H0525-TMA/RECR

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RECRA ENVIRONMENTAL INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L051
SDG/SAF #: H0525/ B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 09-10-99

GC/MS VOLATILE

The set of samples consisted of five (5) soil samples collected on 09-08-99.

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-custody.
2. The required holding time for analysis was met.
3. Non-target compounds were detected in sample B0W9R7.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. Four (4) of five(5) RPDs were outside 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 VBLKTA also contained Acetone at a level less than 1x the CRQL.

JAN 2000 Date Log In

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-19-99
Date

som\group\data\ voa\tnu090051.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.

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 16:49

RFW Batch Number: **9909L051** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

004

	Cust ID:	B0W9V0		B0W9V0		B0W9V0		B0W9V1		B0W9V2		B0W9V3	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		004	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.02		1.00		1.02		0.926		0.943		0.893	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	103	%	98	%	103	%	104	%	103	%	100	%
	Bromofluorobenzene	83	%	90	%	88	%	84	%	90	%	89	%
	1,2-Dichloroethane-d4	100	%	99	%	94	%	95	%	102	%	99	%
			fl		fl		fl		fl		fl		fl
Chloromethane		10	U	10	U	10	U	11	U	11	U	9	U
Bromomethane		10	U	10	U	10	U	11	U	11	U	9	U
Vinyl Chloride		10	U	10	U	10	U	11	U	11	U	9	U
Chloroethane		10	U	10	U	10	U	11	U	11	U	9	U
Methylene Chloride		5	J	10	B	11	B	11	B	7	B	5	B
Acetone		10	U	10	U	10	U	11	U	11	U	9	U
Carbon Disulfide		5	U	5	U	5	U	6	U	6	U	5	U
1,1-Dichloroethene		5	U	72	%	94	%	6	U	6	U	5	U
1,1-Dichloroethane		5	U	5	U	5	U	6	U	6	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	6	U	6	U	5	U
Chloroform		5	U	5	U	5	U	6	U	6	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U	6	U	6	U	5	U
2-Butanone		10	U	10	U	10	U	11	U	11	U	9	U
1,1,1-Trichloroethane		5	U	5	U	5	U	6	U	6	U	5	U
Carbon Tetrachloride		5	U	5	U	5	U	6	U	6	U	5	U
Bromodichloromethane		5	U	5	U	5	U	6	U	6	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	6	U	6	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	6	U	6	U	5	U
Trichloroethene		5	U	72	%	91	%	6	U	6	U	5	U
Dibromochloromethane		5	U	5	U	5	U	6	U	6	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U	6	U	6	U	5	U
Benzene		5	U	72	%	93	%	6	U	6	U	5	U
Trans-1,3-Dichloropropene		5	U	5	U	5	U	6	U	6	U	5	U
Bromoform		5	U	5	U	5	U	6	U	6	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U	11	U	11	U	9	U
2-Hexanone		10	U	10	U	10	U	11	U	11	U	9	U
Tetrachloroethene		5	U	5	U	5	U	6	U	6	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	6	U	6	U	5	U
Toluene		5	U	73	%	97	%	6	U	6	U	5	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: **9909L051** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1b

005

Cust ID:	B0W9V0	B0W9V0	B0W9V0	B0W9V1	B0W9V2	B0W9V3
RFW#:	001	001 MS	001 MSD	002	003	004
Chlorobenzene	5 U	71 %	94 %	6 U	6 U	5 U
Ethylbenzene	5 U	5 U	5 U	6 U	6 U	5 U
Styrene	5 U	5 U	5 U	6 U	6 U	5 U
Xylene (total)	5 U	5 U	5 U	2 J	6 U	5 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 10/15/99 16:49

RFW Batch Number: **9909L051** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

900

	Cust ID:	B0W9R7		VBLKSZ		VBLKSZ BS		VBLKTA		VBLKTA BS	
Sample Information	RFW#:	010		99LVH356-MB1		99LVH356-MB1		99LVH358-MB1		99LVH358-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	0.980		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	114	%	101	%	103	%	103	%	103	%
	Bromofluorobenzene	94	%	90	%	92	%	95	%	96	%
	1,2-Dichloroethane-d4	106	%	95	%	93	%	99	%	99	%
Chloromethane		10	U	10	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U	10	U	10	U
Methylene Chloride		5	JB	5	J	3	JB	5	J	3	JB
Acetone		10	U	10	U	10	U	3	J	10	U
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	5	U	99	%	5	U	86	%
1,1-Dichloroethane		5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	5	U	5	U
Chloroform		5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U	5	U	5	U
2-Butanone		10	U	10	U	10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		5	U	5	U	5	U	5	U	5	U
Bromodichloromethane		5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U
Trichloroethene		5	U	5	U	96	%	5	U	85	%
Dibromochloromethane		5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U	5	U	5	U
Benzene		5	U	5	U	98	%	5	U	89	%
Trans-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U
Bromoform		5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U	10	U	10	U
Tetrachloroethene		5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	5	U	5	U
Toluene		5	U	5	U	101	%	5	U	90	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: **9909L051** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2b

Cust ID:	B0W9R7	VBLKSZ	VBLKSZ BS	VBLKTA	VBLKTA BS
RFW#:	010	99LVH356-MB1	99LVH356-MB1	99LVH358-MB1	99LVH358-MB1
Chlorobenzene	5 U	5 U	100 %	5 U	89 %
Ethylbenzene	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

100

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W9V0

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L051-001

Sample wt/vol: 4.90 (g/mL) G Lab File ID: h091927

Level: (low/med) LOW Date Received: 09/10/99

% Moisture: not dec. 2 Date Analyzed: 09/20/99

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

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W9V1

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L051-002

Sample wt/vol: 5.40 (g/mL) G Lab File ID: h091928

Level: (low/med) LOW Date Received: 09/10/99

% Moisture: not dec. 16 Date Analyzed: 09/20/99

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

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W9V2

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L051-003

Sample wt/vol: 5.30 (g/mL) G Lab File ID: h091929

Level: (low/med) LOW Date Received: 09/10/99

% Moisture: not dec. 14 Date Analyzed: 09/20/99

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

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W9V3

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L051-004

Sample wt/vol: 5.60 (g/mL) G Lab File ID: h091930

Level: (low/med) LOW Date Received: 09/10/99

% Moisture: not dec. 6 Date Analyzed: 09/20/99

Column: (pack/cap) CAP Dilution Factor: 0.893

Number TICs found: 0

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

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

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0W9R7

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 9909L051-010

Sample wt/vol: 5.10 (g/mL) G Lab File ID: h092008

Level: (low/med) LOW Date Received: 09/10/99

% Moisture: not dec. 6 Date Analyzed: 09/20/99

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	22.043	6	J
2.	UNKNOWN	25.331	6	J

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKSZ

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 99LVH356-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h091925

Level: (low/med) LOW Date Received: 09/19/99

% Moisture: not dec. 0 Date Analyzed: 09/20/99

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

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKTA

Lab Name: Recra.LabNet Contract: 10985001001

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

Matrix: (soil/water) SOIL Lab Sample ID: 99LVH358-MB1

Sample wt/vol: 5.00 (g/mL) G Lab File ID: h092006

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

% Moisture: not dec. 0 Date Analyzed: 09/20/99

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

Number TICs found: 0

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

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

FORM 1 VOA-TIC 1/87 Rev.

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

DATE RECEIVED: 09/10/99 RFW LOT # :9909L051

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W9V0	001	S	99LVH356	09/08/99	N/A	09/20/99
B0W9V0	001 MS	S	99LVH356	09/08/99	N/A	09/20/99
B0W9V0	001 MSD	S	99LVH356	09/08/99	N/A	09/20/99
B0W9V1	002	S	99LVH356	09/08/99	N/A	09/20/99
B0W9V2	003	S	99LVH356	09/08/99	N/A	09/20/99
B0W9V3	004	S	99LVH356	09/08/99	N/A	09/20/99
B0W9R7	010	S	99LVH358	09/08/99	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

9909L051

Custody Transfer Record/Lab Work Request

Page 1 of 1

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) gcms VOA BNA PCB Schnell perrone wet lab

RECRA LabNet

Client TNU-Hanford B99-078

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC spec Del Std TAT 30 day

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

Account #

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

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

RECRA LabNet Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625H	OPCB	OGCSC	ODRO	Met(1)	IPH	Inorg(1)
001	BOW9V0			S	9/8/99	0739	X	X	X	X	X	X	X	X
002	BOW9V1					0755								
003	BOW9V2					0806								
004	BOW9V3					0820								
005	BOW9M0				9/7/99	0840								
006	BOW9M2					0900								
007	BOW9M3					0924								
008	BOW9M4					0936								
009	BOW9M5					0944								
010	BOW9R7				9/8/99	1007								

X 9/15/99 X 9/15/99

Special Instructions:

Saf # B99-078

9/15/99 5-9 Logged for metals + ICR6 only per Client coc

COMPOSITE WASTE

DATE/REVISIONS:

Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg, ICR6
Inorg (1) = 1N3N2, 1CCL, 1CFL, 1CNO2, 1CNO3,
4. 1CPO4, 1CSO4, 1SFD, 1NH3N, 1CNTO
OGCSC = ethanol + ipropanol
6. Run Matrix QC

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 2.4 °C

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	9/10/99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

*423579529182 / 3.8° 423579529171

9909L051

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-115	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, GP-10	SAF No.: B99-078	
Ice Chest No.: ERC 96 013	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: ~~TMA/RFCRA~~ RECRA Labnet	Offsite Property No.: A990247	Bill of Lading/Air Bill No.: 4235795 2 9182	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

	Sample No.	Matrix *	Sample Date	Sample Time										
1	B0W9V0	Soil	9/8/99	0739		X	X	X	X	X				B0W928
2	B0W9V1	Soil	9/8/99	0755		X	X	X	X	X				
3	B0W9V2	Soil	9/8/99	0806		X	X	X	X	X				
4	B0W9V3	Soil	9/8/99	0820		X	X	X	X	X				
	~~B0W9V4~~	~~Soil~~ RJN 9/8/99												

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Brent Porter	9/8/99 12:20	Refer 1B	9/8/99 12:20
REF 1B	9999 1300	SIGNATURE	9999 1300
SIGNATURE	9999 1300	FED EX	
Fed Ex	9/10/99 09:45	[signature]	9/10/99 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC.

(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

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

3.8° 2.4°

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	B99-078-109	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: GP-1	SAF No.: B99-078	
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511	Method of Shipment: ~~gov vehicle~~ FED EX	
Shipped To: TMA/RECRA EAB 9-7-99	Offsite Property No.: A990247	Bill of Lading/Air Bill No.: 423579529171	
		COA: B20CW1 6716	

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										
5 B0W9M0	Soil	9-7-99	0840	X				B0W8D8					
~~B0W9M1~~	~~Soil~~	~~9-7-99~~	~~0852~~	X				B0W8D9					
~~B0W9M2~~	~~Soil~~	~~9-7-99~~	~~0900~~	X				B0W5M1					
~~B0W9M3~~	~~Soil~~	~~9-7-99~~	~~0924~~	X									
~~B0W9M4~~	~~Soil~~	~~9-7-99~~	~~0936~~	X									

EAB 9-7-99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-7-99/1600	Received By: Rex IB	Date/Time: 9-7-99/1600
Relinquished By: REF IB	Date/Time: 9999 1300	Received By: SJGALE	Date/Time: 9999 1300
Relinquished By: SJGALE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By: D. [illegible]	Date/Time: 9/10/99 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC.

