, TOTAL	009	S	99L0657	09/10/99	09/28/99	10/06/99
MERCURY, TOTAL	009	S	99C0283	09/10/99	09/30/99	10/01/99
NICKEL, TOTAL	009	S	99L0657	09/10/99	09/28/99	10/06/99
LEAD, TOTAL	009	S	99L0657	09/10/99	09/28/99	10/06/99
ANTIMONY, TOTAL	009	S	99L0657	09/10/99	09/28/99	10/05/99
SELENIUM, TOTAL	009	S	99L0657	09/10/99	09/28/99	10/06/99
THALLIUM, TOTAL	009	S	99L0657	09/10/99	09/28/99	10/06/99

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	009	S	99L0657	09/10/99	09/28/99	10/06/99
ZINC, TOTAL	009	S	99L0657	09/10/99	09/28/99	10/06/99
B0W9N3						
SILVER, TOTAL	010	S	99L0657	09/10/99	09/28/99	10/06/99
ARSENIC, TOTAL	010	S	99L0657	09/10/99	09/28/99	10/06/99
BARIUM, TOTAL	010	S	99L0657	09/10/99	09/28/99	10/06/99
BERYLLIUM, TOTAL	010	S	99L0657	09/10/99	09/28/99	10/10/99
CADMIUM, TOTAL	010	S	99L0657	09/10/99	09/28/99	10/06/99
CHROMIUM, TOTAL	010	S	99L0657	09/10/99	09/28/99	10/06/99
COPPER, TOTAL	010	S	99L0657	09/10/99	09/28/99	10/06/99
MERCURY, TOTAL	010	S	99C0283	09/10/99	09/30/99	10/01/99
NICKEL, TOTAL	010	S	99L0657	09/10/99	09/28/99	10/06/99
LEAD, TOTAL	010	S	99L0657	09/10/99	09/28/99	10/06/99
ANTIMONY, TOTAL	010	S	99L0657	09/10/99	09/28/99	10/05/99
SELENIUM, TOTAL	010	S	99L0657	09/10/99	09/28/99	10/06/99
THALLIUM, TOTAL	010	S	99L0657	09/10/99	09/28/99	10/06/99
VANADIUM, TOTAL	010	S	99L0657	09/10/99	09/28/99	10/06/99
ZINC, TOTAL	010	S	99L0657	09/10/99	09/28/99	10/06/99
B0W9N4						
SILVER, TOTAL	011	S	99L0657	09/10/99	09/28/99	10/06/99
ARSENIC, TOTAL	011	S	99L0657	09/10/99	09/28/99	10/06/99
BARIUM, TOTAL	011	S	99L0657	09/10/99	09/28/99	10/06/99
BERYLLIUM, TOTAL	011	S	99L0657	09/10/99	09/28/99	10/10/99
CADMIUM, TOTAL	011	S	99L0657	09/10/99	09/28/99	10/06/99
CHROMIUM, TOTAL	011	S	99L0657	09/10/99	09/28/99	10/06/99
COPPER, TOTAL	011	S	99L0657	09/10/99	09/28/99	10/06/99
MERCURY, TOTAL	011	S	99C0283	09/10/99	09/30/99	10/01/99
NICKEL, TOTAL	011	S	99L0657	09/10/99	09/28/99	10/06/99
LEAD, TOTAL	011	S	99L0657	09/10/99	09/28/99	10/06/99
ANTIMONY, TOTAL	011	S	99L0657	09/10/99	09/28/99	10/05/99
SELENIUM, TOTAL	011	S	99L0657	09/10/99	09/28/99	10/06/99
THALLIUM, TOTAL	011	S	99L0657	09/10/99	09/28/99	10/06/99
VANADIUM, TOTAL	011	S	99L0657	09/10/99	09/28/99	10/06/99
ZINC, TOTAL	011	S	99L0657	09/10/99	09/28/99	10/06/99

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W9N5						
SILVER, TOTAL	012	S	99L0657	09/10/99	09/28/99	10/06/99
ARSENIC, TOTAL	012	S	99L0657	09/10/99	09/28/99	10/06/99
BARIUM, TOTAL	012	S	99L0657	09/10/99	09/28/99	10/06/99
BERYLLIUM, TOTAL	012	S	99L0657	09/10/99	09/28/99	10/10/99
CADMIUM, TOTAL	012	S	99L0657	09/10/99	09/28/99	10/06/99
CHROMIUM, TOTAL	012	S	99L0657	09/10/99	09/28/99	10/06/99
COPPER, TOTAL	012	S	99L0657	09/10/99	09/28/99	10/06/99
MERCURY, TOTAL	012	S	99C0283	09/10/99	09/30/99	10/01/99
NICKEL, TOTAL	012	S	99L0657	09/10/99	09/28/99	10/06/99
LEAD, TOTAL	012	S	99L0657	09/10/99	09/28/99	10/06/99
ANTIMONY, TOTAL	012	S	99L0657	09/10/99	09/28/99	10/05/99
SELENIUM, TOTAL	012	S	99L0657	09/10/99	09/28/99	10/06/99
THALLIUM, TOTAL	012	S	99L0657	09/10/99	09/28/99	10/06/99
VANADIUM, TOTAL	012	S	99L0657	09/10/99	09/28/99	10/06/99
ZINC, TOTAL	012	S	99L0657	09/10/99	09/28/99	10/06/99
B0W9N6						
SILVER, TOTAL	013	S	99L0657	09/10/99	09/28/99	10/06/99
ARSENIC, TOTAL	013	S	99L0657	09/10/99	09/28/99	10/06/99
BARIUM, TOTAL	013	S	99L0657	09/10/99	09/28/99	10/06/99
BERYLLIUM, TOTAL	013	S	99L0657	09/10/99	09/28/99	10/10/99
CADMIUM, TOTAL	013	S	99L0657	09/10/99	09/28/99	10/06/99
CHROMIUM, TOTAL	013	S	99L0657	09/10/99	09/28/99	10/06/99
COPPER, TOTAL	013	S	99L0657	09/10/99	09/28/99	10/06/99
MERCURY, TOTAL	013	S	99C0283	09/10/99	09/30/99	10/01/99
NICKEL, TOTAL	013	S	99L0657	09/10/99	09/28/99	10/06/99
LEAD, TOTAL	013	S	99L0657	09/10/99	09/28/99	10/06/99
ANTIMONY, TOTAL	013	S	99L0657	09/10/99	09/28/99	10/05/99
SELENIUM, TOTAL	013	S	99L0657	09/10/99	09/28/99	10/06/99
THALLIUM, TOTAL	013	S	99L0657	09/10/99	09/28/99	10/06/99
VANADIUM, TOTAL	013	S	99L0657	09/10/99	09/28/99	10/06/99
ZINC, TOTAL	013	S	99L0657	09/10/99	09/28/99	10/06/99