(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}

COC. SAlt because of lt qnty. shipment, this a copy

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	B99-078-109	Page 1 of 2 019

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-1		SAF No.: B99-078
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ FED EX
Shipped To: TMA/RECRA 9-7-99	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 4235795 29171
			COA: B20CW1 6716

Price Code: 8N

Data Turnaround: 45 Days

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									
	~~B0W9M0~~	~~Soil~~	~~9-7-99~~	~~0840~~	X				B0W8D8				
	~~B0W9M1~~ DF 9999	~~Soil~~	~~9-7-99~~	~~0852~~	X				~~B0W8D9~~				
6	B0W9M2	Soil	9-7-99	0900	X				B0W5M1				
7	B0W9M3	Soil	9-7-99	0924	X								
8	B0W9M4	Soil	9-7-99	0936	X								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-7-99/1600	Received By: Rex IB	Date/Time: 9-7-99/1600
Relinquished By: REF IB	Date/Time: 9999 1300	Received By: SJGALE	Date/Time: 9999 1300
Relinquished By: SJGALE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By: D. Smith	Date/Time: 9/10/99 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) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

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	B99-078-109	Page 2 of 52

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-1	SAF No.: B99-078	
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511	Method of Shipment: ~~gov vehicle~~ FED EX	
Shipped To: TMA/RECRA	Offsite Property No.: A990247	Bill of Lading/Air Bill No.: 4235795291 71	
		COA: B20CW1 671C	

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										
B0W9M5	Soil	9-7-99	0944	X			17.5-18.5'	BOW5M1					
B0W9M6	Soil												
B0W9M7	Soil												
B0W9M8	Soil												
B0W9M9	Soil												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-7-99/1600	Received By: R.F. IB	Date/Time: 9-7-99/1600
Relinquished By: RFF IB	Date/Time: 9999 1300	Received By: SJGALE	Date/Time: 9999
Relinquished By: SJGALE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By:	Date/Time: 9/10/99/0945

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

COLLECTOR UNAVAILABLE TO SIGN COL.

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	B99-078-113	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		SAF No.: B99-078
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA RECRA labnet	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 4235795291 71
			COA: B20CW16716

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

	Sample No.	Matrix *	Sample Date	Sample Time										
10	B0W9R7	Soil	9/8/99	1007		X	X	X	X	X				B0W528
	~~B0W9R8~~	~~Soil~~												
	~~B0W9R9~~	~~Soil~~	RJN 9/8/99											
	~~B0W9T0~~	~~Soil~~												
	~~B0W9T1~~	~~Soil~~												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/8/99 12:20	Received By: Refer IB	Date/Time: 9/8/99 12:20
Relinquished By: REF IB 9999	Date/Time: 1300	Received By: SJOHNE-WHAL 9999	Date/Time: 1300
Relinquished By: SJOHNE-WHAL 9999	Date/Time: 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By: [signature]	Date/Time: 9/10/99 - 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC

(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

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# : 9909L051
SDG/SAF #: H0525/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 09-10-99

SEMIVOLATILE

The set of samples consisted of five (5) soil samples collected on 09-08-99.

The samples and their associated QC samples were extracted on 09-14-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Methods 3550B and 8270B TCL Semivolatile target compounds on 09-25-99.

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

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

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

3. Non-target compounds were detected in these samples.

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

5. All surrogate recoveries were within USEPA QC limits.

6. The blank spike and matrix spike recoveries were within USEPA QC limits.

JAN 2000 RECEIVED Data Log In

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-29-99
Date

pef\gorup\data\bna\tmu09051.doc

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

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: 10/18/99 15:24

RFW Batch Number: **9909L051** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

C14

	Cust ID:	B0W9V0		B0W9V0		B0W9V0		B0W9V1		B0W9V2		B0W9V3	
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	75	%	72	%	77	%	70	%	77	%	76	%
	2-Fluorobiphenyl	70	%	64	%	63	%	65	%	66	%	65	%
	Terphenyl-d14	77	%	68	%	65	%	70	%	68	%	69	%
	Phenol-d5	64	%	52	%	56	%	56	%	59	%	61	%
	2-Fluorophenol	62	%	53	%	60	%	54	%	57	%	57	%
	2,4,6-Tribromophenol	53	%	64	%	62	%	67	%	69	%	66	%
			fl		fl		fl		fl		fl		fl
Phenol		340	U	51	%	54	%	400	U	390	U	350	U
bis(2-Chloroethyl)ether		340	U	340	U	340	U	400	U	390	U	350	U
2-Chlorophenol		340	U	56	%	59	%	400	U	390	U	350	U
1,3-Dichlorobenzene		340	U	340	U	340	U	400	U	390	U	350	U
1,4-Dichlorobenzene		340	U	65	%	69	%	400	U	390	U	350	U
1,2-Dichlorobenzene		340	U	340	U	340	U	400	U	390	U	350	U
2-Methylphenol		340	U	340	U	340	U	400	U	390	U	350	U
2,2'-oxybis(1-Chloropropane)		340	U	340	U	340	U	400	U	390	U	350	U
4-Methylphenol		340	U	340	U	340	U	400	U	390	U	350	U
N-Nitroso-di-n-propylamine		340	U	87	%	96	%	400	U	390	U	350	U
Hexachloroethane		340	U	340	U	340	U	400	U	390	U	350	U
Nitrobenzene		340	U	340	U	340	U	400	U	390	U	350	U
Isophorone		340	U	340	U	340	U	400	U	390	U	350	U
2-Nitrophenol		340	U	340	U	340	U	400	U	390	U	350	U
2,4-Dimethylphenol		340	U	340	U	340	U	400	U	390	U	350	U
bis(2-Chloroethoxy)methane		340	U	340	U	340	U	400	U	390	U	350	U
2,4-Dichlorophenol		340	U	340	U	340	U	400	U	390	U	350	U
1,2,4-Trichlorobenzene		340	U	73	%	76	%	400	U	390	U	350	U
Naphthalene		340	U	340	U	340	U	400	U	390	U	350	U
4-Chloroaniline		340	U	340	U	340	U	400	U	390	U	350	U
Hexachlorobutadiene		340	U	340	U	340	U	400	U	390	U	350	U
4-Chloro-3-methylphenol		340	U	59	%	64	%	400	U	390	U	350	U
2-Methylnaphthalene		340	U	340	U	340	U	400	U	390	U	350	U
Hexachlorocyclopentadiene		340	U	340	U	340	U	400	U	390	U	350	U
2,4,6-Trichlorophenol		340	U	340	U	340	U	400	U	390	U	350	U
2,4,5-Trichlorophenol		850	U	850	U	850	U	990	U	960	U	880	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0W9V0		B0W9V0		B0W9V0		B0W9V1		B0W9V2		B0W9V3	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	340	U	340	U	340	U	400	U	390	U	350	U
2-Nitroaniline	850	U	850	U	850	U	990	U	960	U	880	U
Dimethylphthalate	340	U	340	U	340	U	400	U	390	U	350	U
Acenaphthylene	340	U	340	U	340	U	400	U	390	U	350	U
2,6-Dinitrotoluene	340	U	340	U	340	U	400	U	390	U	350	U
3-Nitroaniline	850	U	850	U	850	U	990	U	960	U	880	U
Acenaphthene	340	U	69	%	65	%	400	U	390	U	350	U
2,4-Dinitrophenol	850	U	850	U	850	U	990	U	960	U	880	U
4-Nitrophenol	850	U	59	%	63	%	990	U	960	U	880	U
Dibenzofuran	340	U	340	U	340	U	400	U	390	U	350	U
2,4-Dinitrotoluene	340	U	72	%	74	%	400	U	390	U	350	U
Diethylphthalate	340	U	340	U	340	U	400	U	390	U	350	U
4-Chlorophenyl-phenylether	340	U	340	U	340	U	400	U	390	U	350	U
Fluorene	340	U	340	U	340	U	400	U	390	U	350	U
4-Nitroaniline	850	U	850	U	850	U	990	U	960	U	880	U
4,6-Dinitro-2-methylphenol	850	U	850	U	850	U	990	U	960	U	880	U
N-Nitrosodiphenylamine (1)	340	U	340	U	340	U	400	U	390	U	350	U
4-Bromophenyl-phenylether	340	U	340	U	340	U	400	U	390	U	350	U
Hexachlorobenzene	340	U	340	U	340	U	400	U	390	U	350	U
Pentachlorophenol	850	U	59	%	65	%	990	U	960	U	880	U
Phenanthrene	340	U	340	U	340	U	400	U	390	U	350	U
Anthracene	340	U	340	U	340	U	400	U	390	U	350	U
Carbazole	340	U	340	U	340	U	400	U	390	U	350	U
Di-n-butylphthalate	340	U	340	U	340	U	400	U	390	U	350	U
Fluoranthene	340	U	340	U	340	U	400	U	390	U	350	U
Pyrene	340	U	72	%	67	%	400	U	390	U	350	U
Butylbenzylphthalate	340	U	340	U	340	U	400	U	390	U	350	U
3,3'-Dichlorobenzidine	340	U	340	U	340	U	400	U	390	U	350	U
Benzo(a)anthracene	340	U	340	U	340	U	400	U	390	U	350	U
Chrysene	340	U	340	U	340	U	400	U	390	U	350	U
bis(2-Ethylhexyl)phthalate	340	U	340	U	340	U	400	U	390	U	350	U
Di-n-octyl phthalate	340	U	340	U	340	U	400	U	390	U	350	U
Benzo(b)fluoranthene	340	U	340	U	340	U	400	U	390	U	350	U
Benzo(k)fluoranthene	340	U	340	U	340	U	400	U	390	U	350	U
Benzo(a)pyrene	340	U	340	U	340	U	400	U	390	U	350	U
Indeno(1,2,3-cd)pyrene	340	U	340	U	340	U	400	U	390	U	350	U
Dibenz(a,h)anthracene	340	U	340	U	340	U	400	U	390	U	350	U
Benzo(g,h,i)perylene	340	U	340	U	340	U	400	U	390	U	350	U

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

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 10/18/99 15:24

RFW Batch Number: **9909L051** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

010

	Cust ID:	B0W9R7		SBLKCV		SBLKCV BS	
Sample Information	RFW#:	010		99LE1121-MB1		99LE1121-MB1	
	Matrix:	SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	74	%	86	%	86	%
	2-Fluorobiphenyl	68	%	72	%	73	%
	Terphenyl-d14	73	%	78	%	77	%
	Phenol-d5	60	%	62	%	66	%
	2-Fluorophenol	55	%	64	%	68	%
	2,4,6-Tribromophenol	63	%	71	%	77	%
Phenol		350	U	330	U	63	%
bis(2-Chloroethyl)ether		350	U	330	U	330	U
2-Chlorophenol		350	U	330	U	68	%
1,3-Dichlorobenzene		350	U	330	U	330	U
1,4-Dichlorobenzene		350	U	330	U	81	%
1,2-Dichlorobenzene		350	U	330	U	330	U
2-Methylphenol		350	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		350	U	330	U	330	U
4-Methylphenol		350	U	330	U	330	U
N-Nitroso-di-n-propylamine		350	U	330	U	107	%
Hexachloroethane		350	U	330	U	330	U
Nitrobenzene		350	U	330	U	330	U
Isophorone		350	U	330	U	330	U
2-Nitrophenol		350	U	330	U	330	U
2,4-Dimethylphenol		350	U	330	U	330	U
bis(2-Chloroethoxy)methane		350	U	330	U	330	U
2,4-Dichlorophenol		350	U	330	U	330	U
1,2,4-Trichlorobenzene		350	U	330	U	83	%
Naphthalene		350	U	330	U	330	U
4-Chloroaniline		350	U	330	U	330	U
Hexachlorobutadiene		350	U	330	U	330	U
4-Chloro-3-methylphenol		350	U	330	U	68	%
2-Methylnaphthalene		350	U	330	U	330	U
Hexachlorocyclopentadiene		350	U	330	U	330	U
2,4,6-Trichlorophenol		350	U	330	U	330	U
2,4,5-Trichlorophenol		880	U	840	U	840	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0W9R7		SBLKCV		SBLKCV BS	
RFW#:	010		99LE1121-MB1		99LE1121-MB1	
2-Chloronaphthalene	350	U	330	U	330	U
2-Nitroaniline	880	U	840	U	840	U
Dimethylphthalate	350	U	330	U	330	U
Acenaphthylene	350	U	330	U	330	U
2,6-Dinitrotoluene	350	U	330	U	330	U
3-Nitroaniline	880	U	840	U	840	U
Acenaphthene	350	U	330	U	75	%
2,4-Dinitrophenol	880	U	840	U	840	U
4-Nitrophenol	880	U	840	U	75	%
Dibenzofuran	350	U	330	U	330	U
2,4-Dinitrotoluene	350	U	330	U	85	%
Diethylphthalate	350	U	330	U	330	U
4-Chlorophenyl-phenylether	350	U	330	U	330	U
Fluorene	350	U	330	U	330	U
4-Nitroaniline	880	U	840	U	840	U
4,6-Dinitro-2-methylphenol	880	U	840	U	840	U
N-Nitrosodiphenylamine (1)	350	U	330	U	330	U
4-Bromophenyl-phenylether	350	U	330	U	330	U
Hexachlorobenzene	350	U	330	U	330	U
Pentachlorophenol	880	U	840	U	69	%
Phenanthrene	350	U	330	U	330	U
Anthracene	350	U	330	U	330	U
Carbazole	350	U	330	U	330	U
Di-n-butylphthalate	350	U	330	U	330	U
Fluoranthene	350	U	330	U	330	U
Pyrene	350	U	330	U	78	%
Butylbenzylphthalate	350	U	330	U	330	U
3,3'-Dichlorobenzidine	350	U	330	U	330	U
Benzo(a)anthracene	350	U	330	U	330	U
Chrysene	350	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	350	U	330	U	330	U
Di-n-octyl phthalate	350	U	330	U	330	U
Benzo(b)fluoranthene	350	U	330	U	330	U
Benzo(k)fluoranthene	350	U	330	U	330	U
Benzo(a)pyrene	350	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	350	U	330	U	330	U
Dibenz(a,h)anthracene	350	U	330	U	330	U
Benzo(g,h,i)perylene	350	U	330	U	330	U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W9V0

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L051-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D092514

Level: (low/med) LOW Date Received: 09/10/99

% Moisture: 2 decanted: (Y/N) __ Date Extracted: 09/14/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/25/99

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.	ALDOL CONDENSATE	9.22	100	JA
2.	HEXADECANOIC ACID	21.75	80	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W9V1

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L051-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092507

Level: (low/med) LOW Date Received: 09/10/99

% Moisture: 16 decanted: (Y/N) __ Date Extracted: 09/14/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/25/99

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.	ALDOL CONDENSATE	8.02	100	JA
2.	HEXADECANOIC ACID	20.87	200	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W9V2

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L051-003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092508

Level: (low/med) LOW Date Received: 09/10/99

% Moisture: 14 decanted: (Y/N) __ Date Extracted: 09/14/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/25/99

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	7.45	80	J
2.	ALDOL CONDENSATE	8.02	100	JA
3.	HEXADECANOIC ACID	20.87	300	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W9V3

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L051-004

Sample wt/vol: 30.1 (g/mL) G Lab File ID: A092509

Level: (low/med) LOW Date Received: 09/10/99

% Moisture: 6 decanted: (Y/N) __ Date Extracted: 09/14/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/25/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

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

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0W9R7

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9909L051-010

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092510

Level: (low/med) LOW Date Received: 09/10/99

% Moisture: 6 decanted: (Y/N) Date Extracted: 09/14/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/25/99

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.	ALDOL CONDENSATE	8.01	100	JA
2.	HEXADECANOIC ACID	20.87	90	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKCV

Lab Name: Recra LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 99LE1121-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A092503

Level: (low/med) LOW Date Received: 09/14/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 09/14/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 09/25/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

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

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

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

DATE RECEIVED: 09/10/99 RFW LOT # :9909L051

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W9V0	001	S	99LE1121	09/08/99	09/14/99	09/25/99
B0W9V0	001 MS	S	99LE1121	09/08/99	09/14/99	09/25/99
B0W9V0	001 MSD	S	99LE1121	09/08/99	09/14/99	09/25/99
B0W9V1	002	S	99LE1121	09/08/99	09/14/99	09/25/99
B0W9V2	003	S	99LE1121	09/08/99	09/14/99	09/25/99
B0W9V3	004	S	99LE1121	09/08/99	09/14/99	09/25/99
B0W9R7	010	S	99LE1121	09/08/99	09/14/99	09/25/99

LAB QC:

SBLKCV	MB1	S	99LE1121	N/A	09/14/99	09/25/99
SBLKCV	MB1 BS	S	99LE1121	N/A	09/14/99	09/25/99

RECRA LabNet Use Only
9909L051

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) gcms VOA BNA PCB — Schnell perrone wet lab

Client: TNU-Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: spec Del: std TAT: 30 day

Date Rec'd: 9.10.99 Date Due: 10/10/99

Account #:

Refrigerator #		1	6	1					6		6	6				0
#/Type Container	Liquid															
	Solid	1g	1g	1					1g		1g	1g				
Volume	Liquid															
	Solid	250	500	1		W/VOA	W/BNA		500		250	ltr				
Preservatives																
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625H	0PCB		OGCSC	ODRO		Met①		IPH	Inorg①				
001	BOW9V0			S	9/8/99	0739	X	X	X		X	X		X		X	X				
002	BOW9V1					0755															
003	BOW9V2					0806															
004	BOW9V3					0820															
005	BOW9M0				9/7/99	0840															
006	BOW9M2					0900															
007	BOW9M3					0924															
008	BOW9M4					0936															
009	BOW9M5					0944							9/15/99					9/15/99			
010	BOW9R7				9/8/99	1007															

Special Instructions:

Saf # B99-078

9/15/99 5-9 Logged for metals + ICR6 only per Client coc

COMPOSITE WASTE

DATE/REVISIONS:

Met ① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg, ICR6
Ang ① = 1N3N2, 1CCL, 1CFL, 1CNO2, 1CNO3,
4. 1CPO4, 1CSO4, 1SFD, 1NH3N, 1CNTO
OGCSC = ethanol + ypropanol
6. Run Matrix QC

RECRA LabNet Use Only

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

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 2.4 °C

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	9/10/99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: *423579529182 / 3.8° 423579529171

9901L051

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-115	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, GP-10		SAF No.: B99-078
Ice Chest No.: ERC 96 013	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA/RECRA~~ RECRA labinet	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 4235795291 82
			COA: B20CW1671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

	Sample No.	Matrix *	Sample Date	Sample Time										
1	B0W9V0	Soil	9/8/99	0739		X	X	X	X	X				BOW98
2	B0W9V1	Soil	9/8/99	0755		X	X	X	X	X				
3	B0W9V2	Soil	9/8/99	0806		X	X	X	X	X				
4	B0W9V3	Soil	9/8/99	0820		X	X	X	X	X				
	~~B0W9V4~~	~~Soil~~ RJN	9/8/99											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/8/99 12:20	Received By: Refer 1B	Date/Time: 9/8/99 12:20
Relinquished By: REF 1B	Date/Time: 9999 1300	Received By: SJONALD Mark	Date/Time: 9999 1300
Relinquished By: SJONALD Mark	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 09:45	Received By: D Yoniad	Date/Time: 9/10/99 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC.

(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

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

3.8° 2.4°

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	B99-078-109	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: GP-1	SAF No.: B99-078	
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511	Method of Shipment: ~~gov vehicle~~ FED EX	
Shipped To: TMA/RECRA 9-7-99	Offsite Property No.: A990247	Bill of Lading/Air Bill No.: 423579529171	
		COA: B20CW1 6716	

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										
5 B0W9M0	Soil	9-7-99	0840	X				B0W8D8					
~~B0W9M1~~	~~Soil~~	~~9-7-99~~	~~0852~~	X				B0W8D9					
~~B0W9M2~~	~~Soil~~	~~9-7-99~~	~~0900~~	X				B0W5M1					
~~B0W9M3~~	~~Soil~~	~~9-7-99~~	~~0924~~	X									
~~B0W9M4~~	~~Soil~~	~~9-7-99~~	~~0936~~	X									

9-7-99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-7-99/1600	Received By: REF IB	Date/Time: 9-7-99/1600
Relinquished By: REF IB	Date/Time: 9999 1300	Received By: SJGALE	Date/Time: 9999 1300
Relinquished By: SJGALE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By: D. Smith	Date/Time: 9/10/99 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC.

(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)

C.O.C. split because of lt qnty. shipment, this a copy

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	B99-078-109	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: GP-1		SAF No.: B99-078
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ FED EX
Shipped To: TMA/RECRA 5 30 9-7-99	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 4235 7952 9171
			COA: B20CW1 671C

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										
	~~B0W9M0~~	~~Soil~~	~~9-7-99~~	~~0890~~	~~X~~									
	~~B0W9M1~~ DF-9999	~~Soil~~	~~9-7-99~~	~~0852~~	~~X~~									
6	B0W9M2	Soil	9-7-99	0900	X									
7	B0W9M3	Soil	9-7-99	0924	X									
8	B0W9M4	Soil	9-7-99	0936	X									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-7-99/1600	Received By: R.P.B	Date/Time: 9-7-99/1600
Relinquished By: R.P.B	Date/Time: 9999 1300	Received By: S.J. Gale	Date/Time: 9999 1300
Relinquished By: S.J. Gale	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By:	Date/Time: 9/10/99 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) Gamma Spec - Complete (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

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	B99-078-109	Page 2 of 52 RAB 9-7-99

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-1		SAF No.: B99-078
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ FED EX
Shipped To: TMA/RECRA RAB 9-7-99	Offsite Property No.: A990 247		Bill of Lading/Air Bill No.: 42357952 9171
			COA: B20CW1 671C

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									
B0W9M5	Soil	9-7-99	0944	X			17.5-18.5	B0W5M1				
B0W9M6	Soil											
B0W9M7	Soil											
B0W9M8 RAB 9-7-99	Soil											
B0W9M9	Soil											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 9-7-99/1600	Received By: RAB 1B	Date/Time: 9-7-99/1600
Relinquished By: RAB 1B	Date/Time: 9999 1300	Received By: SJGALE	Date/Time: 9999
Relinquished By: SJGALE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By:	Date/Time: 9/10/99/0945
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

COLLECTOR UNAVAILABLE TO SIGN COL.

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-113	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		SAF No.: B99-078
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA RECRA labnet	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 4235795 2917 1
			COA: B20CW16716

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

	Sample No.	Matrix *	Sample Date	Sample Time										
10	B0W9R7	Soil	9/8/99	1007		X	X	X	X	X				B0W528
	~~B0W9R8~~	~~Soil~~												
	~~B0W9R9~~	~~Soil~~	RJN 9/8/99											
	~~B0W9T0~~	~~Soil~~												
	~~B0W9T1~~	~~Soil~~												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/8/99 12:20	Received By: Peter JB	Date/Time: 9/8/99 12:20
Relinquished By: REF JB	Date/Time: 9999 1300	Received By: SJONKE-Nielsen	Date/Time: 9999 1300
Relinquished By: SJONKE-Nielsen	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By: [signature]	Date/Time: 9/10/99 - 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC

(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

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 #: 9909L051
SDG/SAF#: H0525/B99-078

W.O. #: #: 10985-001-001-9999-00
Date Received: 09-10-99

GC SCAN

The set of samples consisted of five (5) soil samples collected on 09-08-99.