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0657	N/A	09/28/99	10/05/99

022

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SILVER, TOTAL	MB1	S	99L0657	N/A	09/28/99	10/05/99
ARSENIC LABORATORY	LC1 BS	S	99L0657	N/A	09/28/99	10/05/99
ARSENIC, TOTAL	MB1	S	99L0657	N/A	09/28/99	10/05/99
BARIUM LABORATORY	LC1 BS	S	99L0657	N/A	09/28/99	10/05/99
BARIUM, TOTAL	MB1	S	99L0657	N/A	09/28/99	10/05/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0657	N/A	09/28/99	10/05/99
BERYLLIUM, TOTAL	MB1	S	99L0657	N/A	09/28/99	10/05/99
CADMIUM LABORATORY	LC1 BS	S	99L0657	N/A	09/28/99	10/05/99
CADMIUM, TOTAL	MB1	S	99L0657	N/A	09/28/99	10/05/99
CHROMIUM LABORATORY	LC1 BS	S	99L0657	N/A	09/28/99	10/05/99
CHROMIUM, TOTAL	MB1	S	99L0657	N/A	09/28/99	10/05/99
COPPER LABORATORY	LC1 BS	S	99L0657	N/A	09/28/99	10/05/99
COPPER, TOTAL	MB1	S	99L0657	N/A	09/28/99	10/05/99
MERCURY LABORATORY	LC1 BS	S	99C0283	N/A	09/30/99	10/01/99
MERCURY, TOTAL	MB1	S	99C0283	N/A	09/30/99	10/01/99
NICKEL LABORATORY	LC1 BS	S	99L0657	N/A	09/28/99	10/05/99
NICKEL, TOTAL	MB1	S	99L0657	N/A	09/28/99	10/05/99
LEAD LABORATORY	LC1 BS	S	99L0657	N/A	09/28/99	10/05/99
LEAD, TOTAL	MB1	S	99L0657	N/A	09/28/99	10/05/99
ANTIMONY LABORATORY	LC1 BS	S	99L0657	N/A	09/28/99	10/05/99
ANTIMONY, TOTAL	MB1	S	99L0657	N/A	09/28/99	10/05/99
SELENIUM LABORATORY	LC1 BS	S	99L0657	N/A	09/28/99	10/05/99
SELENIUM, TOTAL	MB1	S	99L0657	N/A	09/28/99	10/05/99
THALLIUM LABORATORY	LC1 BS	S	99L0657	N/A	09/28/99	10/05/99
THALLIUM, TOTAL	MB1	S	99L0657	N/A	09/28/99	10/05/99
VANADIUM LABORATORY	LC1 BS	S	99L0657	N/A	09/28/99	10/05/99
VANADIUM, TOTAL	MB1	S	99L0657	N/A	09/28/99	10/05/99
ZINC LABORATORY	LC1 BS	S	99L0657	N/A	09/28/99	10/05/99
ZINC, TOTAL	MB1	S	99L0657	N/A	09/28/99	10/05/99

RECRA LabNet Use Only
9909L069

Custody Transfer Record/Lab Work Request

Page 1 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) ~~aroma VOA~~ ~~BNA~~ ~~PCB~~ ~~pesticide~~ ~~wet~~ ~~Schedule~~ metals ~~dioxy~~

RECRA LabNet

Client: TNU - HANFORD B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: O. Johnson

QC: Del: TAT: 30 day

Date Rec'd: 9-11-99 Date Due: 10-11-99

Account #:

Refrigerator #		1	6	↓		6	↓	6	6	6				
#/Type Container	Liquid													
	Solid	1G	1G	↓		1G	↓	1G	1G	1G				
Volume	Liquid													
	Solid	250	500	↓		500	↓	250	500	1000				
Preservatives														
ANALYSES REQUESTED →		ORGANIC							INORG					
		VOA	BNA	Pest/PCB	Herb				Metal	CN				

RECRA LabNet Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OG24H	OG25H	OPCB	OGC5C	ODRO	IPH	Met①	ICNTO	INSN2	ISFD	INHSN	INORD
S - Soil	001	BOWBT2			S	9-9-99	0724	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SE - Sediment	002	3					0738												
SO - Solid	003	4					0748												
SL - Sludge	004	5					0806												
W - Water	005	8					0823												
O - Oil	006	9					0845												
A - Air	007	9NO				9-10-99	0737												
DS - Drum Solids	008	1					0749												
DL - Drum Liquids	009	2					0758												
L - EP/TCLP Leachate	010	3					0805												
WI - Wipe																			
X - Other																			
F - Fish																			

Special Instructions:

SAF # = B99-078

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

COMPOSITE WASTE

ORIGINAL REWRITTEN

DATE/REVISIONS:

1. Met① = As, Ba, Be, Cd, Cr, Cu
2. Pb, Ni, Se, Ag, V, Zn, Hg, ICR6
3. Inor① = ICCL, ICFL, ICNO2,
4. ICNO3, ICPO4, ICSO4
5. OGCSC = ethanol & propanol

9/15/99 → Run Matrix QC

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered

Airbill # See Below

2) Ambient or Chilled

3) Received in Good Condition ✓ or N

4) Labels Indicate Properly Preserved ✓ or N

5) Received Within Holding Times ✓ or N

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

2) Unbroken on Outer Package ✓ or N

3) Present on Sample ✓ or N

4) Unbroken on Sample ✓ or N

COC Record Present Upon Sample Rec't ✓ or N

Cooler Temp. 4.6 °C

Discrepancies Between Samples Labels and COC Record? Y or ✓ N

NOTES: 4235795 2926 3 Ent 4235795 2927 4 Cook SMC 3715 5.0 4235795 2932 2 96030 5.1

Relinquished by	Received by	Date	Time
Ent Cp	V. Hennely	9-11-99	0945

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

024

RECRA LabNet Use Only

9909L069

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU HANFORD B99-078

Est. Final Proj. Sampling Date

Project #

Project Contact/Phone #

RECRA Project Manager

QC Del TAT

Date Rec'd Date Due

Account #

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

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	RECRA LabNet Use Only													
011	BOWN4			S	9-10-99	0830														
012	9N5					0849														
013	9N6					0900														

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

RECRA LabNet Use Only

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

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

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 5° °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7952 9322

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	9-11-99	0945

Relinquished by	Received by	Date	Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-117	Page 1 of 2