The samples and their associated QC samples were prepared on 09-13-99 and analyzed by methodology based on EPA Method 8015B for Ethanol and Butanol on 09-13-99.

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

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

2. The required holding time for analysis was met.

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

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

5. Surrogates were not used for this analysis.

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

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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-27-99
Date

JAN 2000
RECEIVED
Data
Log In

r:\share\lc\gcscan\09-051.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: 09/16/99 09:09

RFW Batch Number: **9909L051** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

003

	Cust ID:	B0W9V0	B0W9V0	B0W9V0	B0W9V1	B0W9V2	B0W9V3
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		4.2 U	80 %	14 * %	5.5 U	5.0 U	5.0 U
Ethanol		4.2 U	5.0 U	5.0 U	5.5 U	5.0 U	5.0 U

	Cust ID:	B0W9R7	BLK	BLK BS
Sample Information	RFW#:	010	99LLC139-MB1	99LLC139-MB1
	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg
n-Propyl Alcohol		4.7 U	5.0 U	93 %
Ethanol		4.7 U	5.0 U	5.0 U

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

9/16/99

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

DATE RECEIVED: 09/10/99 RFW LOT # :9909L051

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W9V0	001	S	99LLC139	09/08/99	09/13/99	09/13/99
B0W9V0	001 MS	S	99LLC139	09/08/99	09/13/99	09/13/99
B0W9V0	001 MSD	S	99LLC139	09/08/99	09/13/99	09/13/99
B0W9V1	002	S	99LLC139	09/08/99	09/13/99	09/13/99
B0W9V2	003	S	99LLC139	09/08/99	09/13/99	09/13/99
B0W9V3	004	S	99LLC139	09/08/99	09/13/99	09/13/99
B0W9R7	010	S	99LLC139	09/08/99	09/13/99	09/13/99

LAB QC:

BLK	MB1	S	99LLC139	N/A	09/13/99	09/13/99
BLK	MB1 BS	S	99LLC139	N/A	09/13/99	09/13/99

09/16/99

RECRA LabNet Use Only
9909L051

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

005

Client: TNU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 day
Date Rec'd: 9.10.99 Date Due: 10/10/99
Account #:

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

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625H	OPCB		OGCSC	ODRO		Met①		IPH	Inorg①				
001	BOW9V0			S	9/8/99	0739	X	X	X		X	X		X		X	X				
002	BOW9V1					0755															
003	BOW9V2					0806															
004	BOW9V3					0820															
005	BOW9M0				9/7/99	0840															
006	BOW9M2					0900															
007	BOW9M3					0924															
008	BOW9M4					0936															
009	BOW9M5					0944															
010	BOW9R7				9/8/99	1007															

Special Instructions:

saf # B99-078

COMPOSITE WASTE

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

RECRA LabNet Use Only

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

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 2.4 C

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	9/10/99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-109	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: GP-1		SAF No.: B99-078
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ FED EX
Shipped To: TMA/RECRA	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 4123579529171
			COA: B20CW1 6716

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										
	~~B0W9M0~~	~~Soil~~	~~9-7-99~~	~~0840~~	~~X~~				~~B0W808~~					
	~~B0W9M1~~ ~~DH 9999~~	~~Soil~~	~~9-7-99~~	~~0852~~	~~X~~				~~B0W809~~					
6	B0W9M2	Soil	9-7-99	0900	X				B0W5M1					
7	B0W9M3	Soil	9-7-99	0924	X				↓					
8	B0W9M4	Soil	9-7-99	0936	X									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-7-99/1600	Received By: R.P.B	Date/Time: 9-7-99/1600
Relinquished By: REF LB	Date/Time: 9999 1300	Received By: SJGALE	Date/Time: 9999 1300
Relinquished By: SJGALE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By:	Date/Time: 9/10/99 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) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

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	B99-078-109	Page 2 of 52 RAB 9-7-99

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-1		SAF No.: B99-078
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ FED EX
Shipped To: TMA/RECRA RAB 9-7-99	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 42357952 9171
			COA: B20CW1 671C

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										
B0W9M5	Soil	9-7-99	0944	X			17.5-18.5'		BOW5M1				
B0W9M6	Soil												
B0W9M7	Soil												
B0W9M8	Soil												
B0W9M9	Soil												

RAB 9-7-99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 9-7-99/1600	Received By: R.F. IB	Date/Time: 9-7-99/1600
Relinquished By: REF IB	Date/Time: 9999 1300	Received By: SJGALE	Date/Time: 9999
Relinquished By: SJGALE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By:	Date/Time: 9/10/99/0945

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

COLLECTOR UNAVAILABLE TO SIGN COL.

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	B99-078-113	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	SAF No.: B99-078	
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: TMA/RECRA RECRA labnet	Offsite Property No.: A990247	Bill of Lading/Air Bill No.: 42357952 9171	
		COA: B20CW1671C	

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

Sample No.	Matrix *	Sample Date	Sample Time										
10 B0W9R7	Soil	9/8/99	1007		X	X	X	X	X				B0W528
~~B0W9R8~~	~~Soil~~												
~~B0W9R9~~	~~Soil~~	RJN 9/8/99											
~~B0W9T0~~	~~Soil~~												
~~B0W9T1~~	~~Soil~~												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/8/99 12:20	Received By: Refer 1B	Date/Time: 9/8/99 12:20
Relinquished By: REF 1B	Date/Time: 9999 1300	Received By: SJGALE [signature]	Date/Time: 9999 1300
Relinquished By: SJGALE [signature]	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By: [signature]	Date/Time: 9/10/99 - 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC

(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

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#: 9909L051
SDG/SAF#: H0525/B99-078

W.O.#: 10985-001-001-9999-00
Date Received: 09-10-99

PCB

The set of samples consisted of five (5) soil samples collected on 09-08-99.

The samples and their associated QC samples were extracted on 09-13-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 10-03-99. 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.

JAN 2000
RECEIVED
Data
Log In

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-15-99
Date

pef\r:\group\data\pest\09L-051.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.

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 10:39

RFW Batch Number: **9909L051** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1

004

	Cust ID:	B0W9V0	B0W9V0	B0W9V0	B0W9V1	B0W9V2	B0W9V3
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	82 %	100 %	92 %	98 %	92 %	40 %
	Decachlorobiphenyl	83 %	96 %	90 %	93 %	88 %	83 %
Aroclor-1016		33 U	34 U	34 U	35 U	38 U	35 U
Aroclor-1221		67 U	68 U	67 U	70 U	76 U	70 U
Aroclor-1232		33 U	34 U	34 U	35 U	38 U	35 U
Aroclor-1242		33 U	34 U	34 U	35 U	38 U	35 U
Aroclor-1248		33 U	34 U	34 U	35 U	38 U	35 U
Aroclor-1254		33 U	76 %	73 %	35 U	38 U	35 U
Aroclor-1260		33 U	34 U	34 U	35 U	38 U	35 U

	Cust ID:	B0W9R7	PBLKUL	PBLKUL BS
Sample Information	RFW#:	010	99LE1111-MB1	99LE1111-MB1
	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	92 %	98 %	100 %
	Decachlorobiphenyl	92 %	93 %	95 %
Aroclor-1016		35 U	33 U	33 U
Aroclor-1221		70 U	67 U	67 U
Aroclor-1232		35 U	33 U	33 U
Aroclor-1242		35 U	33 U	33 U
Aroclor-1248		35 U	33 U	33 U
Aroclor-1254		35 U	33 U	77 %
Aroclor-1260		35 U	33 U	33 U

gw 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: 09/10/99 RFW LOT # :9909L051

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W9V0	001	S	99LE1111	09/08/99	09/13/99	10/03/99
B0W9V0	001 MS	S	99LE1111	09/08/99	09/13/99	10/03/99
B0W9V0	001 MSD	S	99LE1111	09/08/99	09/13/99	10/03/99
B0W9V1	002	S	99LE1111	09/08/99	09/13/99	10/03/99
B0W9V2	003	S	99LE1111	09/08/99	09/13/99	10/03/99
B0W9V3	004	S	99LE1111	09/08/99	09/13/99	10/03/99
B0W9R7	010	S	99LE1111	09/08/99	09/13/99	10/03/99

LAB QC:

PBLKUL	MB1	S	99LE1111	N/A	09/13/99	10/03/99
PBLKUL	MB1 BS	S	99LE1111	N/A	09/13/99	10/03/99

gw 10-08-99

RECRA LabNet Use Only

9909L051

Custody Transfer Record/Lab Work Request

Page 1 of 1

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) gcms VOA BNA PCB Schnell perrone wet lab

RECRA LabNet

Client TNU-Hanford B99-078

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC spec Del std TAT 30 day

Date Rec'd 9.10.99 Date Due 10/10/99

Account #

Refrigerator #		1	6	1					6		6	6				
#/Type Container	Liquid															
	Solid	1g	1g	1					1g		1g	1g				
Volume	Liquid															
	Solid	250	500	1					500		250	ltr				
Preservatives																
ANALYSES REQUESTED		ORGANIC				W/VOA	W/BNA		INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625H	OPCB	OGCSC	ODRO	Met①	IPH	Inorg①
001	BOW9V0			S	9/8/99	0739	X	X	X	X	X	X	X	X
002	BOW9V1					0755								
003	BOW9V2					0806								
004	BOW9V3					0820								
005	BOW9M0				9/7/99	0840								
006	BOW9M2					0900								
007	BOW9M3					0924								
008	BOW9M4					0936								
009	BOW9M5					0944								
010	BOW9R7				9/8/99	1007								

9/15/99 9/15/99

Special Instructions:

Saf# B99-078

9/15/99 5-9 Logged for metals + ICR6 only per Client coc

COMPOSITE WASTE

DATE/REVISIONS:

Met ① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,

2. Se, Ag, V, Zn, Hg, ICR6

Inorg ① = 1N3N2, 1CCL, 1CFL, 1CNO2, 1CNO3,

4. 1CPO4, 1CSO4, 1SFD, 1NH3N, 1CNTO

OGCSC = ethanol + ypropanol

6. Run Matrix QC

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___

Airbill # *

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Labels Indicate Properly Preserved Y or N

5) Received Within Holding Times Y or N

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

2) Unbroken on Outer Package Y or N

3) Present on Sample Y or N

4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 2.4 °C

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	9/10/99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

*423579529182 / 3.8° 423579529171

9909L051

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-115	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, GP-10	SAF No.: B99-078	
Ice Chest No.: ERC 96 013	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: ~~TMA/RECRA~~ RECRA Cabinet	Offsite Property No.: A990247	Bill of Lading/Air Bill No.: 4235795 29182	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
Special Handling and/or Storage	No. of Container(s)	1	1	1	1	1	1	1			
	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	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	B0W9V0	Soil	9/8/99	0739		X	X	X	X	X				B0W928
2	B0W9V1	Soil	9/8/99	0755		X	X	X	X	X				
3	B0W9V2	Soil	9/8/99	0806		X	X	X	X	X				
4	B0W9V3	Soil	9/8/99	0820		X	X	X	X	X				
	~~B0W9V4~~	~~Soil~~ RJN 9/8/99												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/8/99 12:20	Received By: Refer IB	Date/Time: 9/8/99 12:20
Relinquished By: REF IB	Date/Time: 9999 1300	Received By: SIGNATURE	Date/Time: 9999 1300
Relinquished By: SIGNATURE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 09:45	Received By: [signature]	Date/Time: 9/10/99 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC.