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 CW1, B8757	SAF No.: B99-078	
Ice Chest No.: ERC 96-043	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: TMA/RECRA RECRA Cabinet	Offsite Property No.: A990250	Bill of Lading/Air Bill No.: 4235 7952 9263	
		COA: B20 ~~CWI~~ CWI 9/10/99 C71C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None		
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1	1		
	Volume	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL		
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	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										
1	B0WBJ2	Soil	9-9-99	0724			X	X	X	X	X		B0W	BCO
2	B0WBJ3	Soil	9-9-99	0738			X	X	X	X	X		B0W	BCO
3	B0WBJ4	Soil	9-9-99	0748			X	X	X	X	X		B0W	BCO
4	B0WBJ5	Soil	9-9-99	0806			X	X	X	X	X		B0W	BCO
	~~B0WBJ6~~	~~Soil~~ RINSATE												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/9/99 11:00	Received By: Peter JB	Date/Time: 9/9/99 11:00
Relinquished By: Peter JB	Date/Time: 9/9/99 13:00	Received By: C Brice	Date/Time: 9/9/99 1300
Relinquished By: C Brice	Date/Time: 9/10/99 1400	Received By: FEDEX	Date/Time: 9/10/99 1400
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: Kristi Henry	Date/Time: 9-11-99 0945

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 SIGN COC

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

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

Cont. 96043 Form H-6

MOYCOC7

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-118	Page 1 of 1 9/9/99 RJN

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 CW1, B8757		SAF No.: B99-078
Ice Chest No.: SML 395	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA Rebra Lebanet	Offsite Property No.: A99 0250		Bill of Lading/Air Bill No.: 4235 7952 9274
			COA: B20 CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
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	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS	Isotopic Uranium	Neptunium-237	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

	Sample No.	Matrix *	Sample Date	Sample Time	Isotopic Uranium	Neptunium-237	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
5	B0WBJ8	Soil	9-9-99	0823						X	X	X	X	X
6	B0WBJ9	Soil	9-9-99	0845						X	X	X	X	X
	~~B0WBK0~~	Soil 9/9/99 RJN												
	~~B0WBK1~~	~~Soil~~ 9/9/99 RJN												

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	Brent Porter	9/9/99 11:00	Refer 1B	9/9/99 11:00
Relinquished By	Refer 1B	9/9/99 1300	C Bruce	9/9/99 1300
Relinquished By	C Bruce	9/10/99 1400	FEDEX	9/10/99 1400
Relinquished By	Fed Ex	9-11-99 0945	Linda Hennung	9-11-99 0945

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

COLLECTOR UNAVAILABLE TO SIGN COC

TIE TO B0W8C0

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

027

9907L061

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-110	Page 1 of 3

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-7		SAF No.: B99-078
Ice Chest No.: ERC 96-030	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ RN 9/10/99 Fed. Ex
Shipped To: TMA/RECRA RECRA LabNet	Offsite Property No.: A990252		Bill of Lading/Air Bill No.: 423579529322
			COA: B20CL01671C

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	None									
	Type of Container	aG	aG									
Special Handling and/or Storage	No. of Container(s)	1	1									
	Volume	500mL	1000mL									
SAMPLE ANALYSIS		See item (1) in Special Instructions	See item (2) in Special Instructions									

	Sample No.	Matrix *	Sample Date	Sample Time										
7	B0W9N0	Soil	9-10-99	0737	X									
8	B0W9N1	Soil	9-10-99	0749	X									
9	B0W9N2	Soil	9-10-99	0758	X									
10	B0W9N3	Soil	9-10-99	0805	X									
11	B0W9N4	Soil	9-10-99	0830	X									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: [signature]	Date/Time: R Nielson 9-10-99 1330	Received By: Fed Ex	Date/Time
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: [signature]	Date/Time: 9-11-99 0945
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

9/11/99

028

A. P. 96-030 T. C. 5-0

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-110	Page 2 of 3

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-7		SAF No.: B99-078
Ice Chest No.: ERC96-030	Field Logbook No.: EL-1511		Method of Shipment: gov vehicle
Shipped To: TMA/RECRA RECRA labnet	Offsite Property No.: A990252		Bill of Lading/Air Bill No.: 423579529322
			COA: B20CW1671C

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	None									
	Type of Container	aG	aG									
	No. of Container(s)	1	1									
Special Handling and/or Storage	Volume	500mL	1000mL									
SAMPLE ANALYSIS		See item (1) in Special Instructions	See item (2) in Special Instructions									

	Sample No.	Matrix *	Sample Date	Sample Time										
12	B0W9N5	Soil	9-10-99	0849	X									
13	B0W9N6	Soil	9-10-99	0900	X									
	~~B0W9N7~~	~~Soil~~												
	~~B0W9N8~~	~~Soil~~												
	~~B0W9N9~~	~~Soil~~												

BN 9/10/99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Nielson / R. Nielson	Date/Time: 9-10-99 1330	Received By: Fed Ex.	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: [illegible]	Date/Time: 9-11-99 0945
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Matrix *
- Soil
- Water
- Vapor
- Other Solid
- Other Liquid

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

Temp 5°

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

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L069
SDG# : H0528
SAF# : B99-078

W.O. # : 10985-001-001-9999-00
Date Received: 09-11-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 13 soil samples.

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

3. Sample holding times as required by the method and/or contract were met with the exception of Sulfide samplea and matrix quality control analyses for Total Cyanide sample B0WBJ2.

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; matrix spike recovery for Nitrate Nitrite was based on the replicate analysis result. The matrix spike duplicates were within the 20% RPD control limit.

8. The replicate analyses were within the 20% RPD control limit with the exception of Nitrate Nitrite.

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

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

12-1-99
Date

njp&pef\i09-069

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 26 pages.

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

Recra LabNet Philadelphia

WET CHEMISTRY
METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

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

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

Other: Ammonia **Method** EPA 350.3

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

L-WI-034/B-06/99

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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 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WBJ2	% Solids	92.4	%	0.01	1.0
		Chloride by IC	4.5	MG/KG	1.4	1.0
		Fluoride by IC	2.3	MG/KG	1.4	1.0
		Nitrite by IC	1.4 u	MG/KG	1.4	1.0
		Nitrate by IC	52	MG/KG	1.4	1.0
		Cyanide, Total	0.54 u	MG/KG	0.54	1.0
		Phosphate by IC	1.4 u	MG/KG	1.4	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0
		Sulfate by IC	863	MG/KG	67.6	50.0
		Nitrate Nitrite	9.7	MG/KG	0.22	1.0
		Ammonia, as N	5.3	MG/KG	1.3	1.0
		pH	8.0	SOIL PH	0.01	1.0
		Sulfide	1.1 u	MG/KG	1.1	1.0
-002	B0WBJ3	% Solids	88.4	%	0.01	1.0
		Chloride by IC	7.0	MG/KG	1.4	1.0
		Fluoride by IC	3.3	MG/KG	1.4	1.0
		Nitrite by IC	1.4 u	MG/KG	1.4	1.0
		Nitrate by IC	55	MG/KG	1.4	1.0
		Cyanide, Total	0.56 u	MG/KG	0.56	1.0
		Phosphate by IC	1.4 u	MG/KG	1.4	1.0
		Chromium VI	0.45 u	MG/KG	0.45	1.0
		Sulfate by IC	1190	MG/KG	70.7	50.0
		Nitrate Nitrite	12.3	MG/KG	1.1	5.0
		Ammonia, as N	17.0	MG/KG	1.4	1.0
		pH	4.6	SOIL PH	0.01	1.0
		Sulfide	4.5	MG/KG	1.1	1.0
-003	B0WBJ4	% Solids	92.5	%	0.01	1.0
		Chloride by IC	1.9	MG/KG	1.4	1.0
		Fluoride by IC	2.0	MG/KG	1.4	1.0
		Nitrite by IC	1.4 u	MG/KG	1.4	1.0
		Nitrate by IC	9.4	MG/KG	1.4	1.0
		Cyanide, Total	0.54 u	MG/KG	0.54	1.0
		Phosphate by IC	1.4 u	MG/KG	1.4	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0
		Sulfate by IC	327	MG/KG	27.0	20.0
		Nitrate Nitrite	3.9	MG/KG	0.22	1.0
		Ammonia, as N	3.7	MG/KG	1.3	1.0
		pH	6.5	SOIL PH	0.01	1.0

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INORGANICS DATA SUMMARY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0WBJ4	Sulfide	4.3		MG/KG	1.1	1.0
-004	B0WBJ5	% Solids	93.6		%	0.01	1.0
		Chloride by IC	2.6		MG/KG	1.3	1.0
		Fluoride by IC	1.3	u	MG/KG	1.3	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	32		MG/KG	1.3	1.0
		Cyanide, Total	0.53	u	MG/KG	0.53	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.43	u	MG/KG	0.43	1.0
		Sulfate by IC	190		MG/KG	13.4	10.0
		Nitrate Nitrite	7.8		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	7.0		SOIL PH	0.01	1.0
		Sulfide	1.1	u	MG/KG	1.1	1.0
-005	B0WBJ8	% Solids	92.3		%	0.01	1.0
		Chloride by IC	2.4		MG/KG	1.4	1.0
		Fluoride by IC	1.5		MG/KG	1.4	1.0
		Nitrite by IC	1.4	u	MG/KG	1.4	1.0
		Nitrate by IC	35		MG/KG	1.4	1.0
		Cyanide, Total	0.54	u	MG/KG	0.54	1.0
		Phosphate by IC	1.4	u	MG/KG	1.4	1.0
		Chromium VI	0.43	u	MG/KG	0.43	1.0
		Sulfate by IC	167		MG/KG	13.5	10.0
		Nitrate Nitrite	7.9		MG/KG	0.22	1.0
		Ammonia, as N	1.4	u	MG/KG	1.4	1.0
		pH	7.1		SOIL PH	0.01	1.0
		Sulfide	1.1	u	MG/KG	1.1	1.0
-006	B0WBJ9	% Solids	91.1		%	0.01	1.0
		Chloride by IC	1.8		MG/KG	1.4	1.0
		Fluoride by IC	1.5		MG/KG	1.4	1.0
		Nitrite by IC	1.4	u	MG/KG	1.4	1.0
		Nitrate by IC	18		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	115		MG/KG	6.9	5.0
		Nitrate Nitrite	5.8		MG/KG	0.22	1.0

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INORGANICS DATA SUMMARY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	B0WBJ9	Ammonia, as N	1.4	u	MG/KG	1.4	1.0
		pH	7.5		SOIL PH	0.01	1.0
		Sulfide	1.1	u	MG/KG	1.1	1.0
-007	B0W9N0	% Solids	94.8		%	0.01	1.0
		Chromium VI	0.47	u	MG/KG	0.47	1.0
-008	B0W9N1	% Solids	97.0		%	0.01	1.0
		Chromium VI	0.41	u	MG/KG	0.41	1.0
-009	B0W9N2	% Solids	96.8		%	0.01	1.0
		Chromium VI	0.41	u	MG/KG	0.41	1.0
-010	B0W9N3	% Solids	96.8		%	0.01	1.0
		Chromium VI	0.41	u	MG/KG	0.41	1.0

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INORGANICS DATA SUMMARY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	B0W9N4	% Solids	97.0	%	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
-012	B0W9N5	% Solids	93.9	%	0.01	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0
-013	B0W9N6	% Solids	86.8	%	0.01	1.0
		Chromium VI	0.46 u	MG/KG	0.46	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LICA81-MB1	Chloride by IC	1.2 u	MG/KG	1.2	1.0
		Fluoride by IC	1.2 u	MG/KG	1.2	1.0
		Nitrite by IC	1.2 u	MG/KG	1.2	1.0
		Nitrate by IC	1.2 u	MG/KG	1.2	1.0
		Phosphate by IC	1.2 u	MG/KG	1.2	1.0
		Sulfate by IC	1.2 u	MG/KG	1.2	1.0
BLANK10	99LC108A-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK1	99LC115-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK10	99LVI065-MB1	Chromium VI	0.40 u	MG/KG	0.40	1.0
BLANK10	99LN3B46-MB1	Nitrate Nitrite	0.20 u	MG/KG	0.20	1.0
BLANK10	99LANA55-MB1	Nitrate Nitrite	0.20 u	MG/KG	0.20	1.0
BLANK10	99LAM036-MB1	Ammonia, as N	1.2 u	MG/KG	1.2	1.0
BLANK10	99LSDA47-MB1	Sulfide	1.0 u	MG/KG	1.0	1.0