(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

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

3.8° 2.4°

LABORATORY SECTION: Received By | Title | Date/Time

FINAL SAMPLE: Disposal Method | Disposed By | Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-109	Page 1 of 2 B20 9-7-99

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-1	SAF No.: B99-078	
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511	Method of Shipment: ~~gov vehicle~~ FED EX	
Shipped To: TMA/RECRA B20 9-7-99	Offsite Property No.: A990247	Bill of Lading/Air Bill No.: 423579529171	
		COA: B20CW1 6710	

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									
5 B0W9M0	Soil	9-7-99	0840	X				B0W8D8				
~~B0W9M1~~	~~Soil~~	~~9-7-99~~	~~0852~~	X				B0W8D9				
~~B0W9M2~~	~~Soil~~	~~9-7-99~~	~~0900~~	X				B0W5M1				
~~B0W9M3~~	~~Soil~~	~~9-7-99~~	~~0924~~	X								
~~B0W9M4~~	~~Soil~~	~~9-7-99~~	~~0936~~	X								

B20 9-9-99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-7-99/1600	Received By: Rex IB	Date/Time: 9-7-99/1600
Relinquished By: REF IB	Date/Time: 9999 1300	Received By: SJOALE	Date/Time: 9999 1300
Relinquished By: SJOALE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By: D. Smith	Date/Time: 9/10/99 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC.

(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}

C.O.C. split because of 1t qnty. shipment, this a copy

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

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-109	Page 1 of 2 B20 9-7-99

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-1		SAF No.: B99-078
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ FED EX
Shipped To: TMA/RECRA B20 9-7-99	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 4235 7952 9171
			COA: B20CW1 6716

Price Code: 8N

Data Turnaround: 45 Days

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										
	~~B0W9M0~~	~~Soil~~	~~9-7-99~~	~~0840~~	X				B0W808					
	~~B0W9M1~~ DF 9999	~~Soil~~	~~9-7-99~~	~~0852~~	X				~~B0W809~~					
6	B0W9M2	Soil	9-7-99	0900	X				B0W5M1					
7	B0W9M3	Soil	9-7-99	0924	X									
8	B0W9M4	Soil	9-7-99	0936	X									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-7-99/1600	Received By: R.P.B	Date/Time: 9-7-99/1600
Relinquished By: REF 1B	Date/Time: 9999 1300	Received By: SJGALE	Date/Time: 9999 1300
Relinquished By: SJGALE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By: D. Smith	Date/Time: 9/10/99 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) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

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	B99-078-109	Page 2 of 2 RJB 9-7-99

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-1		SAF No.: B99-078
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ FED EX
Shipped To: TMA/RECRA RJB 9-7-99	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 4235795291 71
			COA: B20CW1 671C

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										
B0W9M5	Soil	9-7-99	0944	X			17.5-18.5'	BOWSM1					
B0W9M6	Soil												
B0W9M7	Soil												
B0W9M8 RJB 9-7-99	Soil												
B0W9M9	Soil												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-7-99/1600	Received By: R.F. IB	Date/Time: 9-7-99/1600
Relinquished By: RFF IB	Date/Time: 9999 1300	Received By: SJGALE	Date/Time: 9999
Relinquished By: SJGALE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By:	Date/Time: 9/10/99/0945
LABORATORY SECTION: Received By		Title	Date/Time
FINAL SAMPLE: Disposal Method		Disposed By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

COLLECTOR UNAVAILABLE TO SIGN COL.

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-113	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		SAF No.: B99-078
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA RECRA labnet	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 4235795291 71
			COA: B20CW1671C

01

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

	Sample No.	Matrix *	Sample Date	Sample Time										
10	B0W9R7	Soil	9/8/99	1007		X	X	X	X	X				B0W528
	~~B0W9R8~~	~~Soil~~												
	~~B0W9R9~~	~~Soil~~	RJN 9/8/99											
	~~B0W9T0~~	~~Soil~~												
	~~B0W9T1~~	~~Soil~~												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/8/99 12:20	Received By: Refer IB	Date/Time: 9/8/99 12:20
Relinquished By: REF IB	Date/Time: 9999 1300	Received By: SJONLE-Wbl	Date/Time: 9999 1300
Relinquished By: SJONLE-Wbl	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By: [signature]	Date/Time: 9/10/99 - 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC

(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

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# : 9909L051
SDG/SAF#: H0525/B99-078

W.O #: 10985-001-001-9999-00
Date Received: 09-10-99

DIESEL RANGE ORGANICS

The set of samples consisted of five (5) soil samples collected on 09-08-99.

The samples and their associated QC samples were prepared on 09-14-99 and analyzed by methodology based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 09-18-99. 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.

JAN 2000
RECEIVED
Data
Log In

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

9-27-99
Date

R:\SHARE\LC\GCSCAN\09-051d.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 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 12:51

RFW Batch Number: **9909L051** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

003

	Cust ID:	B0W9V0	B0W9V0	B0W9V0	B0W9V1	B0W9V2	B0W9V3
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	70 %	80 %	80 %	64 %	97 %	77 %
Diesel Range Organics		4.1 U	80 %	77 %	4.7 U	4.6 U	4.2 U

	Cust ID:	B0W9R7	BLK	BLK BS
Sample Information	RFW#:	010	99LE1115-MB1	99LE1115-MB1
	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg
Surrogate:	p-Terphenyl	90 %	51 %	52 %
Diesel Range Organics		4.1 U	4.0 U	68 %

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

9/24/99

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

DATE RECEIVED: 09/10/99 RFW LOT # :9909L051

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W9V0	001	S	99LE1115	09/08/99	09/14/99	09/18/99
B0W9V0	001 MS	S	99LE1115	09/08/99	09/14/99	09/18/99
B0W9V0	001 MSD	S	99LE1115	09/08/99	09/14/99	09/18/99
B0W9V1	002	S	99LE1115	09/08/99	09/14/99	09/18/99
B0W9V2	003	S	99LE1115	09/08/99	09/14/99	09/18/99
B0W9V3	004	S	99LE1115	09/08/99	09/14/99	09/18/99
B0W9R7	010	S	99LE1115	09/08/99	09/14/99	09/18/99

LAB QC:

BLK	MB1	S	99LE1115	N/A	09/14/99	09/18/99
BLK	MB1 BS	S	99LE1115	N/A	09/14/99	09/18/99

9/24/99

RECRA LabNet Use Only

9909L051

Custody Transfer Record/Lab Work Request

Page 1 of 1

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) gcms VOA BNA PCB Schnell perrone wet lab

RECRA LabNet

005

Client: TNU-Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: spec Del: std TAT: 30 day

Date Rec'd: 9.10.99 Date Due: 10/10/99

Account #:

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

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625H	OPCB		OGCSC	ODRO		Met(1)		IPH	Inorg(1)				
001	BOW9V0			S	9/8/99	0739	X	X	X		X	X		X		X	X				
002	BOW9V1					0755															
003	BOW9V2					0806															
004	BOW9V3					0820															
005	BOW9M0				9/7/99	0840															
006	BOW9M2					0900															
007	BOW9M3					0924															
008	BOW9M4					0936															
009	BOW9M5					0944							9/15/99					9/15/99			
010	BOW9R7				9/8/99	1007															

Special Instructions:

Saf # B99-078

9/15/99 5-9 Logged for metals + ICR6 only per Client coc

COMPOSITE WASTE

DATE/REVISIONS:

Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg, ICR6
Inorg (1) = 1N3N2, 1CCL, 1CFL, 1CNO2, 1CNO3,
4. 1CPO4, 1CSO4, 1SFD, 1NH3N, 1CNTO
OGCSC = ethanol + ypropanol
6. Run Matrix QC

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 2.4 °C

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	9/10/99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

*423579529182 / 3.8" 423579529171

9901L051

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-115	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, GP-10	SAF No.: B99-078	
Ice Chest No.: ERC 96 013	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: ~~TMA/RECRA~~ RECRA labinet	Offsite Property No.: A990247	Bill of Lading/Air Bill No.: 4235795291 82	
		COA: B20CW1671C	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

	Sample No.	Matrix *	Sample Date	Sample Time										
1	B0W9V0	Soil	9/8/99	0739		X	X	X	X	X				B0W928
2	B0W9V1	Soil	9/8/99	0755		X	X	X	X	X				
3	B0W9V2	Soil	9/8/99	0806		X	X	X	X	X				
4	B0W9V3	Soil	9/8/99	0820		X	X	X	X	X				
	~~B0W9V4~~	~~Soil~~ RJN 9/8/99												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/8/99 12:20	Received By: Refer 1B	Date/Time: 9/8/99 12:20
Relinquished By: REF 1B	Date/Time: 9999 1300	Received By: SIGNATURE	Date/Time: 9999 1300
Relinquished By: SIGNATURE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 09:45	Received By: [signature]	Date/Time: 9/10/99 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC.

(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

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

3.8° 2.4°

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	B99-078-109	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: GP-1	SAF No.: B99-078	
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511	Method of Shipment: ~~gov vehicle~~ FED EX	
Shipped To: TMA/RECRA 9-7-99	Offsite Property No.: A990247	Bill of Lading/Air Bill No.: 423579529171	
		COA: B20CW1 6716	

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										
5 B0W9M0	Soil	9-7-99	0840	X				B0W8D8					
~~B0W9M1~~	~~Soil~~	~~9-7-99~~	~~0852~~	X				B0W8D9					
~~B0W9M2~~	~~Soil~~	~~9-7-99~~	~~0900~~	X				B0W5M1					
~~B0W9M3~~	~~Soil~~	~~9-7-99~~	~~0924~~	X									
~~B0W9M4~~	~~Soil~~	~~9-7-99~~	~~0936~~	X									

9-7-99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-7-99/1600	Received By: B. Ford	Date/Time: 9-7-99/1600
Relinquished By: REF 1B	Date/Time: 9999 1300	Received By: Sjoale	Date/Time: 9999 1300
Relinquished By: Sjoale	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By: D. Smith	Date/Time: 9/10/99 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC.

(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)

C.O.C. split because of lt qnty. shipment, this a copy

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	B99-078-109	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: GP-1		SAF No.: B99-078
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ FED EX
Shipped To: TMA/RECRA	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 4235795291 71
			COA: B20CW1 6716

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									
	~~B0W9M0~~	~~Soil~~	~~9-7-99~~	~~0890~~	~~X~~								
	~~B0W9M1~~ DF 9999	~~Soil~~	~~9-7-99~~	~~0852~~	~~X~~								
6	B0W9M2	Soil	9-7-99	0900	X								
7	B0W9M3	Soil	9-7-99	0924	X								
8	B0W9M4	Soil	9-7-99	0936	X								

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: Doug Bowers		9-7-99/1600
Received By: R.P.B		9-7-99/1600
Relinquished By: REF LB		9999 1300
Received By: SJ GALE		9999 1300
Relinquished By: SJ GALE		9999 1300
Received By: FED EX		
Relinquished By: Fed Ex		9/10/99 0945
Received By:		9/10/99 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) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

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	B99-078-109	Page 2 of 52 RAB 9-7-99

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-1		SAF No.: B99-078
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ FED EX
Shipped To: TMA/RECRA RAB 9-7-99	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 42357952 9171
			COA: B20CW1 671C

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										
B0W9M5	Soil	9-7-99	0944	X			17.5-18.5'		B0W5M1				
B0W9M6	Soil												
B0W9M7	Soil												
B0W9M8 RAB 9-7-99	Soil												
B0W9M9	Soil												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 9-7-99/1600	Received By: R.F. IB	Date/Time: 9-7-99/1600
Relinquished By: REF IB	Date/Time: 9999 1300	Received By: SJGALE	Date/Time: 9999
Relinquished By: SJGALE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By:	Date/Time: 9/10/99/0945

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

COLLECTOR UNAVAILABLE TO SIGN COL.

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	B99-078-113	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	SAF No.: B99-078	
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: TMA/RECRA RECRA labnet	Offsite Property No.: A990247	Bill of Lading/Air Bill No.: 42357952 9171	
		COA: B20CW1671C	

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

Sample No.	Matrix *	Sample Date	Sample Time										
10 B0W9R7	Soil	9/8/99	1007		X	X	X	X	X				B0W528
~~B0W9R8~~	~~Soil~~												
~~B0W9R9~~	~~Soil~~	RJN 9/8/99											
~~B0W9T0~~	~~Soil~~												
~~B0W9T1~~	~~Soil~~												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/8/99 12:20	Received By: Refer IB	Date/Time: 9/8/99 12:20
Relinquished By: REF IB	Date/Time: 9999 1300	Received By: SJGALE [illegible]	Date/Time: 9999 1300
Relinquished By: SJGALE [illegible]	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By: [illegible]	Date/Time: 9/10/99 - 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC

(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

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

JAN 2000
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L051
SDG# : H0525
SAF# : B99-078

W.O. # : 10985-001-001-9999-00
Date Received: 09-10-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 10 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 analysis and matrix quality control analysis for Total Cyanide.

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

5. The method blanks were within method criteria.

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

7. The matrix spike recoveries were within the 75-125% control limits with the exception of Nitrate Nitrite which were above the control limits which may be attributed to sample inhomogeneity and low spike concentration relative to ambient Nitrate Nitrite concentration of the sample. The matrix spike duplicates were within the 20% RPD control limit with the exception of Nitrate Nitrite which may be attributed to sample inhomogeneity.

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

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

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

1-4-00
Date

njp\i09-051

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 24 pages.

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

Recra LabNet Philadelphia

WET CHEMISTRY
METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

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

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

Other: Ammonia **Method** EPA 350.3

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

L-WI-034/B-06/99

Recra LabNet Philadelphia
METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/31/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L051

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0W9V0	% Solids	97.9		%	0.01	1.0
		Chloride by IC	82.1		MG/KG	2.6	2.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	280		MG/KG	13	10
		Cyanide, Total	0.51	u	MG/KG	0.51	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.41	u	MG/KG	0.41	1.0
		Sulfate by IC	63.8	u	MG/KG	63.8	50.0
		Nitrate Nitrite	71.2		MG/KG	2.0	10.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	8.6		SOIL PH	0.0	1.0
		Sulfide	3.9		MG/KG	1.0	1.0
-002	B0W9V1	% Solids	84.0		%	0.01	1.0
		Chloride by IC	87.0		MG/KG	3.0	2.0
		Fluoride by IC	3.0		MG/KG	3.0	1.0
		Nitrite by IC	1.5	u	MG/KG	1.5	1.0
		Nitrate by IC	260		MG/KG	15	10
		Cyanide, Total	0.60	u	MG/KG	0.60	1.0
		Phosphate by IC	1.8		MG/KG	1.5	1.0
		Chromium VI	0.48	u	MG/KG	0.48	1.0
		Sulfate by IC	777		MG/KG	29.8	20.0
		Nitrate Nitrite	81.3		MG/KG	2.4	10.0
		Ammonia, as N	1.4	u	MG/KG	1.4	1.0
		pH	8.4		SOIL PH	0.0	1.0
		Sulfide	1.2	u	MG/KG	1.2	1.0
-003	B0W9V2	% Solids	86.5		%	0.01	1.0
		Chloride by IC	85.2		MG/KG	2.6	2.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	130		MG/KG	6.5	5.0
		Cyanide, Total	0.58	u	MG/KG	0.58	1.0
		Phosphate by IC	1.3	u	MG/KG	1.3	1.0
		Chromium VI	0.46	u	MG/KG	0.46	1.0
		Sulfate by IC	474		MG/KG	25.9	20.0
		Nitrate Nitrite	41.1		MG/KG	2.3	10.0
		Ammonia, as N	1.4	u	MG/KG	1.4	1.0
		pH	8.8		SOIL PH	0.0	1.0

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INORGANICS DATA SUMMARY REPORT 12/31/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L051

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0W9V2	Sulfide	1.2 u	MG/KG	1.2	1.0
-004	B0W9V3	% Solids	94.5	%	0.01	1.0
		Chloride by IC	53.5	MG/KG	2.6	2.0
		Fluoride by IC	2.6 u	MG/KG	2.6	1.0
		Nitrite by IC	1.3 u	MG/KG	1.3	1.0
		Nitrate by IC	54	MG/KG	2.6	2.0
		Cyanide, Total	0.53 u	MG/KG	0.53	1.0
		Phosphate by IC	1.3 u	MG/KG	1.3	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
		Sulfate by IC	220	MG/KG	13.2	10.0
		Nitrate Nitrite	8.4	MG/KG	0.21	1.0
		Ammonia, as N	1.3 u	MG/KG	1.3	1.0
		pH	8.7	SOIL PH	0.0	1.0
		Sulfide	3.7	MG/KG	1.1	1.0
-005	B0W9M0	% Solids	78.5	%	0.01	1.0
		Chromium VI	0.51 u	MG/KG	0.51	1.0
-006	B0W9M2	% Solids	85.0	%	0.01	1.0
		Chromium VI	0.47 u	MG/KG	0.47	1.0
-007	B0W9M3	% Solids	83.8	%	0.01	1.0
		Chromium VI	0.48 u	MG/KG	0.48	1.0
-008	B0W9M4	% Solids	96.4	%	0.01	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
-009	B0W9M5	% Solids	93.7	%	0.01	1.0
		Chromium VI	0.43 u	MG/KG	0.43	1.0
-010	B0W9R7	% Solids	94.5	%	0.01	1.0
		Chloride by IC	1.5	MG/KG	1.3	1.0
		Fluoride by IC	2.6 u	MG/KG	2.6	1.0
		Nitrite by IC	1.3 u	MG/KG	1.3	1.0
		Nitrate by IC	42	MG/KG	1.3	1.0
		Cyanide, Total	0.53 u	MG/KG	0.53	1.0
		Phosphate by IC	3.6	MG/KG	1.3	1.0
		Chromium VI	0.42 u	MG/KG	0.42	1.0
		Sulfate by IC	130	MG/KG	5.3	4.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/31/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L051

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-010	B0W9R7	Nitrate Nitrite	15.8		MG/KG	1.1	5.0
		Ammonia, as N	1.6		MG/KG	1.3	1.0
		pH	7.6		SOIL PH	0.0	1.0
		Sulfide	1.1	u	MG/KG	1.1	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/31/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L051

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LIC080-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.2	u	MG/KG	1.2	1.0
		Nitrate by IC	1.2	u	MG/KG	1.2	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	99LC107A-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	99LC114A-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	99LVI064-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
		~~Nitrate, as N~~	~~20.0~~	~~u~~	~~UG-N/L~~	~~20.0~~	~~1.0~~ mp 1-4-00
BLANK10	99LAM035-MB1	Ammonia, as N	1.2	u	MG/KG	1.2	1.0
BLANK10	99LSDA45-MB1	Sulfide	1.0	u	MG/KG	1.0	1.0
BLANK10	99LAM036-MB1	Ammonia, as N	1.2	u	MG/KG	1.2	1.0
BLANK10	99LAM045-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

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/31/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L051

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0W9V0	Cyanide, Total	4.6	0.51u	5.1	90.5	1.0
		Cyanide, Total MSD	4.4	0.51u	5.1	85.2	1.0
		Nitrate Nitrite	80.5	71.2	5.1	183.9*	10.0
		Nitrate Nitrite MSD	78.3	71.2	5.1	140.0*	10.0
-009	B0W9M5	Soluble Chromium VI	4.1	0.43u	4.3	99.0	1.0
		Insoluble Chromium VI	1160	0.43u	1180	98.5	100
-010	B0W9R7	Chloride by IC	29.0	1.5	26.5	104.3	1.0
		Chloride by IC MSD	30.2	1.5	26.5	108.5	1.0
		Fluoride by IC	63.6	2.1	52.9	116.2	1.0
		Fluoride by IC MSD	63.7	2.1	52.9	116.5	1.0
		Nitrite by IC	28	1.3 u	26	106.7	1.0
		Nitrite by IC MSD	28	1.3 u	26	106.9	1.0
		Nitrate by IC	160	42	110	114.6	4.0
		Nitrate by IC MSD	160	42	110	114.5	4.0
		Phosphate by IC	32.2	3.6	26.5	108.2	1.0
		Phosphate by IC MSD	32.2	3.6	26.5	107.8	1.0
		Sulfate by IC	256	130	106	118.9	4.0
		Sulfate by IC MSD	256	130	106	118.3	4.0
		Ammonia, as N	84.4	1.6	82.1	100.8	1.0
BLANK10	99LIC080-MB1	Chloride by IC	24.3	1.2 u	25.0	97.3	1.0
		Fluoride by IC	53.3	2.5 u	50.0	106.6	1.0
		Nitrite by IC	24	1.2 u	25	97.5	1.0
		Nitrate by IC	24	1.2 u	25	97.9	1.0
		Phosphate by IC	25.8	1.2 u	25.0	103.1	1.0
		Sulfate by IC	24.0	1.2 u	25.0	96.2	1.0
BLANK10	99LVI064-MB1	Soluble Chromium VI	4.1	0.40u	4.0	101.8	1.0
		Insoluble Chromium VI	1070	0.40u	1160	91.5	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
		~~Nitrate, as N~~	~~514~~	~~20.0 u~~	~~500~~	~~102.8~~	~~1.0~~
		~~Nitrate, as N MSD~~	~~512~~	~~20.0 u~~	~~500~~	~~102.4~~	~~1.0~~
BLANK10	99LAM035-MB1	Ammonia, as N	52.4	1.2 u	50.0	104.8	1.0
		Ammonia, as N MSD	52.6	1.2 u	50.0	105.2	1.0
BLANK10	99LSDA45-MB1	Sulfide	345	1.0 u	400	86.2	1.0
		Sulfide MSD	365	1.0 u	400	91.2	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
BLANK10	99LAM045-MB1	Ammonia, as N	51.4	1.2 u	50.0	102.8	1.0
		Ammonia, as N MSD	50.6	1.2 u	50.0	101.2	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/31/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L051

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

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 12/31/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L051

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	B0W9V0	Cyanide, Total	90.5	85.2	6.0
		Nitrate Nitrite	183.9	140.0*	~~NC~~ 27.1
-010	B0W9R7	Chloride by IC	104.3	108.5	3.9
		Fluoride by IC	116.2	116.5	0.26
		Nitrite by IC	106.7	106.9	0.24
		Nitrate by IC	114.6	114.5	0.095
		Phosphate by IC	108.2	107.8	0.30
		Sulfate by IC	118.9	118.3	0.46
BLANK10	99LN3B46-MB1	Nitrate Nitrite	102.8	102.4	0.39
		~~Nitrate, as N~~	~~102.8~~	~~102.4~~	~~0.39~~
BLANK10	99LAM035-MB1	Ammonia, as N	104.8	105.2	0.48
BLANK10	99LSDA45-MB1	Sulfide	86.2	91.2	5.6
BLANK10	99LAM036-MB1	Ammonia, as N	99.2	101.5	2.2