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INORGANICS ACCURACY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WBJ2	Cyanide, Total	5.0	0.54u	5.4	92.5	1.0
		Cyanide, Total MSD	4.5	0.54u	5.4	83.9	1.0
		Nitrate Nitrite	20.6	15.5	5.2	96.8	5.0
-003	B0WBJ4	Chloride by IC	28.4	1.9	27.0	97.9	1.0
		Chloride by IC MSD	26.8	1.9	27.0	91.9	1.0
		Fluoride by IC	59.9	2.0	54.1	107.3	1.0
		Fluoride by IC MSD	59.2	2.0	54.1	105.8	1.0
		Nitrite by IC	27	1.4 u	27	99.2	1.0
		Nitrite by IC MSD	27	1.4 u	27	99.3	1.0
		Nitrate by IC	36	9.4	27	100.0	1.0
		Nitrate by IC MSD	36	9.4	27	98.6	1.0
		Phosphate by IC	27.3	1.4 u	27.0	101.0	1.0
		Phosphate by IC MSD	27.2	1.4 u	27.0	100.6	1.0
		Sulfate by IC	878	327	541	102.0	20.0
		Sulfate by IC MSD	878	327	541	101.9	20.0
-004	B0WBJ5	Ammonia, as N	107	1.3 u	106	100.5	1.0
		Ammonia, as N MSD	111	1.3 u	105	105.3	1.0
-006	B0WBJ9	Sulfide	390	1.1 u	411	94.8	1.0
		Sulfide MSD	407	1.1 u	411	99.0	1.0
-013	B0W9N6	Soluble Chromium VI	4.4	0.43u	4.6	101.4	1.0
		Insoluble Chromium VI	1260	0.43u	1180	107.2	100
BLANK10	99LICA81-MB1	Chloride by IC	23.9	1.2 u	25.0	95.4	1.0
		Fluoride by IC	53.4	1.2 u	50.0	106.7	1.0
		Nitrite by IC	25	1.2 u	25	98.8	1.0
		Nitrate by IC	24	1.2 u	25	97.9	1.0
		Phosphate by IC	25.5	1.2 u	25.0	101.9	1.0
BLANK10	99LVI065-MB1	Soluble Chromium VI	3.9	0.40u	4.0	98.6	1.0
		Insoluble Chromium VI	1120	0.40u	1160	96.3	100
BLANK10	99LN3B46-MB1	Nitrate Nitrite	5.1	0.20u	5.0	102.8	1.0
		Nitrate Nitrite MSD	5.1	0.20u	5.0	102.4	1.0
BLANK10	99LANA55-MB1	Nitrate Nitrite	4.9	0.20u	5.0	98.4	1.0
		Nitrate Nitrite MSD	5.0	0.20u	5.0	100.8	1.0
BLANK10	99LAM036-MB1	Ammonia, as N	49.6	1.2 u	50.0	99.2	1.0
		Ammonia, as N MSD	50.8	1.2 u	50.0	101.5	1.0

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INORGANICS ACCURACY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
BLANK10	99LSDA47-MB1	Sulfide	9.3	1.0 u	9.9	93.9	1.0
		Sulfide MSD	9.5	1.0 u	9.9	96.0	1.0

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INORGANICS DUPLICATE SPIKE REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	B0WBJ2	Cyanide, Total	92.5	83.9	9.8
-003	B0WBJ4	Chloride by IC	97.9	91.9	6.3
		Fluoride by IC	107.3	105.8	1.4
		Nitrite by IC	99.2	99.3	0.10
		Nitrate by IC	100.0	98.6	1.4
		Phosphate by IC	101.0	100.6	0.41
		Sulfate by IC	102.0	101.9	0.14
-004	B0WBJ5	Ammonia, as N	100.5	105.3	4.6
-006	B0WBJ9	Sulfide	96.0	100.1	4.1
BLANK10	99LN3B46-MB1	Nitrate Nitrite	102.8	102.4	0.39
BLANK10	99LANA55-MB1	Nitrate Nitrite	98.4	100.8	2.4

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INORGANICS DUPLICATE SPIKE REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	99LAM036-MB1	Ammonia, as N	99.2	101.5	2.2
BLANK10	99LSDA47-MB1	Sulfide	93.9	96.0	2.1

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WBJ2	Cyanide, Total	0.54u	0.54u	NC	1.0
		Nitrate Nitrite	9.7	15.5	46.6	5.0
		pH	8.0	7.9	0.8	1.0
-003REP	B0WBJ4	Chloride by IC	1.9	1.9	0.57	1.0
		Fluoride by IC	2.0	1.9	2.5	1.0
		Nitrite by IC	1.4 u	1.4 u	NC	1.0
		Nitrate by IC	9.4	9.4	0.57	1.0
		Phosphate by IC	1.4 u	1.4 u	NC	1.0
		Sulfate by IC	327	326	0.19	20.0
-004REP	B0WBJ5	% Solids	93.6	93.3	0.33	1.0
		Ammonia, as N	1.3 u	1.3 u	NC	1.0
-006REP	B0WBJ9	Sulfide	1.1 u	1.1 u	NC	1.0
-013REP	B0W9N6	% Solids	86.8	85.3	1.8	1.0
		Chromium VI	0.46u	0.46u	NC	1.0
BLANREP	99LICA81-MB1	Sulfate by IC	1.2 u	24.0	NC	1.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L069

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS10	99LC108A-LC1	Cyanide, Total LCS	2.1	2.0	MG/KG	103.1
LCS20	99LC108A-LC2	Cyanide, Total LCS	10	10	MG/KG	102.6
LCS1	99LC115-LC1	Cyanide, Total LCS	1.8	2.0	MG/KG	90.2
LCS2	99LC115-LC2	Cyanide, Total LCS	9.1	10	MG/KG	91.4

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBJ2						
% SOLIDS	001	S	99L%S130	09/09/99	09/16/99	09/17/99
CHLORIDE BY IC	001	S	99LICA81	09/09/99	09/27/99	09/27/99
FLUORIDE BY IC	001	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRITE BY IC	001	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRATE BY IC	001	S	99LICA81	09/09/99	09/27/99	09/27/99
TOTAL CYANIDE	001	S	99LC108A	09/09/99	09/21/99	09/22/99
TOTAL CYANIDE	001 REP	S	99LC115	09/09/99	10/08/99	10/08/99
TOTAL CYANIDE	001 MS	S	99LC115	09/09/99	10/08/99	10/08/99
TOTAL CYANIDE	001 MSD	S	99LC115	09/09/99	10/08/99	10/08/99
PHOSPHATE BY IC	001	S	99LICA81	09/09/99	09/27/99	09/27/99
CHROMIUM VI	001	S	99LVI065	09/09/99	09/20/99	09/20/99
SULFATE BY IC	001	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRATE NITRITE	001	S	99LN3B46	09/09/99	09/22/99	09/22/99
NITRATE NITRITE	001 REP	S	99LANA55	09/09/99	11/17/99	11/18/99
NITRATE NITRITE	001 MS	S	99LANA55	09/09/99	11/17/99	11/18/99
AMMONIA	001	S	99LAM036	09/09/99	09/24/99	09/24/99
PH	001	S	99LPH105	09/09/99	10/01/99	10/01/99
PH	001 REP	S	99LPH105	09/09/99	10/01/99	10/01/99
SULFIDE	001	S	99LSDA47	09/09/99	09/19/99	09/20/99
B0WBJ3						
% SOLIDS	002	S	99L%S130	09/09/99	09/16/99	09/17/99
CHLORIDE BY IC	002	S	99LICA81	09/09/99	09/27/99	09/27/99
FLUORIDE BY IC	002	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRITE BY IC	002	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRATE BY IC	002	S	99LICA81	09/09/99	09/27/99	09/27/99
TOTAL CYANIDE	002	S	99LC108A	09/09/99	09/21/99	09/22/99
PHOSPHATE BY IC	002	S	99LICA81	09/09/99	09/27/99	09/27/99
CHROMIUM VI	002	S	99LVI065	09/09/99	09/20/99	09/20/99
SULFATE BY IC	002	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRATE NITRITE	002	S	99LN3B46	09/09/99	09/22/99	09/22/99
AMMONIA	002	S	99LAM036	09/09/99	09/24/99	09/24/99
PH	002	S	99LPH105	09/09/99	10/01/99	10/01/99
SULFIDE	002	S	99LSDA47	09/09/99	09/19/99	09/20/99

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBJ4						
% SOLIDS	003	S	99L%S130	09/09/99	09/16/99	09/17/99
CHLORIDE BY IC	003	S	99LICA81	09/09/99	09/27/99	09/27/99
CHLORIDE BY IC	003 REP	S	99LICA81	09/09/99	09/27/99	09/27/99
CHLORIDE BY IC	003 MS	S	99LICA81	09/09/99	09/27/99	09/27/99
CHLORIDE BY IC	003 MSD	S	99LICA81	09/09/99	09/27/99	09/27/99
FLUORIDE BY IC	003	S	99LICA81	09/09/99	09/27/99	09/27/99
FLUORIDE BY IC	003 REP	S	99LICA81	09/09/99	09/27/99	09/27/99
FLUORIDE BY IC	003 MS	S	99LICA81	09/09/99	09/27/99	09/27/99
FLUORIDE BY IC	003 MSD	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRITE BY IC	003	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRITE BY IC	003 REP	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRITE BY IC	003 MS	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRITE BY IC	003 MSD	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRATE BY IC	003	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRATE BY IC	003 REP	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRATE BY IC	003 MS	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRATE BY IC	003 MSD	S	99LICA81	09/09/99	09/27/99	09/27/99
TOTAL CYANIDE	003	S	99LC108A	09/09/99	09/21/99	09/22/99
PHOSPHATE BY IC	003	S	99LICA81	09/09/99	09/27/99	09/27/99
PHOSPHATE BY IC	003 REP	S	99LICA81	09/09/99	09/27/99	09/27/99
PHOSPHATE BY IC	003 MS	S	99LICA81	09/09/99	09/27/99	09/27/99
PHOSPHATE BY IC	003 MSD	S	99LICA81	09/09/99	09/27/99	09/27/99
CHROMIUM VI	003	S	99LVI065	09/09/99	09/20/99	09/20/99
SULFATE BY IC	003	S	99LICA81	09/09/99	09/27/99	09/27/99
SULFATE BY IC	003 REP	S	99LICA81	09/09/99	09/27/99	09/27/99
SULFATE BY IC	003 MS	S	99LICA81	09/09/99	09/27/99	09/27/99
SULFATE BY IC	003 MSD	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRATE NITRITE	003	S	99LN3B46	09/09/99	09/22/99	09/22/99
AMMONIA	003	S	99LAM036	09/09/99	09/24/99	09/24/99
PH	003	S	99LPH105	09/09/99	10/01/99	10/01/99
SULFIDE	003	S	99LSDA47	09/09/99	09/19/99	09/20/99
B0WBJ5						
% SOLIDS	004	S	99L%S130	09/09/99	09/16/99	09/17/99

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
% SOLIDS	004 REP	S	99L%S130	09/09/99	09/16/99	09/17/99
CHLORIDE BY IC	004	S	99LICA81	09/09/99	09/27/99	09/27/99
FLUORIDE BY IC	004	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRITE BY IC	004	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRATE BY IC	004	S	99LICA81	09/09/99	09/27/99	09/27/99
TOTAL CYANIDE	004	S	99LC108A	09/09/99	09/21/99	09/22/99
PHOSPHATE BY IC	004	S	99LICA81	09/09/99	09/27/99	09/27/99
CHROMIUM VI	004	S	99LVI065	09/09/99	09/20/99	09/20/99
SULFATE BY IC	004	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRATE NITRITE	004	S	99LN3B46	09/09/99	09/22/99	09/22/99
AMMONIA	004	S	99LAM036	09/09/99	09/24/99	09/24/99
AMMONIA	004 REP	S	99LAM036	09/09/99	09/24/99	09/24/99
AMMONIA	004 MS	S	99LAM036	09/09/99	09/24/99	09/24/99
AMMONIA	004 MSD	S	99LAM036	09/09/99	09/24/99	09/24/99
PH	004	S	99LPH105	09/09/99	10/01/99	10/01/99
SULFIDE	004	S	99LSDA47	09/09/99	09/19/99	09/20/99
B0WBJ8						
% SOLIDS	005	S	99L%S130	09/09/99	09/16/99	09/17/99
CHLORIDE BY IC	005	S	99LICA81	09/09/99	09/27/99	09/27/99
FLUORIDE BY IC	005	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRITE BY IC	005	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRATE BY IC	005	S	99LICA81	09/09/99	09/27/99	09/27/99
TOTAL CYANIDE	005	S	99LC108A	09/09/99	09/21/99	09/22/99
PHOSPHATE BY IC	005	S	99LICA81	09/09/99	09/27/99	09/27/99
CHROMIUM VI	005	S	99LVI065	09/09/99	09/20/99	09/20/99
SULFATE BY IC	005	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRATE NITRITE	005	S	99LN3B46	09/09/99	09/22/99	09/22/99
AMMONIA	005	S	99LAM036	09/09/99	09/24/99	09/24/99
PH	005	S	99LPH105	09/09/99	10/01/99	10/01/99
SULFIDE	005	S	99LSDA47	09/09/99	09/19/99	09/20/99
B0WBJ9						
% SOLIDS	006	S	99L%S130	09/09/99	09/16/99	09/17/99
CHLORIDE BY IC	006	S	99LICA81	09/09/99	09/27/99	09/27/99
FLUORIDE BY IC	006	S	99LICA81	09/09/99	09/27/99	09/27/99