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 12/31/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L051

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	99LAM045-MB1	Ammonia, as N	102.8	101.2	1.5
BLANK10	99LSDA47-MB1	Sulfide	93.9	96.0	2.1

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/31/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L051

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0W9V0	% Solids	97.9	99.9	2.1	1.0
		Cyanide, Total	0.51u	0.51u	NC	1.0
		Nitrate Nitrite	71.2	77.9	9.0	10.0
-009REP	B0W9M5	Chromium VI	0.43u	0.43u	NC	1.0
-010REP	B0W9R7	Chloride by IC	1.5	1.5	0.75	1.0
		Fluoride by IC	2.6 u	2.6 u	NC	1.0
		Nitrite by IC	1.3 u	1.3 u	NC	1.0
		Nitrate by IC	42	41	1.2	1.0
		Phosphate by IC	3.6	3.6	0.17	1.0
		Sulfate by IC	130	129	1.0	4.0
		Ammonia, as N	1.6	1.3 u	NC	1.0
		pH	7.6	7.6	0.0	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/31/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L051

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS10	99LC107A-LC1	Cyanide, Total LCS	1.8	2.0	MG/KG	89.2
LCS20	99LC107A-LC2	Cyanide, Total LCS	10	10	MG/KG	101.2
LCS10	99LC114A-LC1	Cyanide, Total LCS	2.0	2.0	MG/KG	100.2
LCS20	99LC114A-LC2	Cyanide, Total LCS	9.8	10	MG/KG	98.0

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

DATE RECEIVED: 09/10/99 RFW LOT # :9909L051

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W9V0						
% SOLIDS	001	S	99L%S128	09/08/99	09/14/99	09/15/99
% SOLIDS	001 REP	S	99L%S128	09/08/99	09/14/99	09/15/99
CHLORIDE BY IC	001	S	99LIC080	09/08/99	09/25/99	09/25/99
FLUORIDE BY IC	001	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRITE BY IC	001	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRATE BY IC	001	S	99LIC080	09/08/99	09/25/99	09/25/99
TOTAL CYANIDE	001	S	99LC107A	09/08/99	09/20/99	09/20/99
TOTAL CYANIDE	001 REP	S	99LC114A	09/08/99	10/08/99	10/08/99
TOTAL CYANIDE	001 MS	S	99LC114A	09/08/99	10/08/99	10/08/99
TOTAL CYANIDE	001 MSD	S	99LC114A	09/08/99	10/08/99	10/08/99
PHOSPHATE BY IC	001	S	99LIC080	09/08/99	09/25/99	09/25/99
CHROMIUM VI	001	S	99LVI064	09/08/99	09/14/99	09/14/99
SULFATE BY IC	001	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRATE NITRITE	001	S	99LN3B46	09/08/99	09/22/99	09/22/99
NITRATE NITRITE	001 REP	S	99LN3B46	09/08/99	09/22/99	09/22/99
NITRATE NITRITE	001 MS	S	99LN3B46	09/08/99	09/22/99	09/22/99
NITRATE NITRITE	001 MSD	S	99LN3B46	09/08/99	09/22/99	09/22/99
AMMONIA	001	S	99LAM035	09/08/99	09/15/99	09/15/99
PH	001	S	99LPH099	09/08/99	09/15/99	09/15/99
SULFIDE	001	S	99LSDA45	09/08/99	09/14/99	09/14/99
B0W9V1						
% SOLIDS	002	S	99L%S128	09/08/99	09/14/99	09/15/99
CHLORIDE BY IC	002	S	99LIC080	09/08/99	09/25/99	09/25/99
FLUORIDE BY IC	002	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRITE BY IC	002	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRATE BY IC	002	S	99LIC080	09/08/99	09/25/99	09/25/99
TOTAL CYANIDE	002	S	99LC107A	09/08/99	09/20/99	09/20/99
PHOSPHATE BY IC	002	S	99LIC080	09/08/99	09/25/99	09/25/99
CHROMIUM VI	002	S	99LVI064	09/08/99	09/14/99	09/14/99
SULFATE BY IC	002	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRATE NITRITE	002	S	99LN3B46	09/08/99	09/22/99	09/22/99
AMMONIA	002	S	99LAM035	09/08/99	09/15/99	09/15/99
PH	002	S	99LPH099	09/08/99	09/15/99	09/15/99

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

DATE RECEIVED: 09/10/99 RFW LOT # :9909L051

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SULFIDE	002	S	99LSDA45	09/08/99	09/14/99	09/14/99
B0W9V2						
% SOLIDS	003	S	99L%S128	09/08/99	09/14/99	09/15/99
CHLORIDE BY IC	003	S	99LIC080	09/08/99	09/25/99	09/25/99
FLUORIDE BY IC	003	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRITE BY IC	003	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRATE BY IC	003	S	99LIC080	09/08/99	09/25/99	09/25/99
TOTAL CYANIDE	003	S	99LC107A	09/08/99	09/20/99	09/20/99
PHOSPHATE BY IC	003	S	99LIC080	09/08/99	09/25/99	09/25/99
CHROMIUM VI	003	S	99LVI064	09/08/99	09/14/99	09/14/99
SULFATE BY IC	003	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRATE NITRITE	003	S	99LN3B46	09/08/99	09/22/99	09/22/99
AMMONIA	003	S	99LAM035	09/08/99	09/15/99	09/15/99
PH	003	S	99LPH099	09/08/99	09/15/99	09/15/99
SULFIDE	003	S	99LSDA45	09/08/99	09/14/99	09/14/99
B0W9V3						
% SOLIDS	004	S	99L%S128	09/08/99	09/14/99	09/15/99
CHLORIDE BY IC	004	S	99LIC080	09/08/99	09/25/99	09/25/99
FLUORIDE BY IC	004	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRITE BY IC	004	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRATE BY IC	004	S	99LIC080	09/08/99	09/25/99	09/25/99
TOTAL CYANIDE	004	S	99LC107A	09/08/99	09/20/99	09/20/99
PHOSPHATE BY IC	004	S	99LIC080	09/08/99	09/25/99	09/25/99
CHROMIUM VI	004	S	99LVI064	09/08/99	09/14/99	09/14/99
SULFATE BY IC	004	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRATE NITRITE	004	S	99LN3B46	09/08/99	09/22/99	09/22/99
AMMONIA	004	S	99LAM035	09/08/99	09/15/99	09/15/99
PH	004	S	99LPH099	09/08/99	09/15/99	09/15/99
SULFIDE	004	S	99LSDA45	09/08/99	09/14/99	09/14/99
B0W9M0						
% SOLIDS	005	S	99L%S128	09/07/99	09/14/99	09/15/99
CHROMIUM VI	005	S	99LVI064	09/07/99	09/14/99	09/14/99

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

DATE RECEIVED: 09/10/99 RFW LOT # :9909L051

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W9M2						
% SOLIDS	006	S	99L%S128	09/07/99	09/14/99	09/15/99
CHROMIUM VI	006	S	99LVI064	09/07/99	09/14/99	09/14/99
B0W9M3						
% SOLIDS	007	S	99L%S128	09/07/99	09/14/99	09/15/99
CHROMIUM VI	007	S	99LVI064	09/07/99	09/14/99	09/14/99
B0W9M4						
% SOLIDS	008	S	99L%S128	09/07/99	09/14/99	09/15/99
CHROMIUM VI	008	S	99LVI064	09/07/99	09/14/99	09/14/99
B0W9M5						
% SOLIDS	009	S	99L%S128	09/07/99	09/14/99	09/15/99
CHROMIUM VI	009	S	99LVI064	09/07/99	09/14/99	09/14/99
CHROMIUM VI	009 REP	S	99LVI064	09/07/99	09/14/99	09/14/99
CHROMIUM VI	009 MS	S	99LVI064	09/07/99	09/14/99	09/14/99
CHROMIUM VI	009 MSD	S	99LVI064	09/07/99	09/14/99	09/14/99
B0W9R7						
% SOLIDS	010	S	99L%S128	09/08/99	09/14/99	09/15/99
CHLORIDE BY IC	010	S	99LIC080	09/08/99	09/25/99	09/25/99
CHLORIDE BY IC	010 REP	S	99LIC080	09/08/99	09/25/99	09/25/99
CHLORIDE BY IC	010 MS	S	99LIC080	09/08/99	09/25/99	09/25/99
CHLORIDE BY IC	010 MSD	S	99LIC080	09/08/99	09/25/99	09/25/99
FLUORIDE BY IC	010	S	99LIC080	09/08/99	09/25/99	09/25/99
FLUORIDE BY IC	010 REP	S	99LIC080	09/08/99	09/25/99	09/25/99
FLUORIDE BY IC	010 MS	S	99LIC080	09/08/99	09/25/99	09/25/99
FLUORIDE BY IC	010 MSD	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRITE BY IC	010	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRITE BY IC	010 REP	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRITE BY IC	010 MS	S	99LIC080	09/08/99	09/25/99	09/25/99

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

DATE RECEIVED: 09/10/99 RFW LOT # :9909L051

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRITE BY IC	010 MSD	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRATE BY IC	010	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRATE BY IC	010 REP	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRATE BY IC	010 MS	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRATE BY IC	010 MSD	S	99LIC080	09/08/99	09/25/99	09/25/99
TOTAL CYANIDE	010	S	99LC107A	09/08/99	09/20/99	09/20/99
PHOSPHATE BY IC	010	S	99LIC080	09/08/99	09/25/99	09/25/99
PHOSPHATE BY IC	010 REP	S	99LIC080	09/08/99	09/25/99	09/25/99
PHOSPHATE BY IC	010 MS	S	99LIC080	09/08/99	09/25/99	09/25/99
PHOSPHATE BY IC	010 MSD	S	99LIC080	09/08/99	09/25/99	09/25/99
CHROMIUM VI	010	S	99LVI064	09/08/99	09/14/99	09/14/99
SULFATE BY IC	010	S	99LIC080	09/08/99	09/25/99	09/25/99
SULFATE BY IC	010 REP	S	99LIC080	09/08/99	09/25/99	09/25/99
SULFATE BY IC	010 MS	S	99LIC080	09/08/99	09/25/99	09/25/99
SULFATE BY IC	010 MSD	S	99LIC080	09/08/99	09/25/99	09/25/99
NITRATE NITRITE	010	S	99LN3B46	09/08/99	09/22/99	09/22/99
AMMONIA	010	S	99LAM036	09/08/99	09/24/99	09/24/99
AMMONIA	010 REP	S	99LAM045	09/08/99	11/19/99	11/19/99
AMMONIA	010 MS	S	99LAM045	09/08/99	11/19/99	11/19/99
PH	010	S	99LPH099	09/08/99	09/15/99	09/15/99
PH	010 REP	S	99LPH099	09/08/99	09/15/99	09/15/99
SULFIDE	010	S	99LSDA47	09/08/99	09/19/99	09/20/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LIC080	N/A	09/25/99	09/25/99
CHLORIDE BY IC	MB1 BS	S	99LIC080	N/A	09/25/99	09/25/99
FLUORIDE BY IC	MB1	S	99LIC080	N/A	09/25/99	09/25/99
FLUORIDE BY IC	MB1 BS	S	99LIC080	N/A	09/25/99	09/25/99
NITRITE BY IC	MB1	S	99LIC080	N/A	09/25/99	09/25/99
NITRITE BY IC	MB1 BS	S	99LIC080	N/A	09/25/99	09/25/99
NITRATE BY IC	MB1	S	99LIC080	N/A	09/25/99	09/25/99
NITRATE BY IC	MB1 BS	S	99LIC080	N/A	09/25/99	09/25/99
TOTAL CYANIDE	LC1 L	S	99LC107A	N/A	09/20/99	09/20/99
TOTAL CYANIDE	LC2 L	S	99LC107A	N/A	09/20/99	09/20/99
TOTAL CYANIDE	MB1	S	99LC107A	N/A	09/20/99	09/20/99
TOTAL CYANIDE	LC1 L	S	99LC114A	N/A	10/08/99	10/08/99
TOTAL CYANIDE	LC2 L	S	99LC114A	N/A	10/08/99	10/08/99