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRITE BY IC	006	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRATE BY IC	006	S	99LICA81	09/09/99	09/27/99	09/27/99
TOTAL CYANIDE	006	S	99LC108A	09/09/99	09/21/99	09/22/99
PHOSPHATE BY IC	006	S	99LICA81	09/09/99	09/27/99	09/27/99
CHROMIUM VI	006	S	99LVI065	09/09/99	09/20/99	09/20/99
SULFATE BY IC	006	S	99LICA81	09/09/99	09/27/99	09/27/99
NITRATE NITRITE	006	S	99LN3B46	09/09/99	09/22/99	09/22/99
AMMONIA	006	S	99LAM036	09/09/99	09/24/99	09/24/99
PH	006	S	99LPH105	09/09/99	10/01/99	10/01/99
SULFIDE	006	S	99LSDA47	09/09/99	09/19/99	09/20/99
SULFIDE	006 REP	S	99LSDA47	09/09/99	09/19/99	09/20/99
SULFIDE	006 MS	S	99LSDA47	09/09/99	09/19/99	09/20/99
SULFIDE	006 MSD	S	99LSDA47	09/09/99	09/19/99	09/20/99
B0W9N0						
% SOLIDS	007	S	99L%S124	09/10/99	09/17/99	09/20/99
CHROMIUM VI	007	S	99LVI065	09/10/99	09/20/99	09/20/99
B0W9N1						
% SOLIDS	008	S	99L%S124	09/10/99	09/17/99	09/20/99
CHROMIUM VI	008	S	99LVI065	09/10/99	09/20/99	09/20/99
B0W9N2						
% SOLIDS	009	S	99L%S124	09/10/99	09/17/99	09/20/99
CHROMIUM VI	009	S	99LVI065	09/10/99	09/20/99	09/20/99
B0W9N3						
% SOLIDS	010	S	99L%S124	09/10/99	09/17/99	09/20/99
CHROMIUM VI	010	S	99LVI065	09/10/99	09/20/99	09/20/99
B0W9N4						
% SOLIDS	011	S	99L%S124	09/10/99	09/17/99	09/20/99
CHROMIUM VI	011	S	99LVI065	09/10/99	09/20/99	09/20/99

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W9N5						
% SOLIDS	012	S	99L%S124	09/10/99	09/17/99	09/20/99
CHROMIUM VI	012	S	99LVI065	09/10/99	09/20/99	09/20/99
B0W9N6						
% SOLIDS	013	S	99L%S124	09/10/99	09/17/99	09/20/99
% SOLIDS	013 REP	S	99L%S124	09/10/99	09/17/99	09/20/99
CHROMIUM VI	013	S	99LVI065	09/10/99	09/20/99	09/20/99
CHROMIUM VI	013 REP	S	99LVI065	09/10/99	09/20/99	09/20/99
CHROMIUM VI	013 MS	S	99LVI065	09/10/99	09/20/99	09/20/99
CHROMIUM VI	013 MSD	S	99LVI065	09/10/99	09/20/99	09/20/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LICA81	N/A	09/27/99	09/27/99
CHLORIDE BY IC	MB1 BS	S	99LICA81	N/A	09/27/99	09/27/99
FLUORIDE BY IC	MB1	S	99LICA81	N/A	09/27/99	09/27/99
FLUORIDE BY IC	MB1 BS	S	99LICA81	N/A	09/27/99	09/27/99
NITRITE BY IC	MB1	S	99LICA81	N/A	09/27/99	09/27/99
NITRITE BY IC	MB1 BS	S	99LICA81	N/A	09/27/99	09/27/99
NITRATE BY IC	MB1	S	99LICA81	N/A	09/27/99	09/27/99
NITRATE BY IC	MB1 BS	S	99LICA81	N/A	09/27/99	09/27/99
TOTAL CYANIDE	LC1 L	S	99LC108A	N/A	09/21/99	09/22/99
TOTAL CYANIDE	LC2 L	S	99LC108A	N/A	09/21/99	09/22/99
TOTAL CYANIDE	MB1	S	99LC108A	N/A	09/21/99	09/22/99
TOTAL CYANIDE	LC1 L	S	99LC115	N/A	10/08/99	10/08/99
TOTAL CYANIDE	LC2 L	S	99LC115	N/A	10/08/99	10/08/99
TOTAL CYANIDE	MB1	S	99LC115	N/A	10/08/99	10/08/99
PHOSPHATE BY IC	MB1	S	99LICA81	N/A	09/27/99	09/27/99
PHOSPHATE BY IC	MB1 BS	S	99LICA81	N/A	09/27/99	09/27/99
CHROMIUM VI	MB1	S	99LVI065	N/A	09/20/99	09/20/99
CHROMIUM VI	MB1 BS	S	99LVI065	N/A	09/20/99	09/20/99
CHROMIUM VI	MB1 BSD	S	99LVI065	N/A	09/20/99	09/20/99
SULFATE BY IC	MB1	S	99LICA81	N/A	09/27/99	09/27/99
SULFATE BY IC	MB1 REP	S	99LICA81	N/A	09/27/99	09/27/99

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

DATE RECEIVED: 09/11/99 RFW LOT # :9909L069

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRATE NITRITE	MB1	S	99LN3B46	N/A	09/22/99	09/22/99
NITRATE NITRITE	MB1 BS	S	99LN3B46	N/A	09/22/99	09/22/99
NITRATE NITRITE	MB1 BSD	S	99LN3B46	N/A	09/22/99	09/22/99
NITRATE NITRITE	MB1	S	99LANA55	N/A	11/17/99	11/18/99
NITRATE NITRITE	MB1 BS	S	99LANA55	N/A	11/17/99	11/18/99
NITRATE NITRITE	MB1 BSD	S	99LANA55	N/A	11/17/99	11/18/99
AMMONIA	MB1	S	99LAM036	N/A	09/24/99	09/24/99
AMMONIA	MB1 BS	S	99LAM036	N/A	09/24/99	09/24/99
AMMONIA	MB1 BSD	S	99LAM036	N/A	09/24/99	09/24/99
SULFIDE	MB1	S	99LSDA47	N/A	09/19/99	09/20/99
SULFIDE	MB1 BS	S	99LSDA47	N/A	09/19/99	09/20/99
SULFIDE	MB1 BSD	S	99LSDA47	N/A	09/19/99	09/20/99

RECRA LabNet Use Only
9909L069

Custody Transfer Record/Lab Work Request

Page 1 of 2

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) qcms VOA BNA PCB pesticide wet schnell metals dig

RECRA LabNet

Client: TNU - HANFORD B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: O. Johnson
QC: Del: TAT: 30day
Date Rec'd: 9-11-99 Date Due: 10-11-99
Account #:

Refrigerator #		1	6	1		6	1	6	6	6						021
#/Type Container	Liquid															
	Solid	1G	1G	1		1G	1	1G	1G	1G						
Volume	Liquid															
	Solid	250	500	1		500	1	250	500	1000						
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OGC24H	OGC25H	OPCB	OGC5C	ODRO	IPH	Met①	ICNTO	INSN2	ISFD	INH3N	INORD
001	BOWBT2			S	9-9-99	0724	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
002	3					0738												
003	4					0748												
004	5					0806												
005	8					0823												
006	9					0845												
007	9NO				9-10-99	0737												
008	1					0744												
009	2					0758												
010	3					0805												

Special Instructions:

SAF # = B99-078

COMPOSITE WASTE

ORIGINAL REWRITTEN

DATE/REVISIONS:

1. Met① = As, Ba, Be, Cd, Cr, Cu
2. Pb, Ni, Se, Ag, V, Zn, Hg, ICR6
3. Inor① = ICCL, ICFL, ICNO2,
4. ICNO3, ICPO4, ICSO4
5. OGCSC = ethanol & propanol
6. 9/15/99 → Run Matrix QC

Relinquished by	Received by	Date	Time
Fed Ep	Kennedy	9-11-99	0945

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package ✓ or N
2) Unbroken on Outer Package ✓ or N
3) Present on Sample ✓ or N
4) Unbroken on Sample ✓ or N
COC Record Present Upon Sample Rec't ✓ or N
Cooler Temp. 4.6 °C

Discrepancies Between Samples Labels and COC Record? Y or ✓ N

NOTES: 4235 7952 9263 96043
FedEx 4235 7952 9274 Cooler SINC 395 5.0°C
4235 7952 9322 96030 5°C

RECRA LabNet Use Only

9909C069

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU HANFORD B99-078

Est. Final Proj. Sampling Date

Project #

Project Contact/Phone #

RECRA Project Manager

QC Del TAT

Date Rec'd Date Due

Account #

Refrigerator #											6							022
#/Type Container	Liquid																	
	Solid										1G							
Volume	Liquid																	
	Solid										500							
Preservatives																		
ANALYSES REQUESTED →		ORGANIC									INORG							
		VOA	BNA	Pest/ PCB	Herb						Metal	CN						
		RECRA LabNet Use Only																
											Met							

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													
011	BOWN4			S	9-10-99	0830													
012	9N5					0849													
013	9N6					0900													

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

RECRA LabNet Use Only

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

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

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 5° °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:
4235 7952 9322

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	9-11-99	0945

Relinquished by	Received by	Date	Time

9907C001

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-117	Page 1 of 2

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 CW1, B8757		SAF No.: B99-078
Ice Chest No.: ERC 96-043	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA RECRA Cabinet	Offsite Property No.: A990250		Bill of Lading/Air Bill No.: 4235 7952 9263
			COA: B20 ~~CW1~~ CW1 C71C

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None		
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
	No. of Container(s)	1	1	1	1	1	1	1	1		
Special Handling and/or Storage	Volume	60mL	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL		
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	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										
1	B0WBJ2	Soil	9-9-99	0724			X	X	X	X	X		B0W	BCO
2	B0WBJ3	Soil	9-9-99	0738			X	X	X	X	X		B0W	BCO
3	B0WBJ4	Soil	9-9-99	0748			X	X	X	X	X		B0W	BCO
4	B0WBJ5	Soil	9-9-99	0806			X	X	X	X	X		B0W	BCO
	~~B0WBJ6~~	~~Soil~~ RINSATE												

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	Brent Porter	9/9/99 11:00	Robert JB	9/9/99 11:00
Relinquished By	Robert JB	9/9/99 13:00	Chris	9/9/99 1300
Relinquished By	Chris	9/10/99 1400	Received By FEDEX	9/10/99 1400
Relinquished By	Ed Ep	9-11-99 0945	Received By	9-11-99 0945

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 SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

N. P. 9/10/99 Form H-6

1707L001

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-118	Page 1 of 1 9/9/99 RJN

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 CW1, B8757		SAF No.: B99-078
Ice Chest No.: SML 395	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA RCRA Lab	Offsite Property No.: A99 0250		Bill of Lading/Air Bill No.: 4235 7952 9274
			COA: B20 CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
	Volume	60mL	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Neptunium-237	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
Sample No.	Matrix *	Sample Date	Sample Time								
5 B0WBJ8	Soil	9-9-99	0823						X	X	X	X	X
6 B0WBJ9	Soil	9-9-99	0845						X	X	X	X	X
~~B0WBK0~~	~~Soil~~ 9/9/99 RJN												
~~B0WBK1~~	~~Soil~~ 9/9/99 RJN												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/9/99 11:00	Received By: Refer 1B	Date/Time: 9/9/99 11:00
Relinquished By: Refer 1B	Date/Time: 9/9/99 1300	Received By: C Bruce	Date/Time: 9/9/99 1300
Relinquished By: C Bruce	Date/Time: 9/10/99 1400	Received By: FEDEX	Date/Time: 9/10/99 1400
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: Linda Hennung	Date/Time: 9-11-99 0945

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

COLLECTOR UNAVAILABLE TO SIGN COC

TIE TO B0W8C0

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

SML 395 T=5°

990-12-061

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-110	Page 1 of 3

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-7		SAF No.: B99-078
Ice Chest No.: ERC 96-030	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ RN 9/10/99 Fed. Ex
Shipped To: TMA/RECRA RECRA/LabNet	Offsite Property No.: A990252		Bill of Lading/Air Bill No.: 4235795293 22
			COA: B20C001671C

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	None								
	Type of Container	aG	aG								
Special Handling and/or Storage	No. of Container(s)	1	1								
	Volume	500mL	1000mL								
SAMPLE ANALYSIS		See item (1) in Special Instructions	See item (2) in Special Instructions								

	Sample No.	Matrix *	Sample Date	Sample Time										
7	B0W9N0	Soil	9-10-99	0737	X									
8	B0W9N1	Soil	9-10-99	0749	X									
9	B0W9N2	Soil	9-10-99	0758	X									
10	B0W9N3	Soil	9-10-99	0805	X									
11	B0W9N4	Soil	9-10-99	0830	X									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R Nielson	Date/Time: 1330 9-10-99	Received By: Fed Ex	Date/Time
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: [illegible]	Date/Time: 9-11-99 0945
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Matrix *
- Soil
- Water
- Vapor
- Other Solid
- Other Liquid

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

7-107C001

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-110	Page 2 of 3

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-7		SAF No.: B99-078
Ice Chest No.: ERC96-030	Field Logbook No.: EL-1511		Method of Shipment: gov vehicle
Shipped To: TMA/RECRA RECRA Labnet	Offsite Property No.: A990252		Bill of Lading/Air Bill No.: 423579529322
			COA: B20CW1671C

POSSIBLE SAMPLE HAZARDS/REMARKS												
	Preservation	Cool 4C	None									
	Type of Container	aG	aG									
Special Handling and/or Storage	No. of Container(s)	1	1									
	Volume	500mL	1000mL									
SAMPLE ANALYSIS		See item (1) in Special Instructions.	See item (2) in Special Instructions									
Sample No.	Matrix *	Sample Date	Sample Time									
12 B0W9N5	Soil	9-10-99	0849	X								
13 B0W9N6	Soil	9-10-99	0900	X								
~~B0W9N7~~	~~Soil~~											
~~B0W9N8~~	~~Soil~~											
~~B0W9N9~~	~~Soil~~											

RN 9/10/99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R Nielson / R Nielson	Date/Time: 9-10-99 1330	Received By: Fed Ex.	Date/Time
Relinquished By: Fed Ex	Date/Time: 9-11-99 0945	Received By: Richard Heemann	Date/Time: 9-11-99 0945
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Matrix *
- Soil
- Water
- Vapor
- Other Solid
- Other Liquid

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