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

DATE RECEIVED: 09/10/99 RFW LOT # :9909L051

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL CYANIDE	MB1	S	99LC114A	N/A	10/08/99	10/08/99
PHOSPHATE BY IC	MB1	S	99LIC080	N/A	09/25/99	09/25/99
PHOSPHATE BY IC	MB1 BS	S	99LIC080	N/A	09/25/99	09/25/99
CHROMIUM VI	MB1	S	99LVI064	N/A	09/14/99	09/14/99
CHROMIUM VI	MB1 BS	S	99LVI064	N/A	09/14/99	09/14/99
CHROMIUM VI	MB1 BSD	S	99LVI064	N/A	09/14/99	09/14/99
SULFATE BY IC	MB1	S	99LIC080	N/A	09/25/99	09/25/99
SULFATE BY IC	MB1 BS	S	99LIC080	N/A	09/25/99	09/25/99
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
AMMONIA	MB1	S	99LAM035	N/A	09/15/99	09/15/99
AMMONIA	MB1 BS	S	99LAM035	N/A	09/15/99	09/15/99
AMMONIA	MB1 BSD	S	99LAM035	N/A	09/15/99	09/15/99
SULFIDE	MB1	S	99LSDA45	N/A	09/14/99	09/14/99
SULFIDE	MB1 BS	S	99LSDA45	N/A	09/14/99	09/14/99
SULFIDE	MB1 BSD	S	99LSDA45	N/A	09/14/99	09/14/99
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
AMMONIA	MB1	S	99LAM045	N/A	11/19/99	11/19/99
AMMONIA	MB1 BS	S	99LAM045	N/A	11/19/99	11/19/99
AMMONIA	MB1 BSD	S	99LAM045	N/A	11/19/99	11/19/99
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: 9909L051

Custody Transfer Record/Lab Work Request

Page 1 of 1

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RECRA LabNet

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) gcms VOA BNA PCB — Schnell, Perrone, wet lab

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

	VOA	BNA	Pest/PCB	Herb	W/VOA	W/BNA		Metal	CN			
Refrigerator #	1	6						6		6	6	
#/Type Container – Liquid												
#/Type Container – Solid	1g	1g						1g		1g	1g	
Volume – Liquid												
Volume – Solid	250	500						500		250	ltr	
Preservatives												

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

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

RECRA LabNet Use Only

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	O824H	O825H	OPCB		OGCSC	ODRO		Met①		1PH	Inorg①	
001	B0W9V0			S	9/8/99	0739	X	X	X		X	X		X		X	X	
002	B0W9V1			|	|	0755	|	|	|		|	|		|		|	|	
003	B0W9V2			|	|	0806	|	|	|		|	|		|		|	|	
004	B0W9V3			|	|	0820	|	|	|		|	|		|		|	|	
005	B0W9M0			|	9/7/99	0840	|	|	|		|	|		|		|	|	
006	B0W9M2			|	|	0900	|	|	|		|	|		|		|	|	
007	B0W9M3			|	|	0924	|	|	|		|	|		|		|	|	
008	B0W9M4			|	|	0936	|	|	|		|	|		|		|	|	
009	B0W9M5			|	|	0944	|	|	|		|	|		|		|	|	
010	B0W9R7			|	9/8/99	1007	|	|	|		|	|		|		|	|	

(005–009 organic and inorganic columns lined out: 8/9/15/99, 8/9/15/99)

Special Instructions:
Saf # B99-078
9/15/99 5-9 Logged for metals & ICRG only per client coc

COMPOSITE WASTE

DATE/REVISIONS:
1. Met① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg, ICRG
3. Inorg① = IN3N2, ICCL, ICFL, ICNO2, ICNO3,
4. ICPO4, ICSO4, ISFD, INH3N, ICNTO
5. OGCSC = ethanol + ipropanol
6. Run Matrix QC

RECRA LabNet Use Only

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

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 2.4 °C

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	9/10/99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
*423579529182 / 3.8° 423579529171

4407L051

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-115	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, GP-10		SAF No.: B99-078
Ice Chest No.: ERC 96 013	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA/RECRA~~ RECRA Labinet	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 4235795 29182
			COA: B20CW1671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

	Sample No.	Matrix *	Sample Date	Sample Time										
1	B0W9V0	Soil	9/8/99	0739		X	X	X	X	X				B0W9V8
2	B0W9V1	Soil	9/8/99	0755		X	X	X	X	X				
3	B0W9V2	Soil	9/8/99	0806		X	X	X	X	X				
4	B0W9V3	Soil	9/8/99	0820		X	X	X	X	X				
	~~B0W9V4~~	~~Soil~~ RJN 9/8/99												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/8/99 12:20	Received By: Refer 1B	Date/Time: 9/8/99 12:20
Relinquished By: REF 1B	Date/Time: 9999 1300	Received By: SIGNATURE	Date/Time: 9999 1300
Relinquished By: SIGNATURE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 09:45	Received By: [signature]	Date/Time: 9/10/99 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC.

(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

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

3.8° 2.4°

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	B99-078-109	Page 1 of 2 B20 9-7-99

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-1	SAF No.: B99-078	
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511	Method of Shipment: ~~gov vehicle~~ FED EX	
Shipped To: TMA/RECRA B20 9-7-99	Offsite Property No.: A990247	Bill of Lading/Air Bill No.: 423579529171	
		COA: B20CW1 6716	

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										
5 B0W9M0	Soil	9-7-99	0840	X				B0W8D8					
~~B0W9M1~~	~~Soil~~	~~9-7-99~~	~~0852~~	X				B0W8D9					
~~B0W9M2~~	~~Soil~~	~~9-7-99~~	~~0900~~	X				B0W5M1					
~~B0W9M3~~	~~Soil~~	~~9-7-99~~	~~0924~~	X									
~~B0W9M4~~	~~Soil~~	~~9-7-99~~	~~0936~~	X									

B20 9-7-99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-7-99/1600	Received By: REF 1B	Date/Time: 9-7-99/1600
Relinquished By: REF 1B	Date/Time: 9999 1300	Received By: SJGALE	Date/Time: 9999 1300
Relinquished By: SJGALE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By: D. Smith	Date/Time: 9/10/99 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC.

(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}

C.O.C. split because of lt qnty. shipment, this a copy

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	B99-078-109	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: GP-1		SAF No.: B99-078
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ FED EX
Shipped To: TMA/RECRA	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 4235795291 71
			COA: B20CW1 671C

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										
	~~B0W9M0~~	~~Soil~~	~~9-7-99~~	~~0840~~	~~X~~									
	~~B0W9M1~~ DF 9999	~~Soil~~	~~9-7-99~~	~~0852~~	~~X~~									
6	B0W9M2	Soil	9-7-99	0900	X									
7	B0W9M3	Soil	9-7-99	0924	X									
8	B0W9M4	Soil	9-7-99	0936	X									

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	Doug Bowers	9-7-99 1600	Received By	9-7-99 1600
Relinquished By	REF 1B	9999 1300	Received By	9999 1300
Relinquished By	SJ GALE	9999 1300	Received By	FED EX
Relinquished By	Fed Ex	9/10/99 0945	Received By	9/10/99 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) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

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	B99-078-109	Page 2 of 2 RB 9-7-99

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-1		SAF No.: B99-078	
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ FED EX	
Shipped To: TMA/RECRA RB 9-7-99	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 4235795291 71	
			COA: B20CW1 671C	

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										
B0W9M5	Soil	9-7-99	0944	X			17.5-18.5'		BOW5M1				
B0W9M6	Soil												
B0W9M7	Soil												
B0W9M8 RB 9-7-99	Soil												
B0W9M9	Soil												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 9-7-99/1600	Received By: R.F. IB	Date/Time: 9-7-99/1600
Relinquished By: REF IB	Date/Time: 9999 1300	Received By: SJGALE	Date/Time: 9999
Relinquished By: SJGALE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By: D. Smith	Date/Time: 9/10/99/0945

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

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	B99-078-113	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		SAF No.: B99-078
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA RECRA labnet	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 4235795291 71
			COA: B20CW16711C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SAMPLE ANALYSIS													
			Preservation	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None			
			Type of Container	aG	aG	aG	aG	aG	aG	aG			
			No. of Container(s)	1	1	1	1	1	1	1			
			Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
				Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions	Semi-VOA - 8270A (TCL), TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions	See item (3) in Special Instructions			
Sample No.	Matrix *	Sample Date	Sample Time										
10 B0W9R7	Soil	9/8/99	1007		X	X	X	X	X				B0W528
~~B0W9R8~~	~~Soil~~												
~~B0W9R9~~	~~Soil~~	RJN 9/8/99											
~~B0W9T0~~	~~Soil~~												
~~B0W9T1~~	~~Soil~~												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/8/99 12:20	Received By: Refer 1B	Date/Time: 9/8/99 12:20
Relinquished By: REF 1B	Date/Time: 9999 1300	Received By: SJOHNSON/SJA	Date/Time: 9999 1300
Relinquished By: SJOHNSON/SJA	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By: [signature]	Date/Time: 9/10/99 - 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC

(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

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# : 9909L051
SDG/SAF# : H0525/B99-078

W.O.# : 10985-001-001-9999-00
Date Received: 09-10-99

JAN 2000
RECEIVED
Data
Log In

REVISION

METALS CASE NARRATIVE

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

1. This narrative covers the analyses of 10 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 026 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
B0W9V0	Antimony	500	109.0

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

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

for Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-11-99
Date

mld/m09-051r

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9909L051

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 #: 9909L051

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0W9V0	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	3.1	MG/KG	0.28	1.0
		Barium, Total	77.6	MG/KG	0.03	1.0
		Beryllium, Total	0.30	MG/KG	0.009	1.0
		Cadmium, Total	0.06	MG/KG	0.03	1.0
		Chromium, Total	6.7	MG/KG	0.07	1.0
		Copper, Total	11.4	MG/KG	0.10	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.9	MG/KG	0.10	1.0
		Lead, Total	4.1	MG/KG	0.18	1.0
		Antimony, Total	0.21 u	MG/KG	0.21	1.0
		Selenium, Total	0.31 u	MG/KG	0.31	1.0
		Thallium, Total	0.45 u	MG/KG	0.45	1.0
		Vanadium, Total	23.6	MG/KG	0.05	1.0
		Zinc, Total	29.5	MG/KG	0.07	1.0
-002	B0W9V1	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Arsenic, Total	10.6	MG/KG	0.35	1.0
		Barium, Total	127	MG/KG	0.03	1.0
		Beryllium, Total	0.46	MG/KG	0.01	1.0
		Cadmium, Total	0.09	MG/KG	0.03	1.0
		Chromium, Total	12.3	MG/KG	0.08	1.0
		Copper, Total	17.2	MG/KG	0.13	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	12.7	MG/KG	0.13	1.0
		Lead, Total	9.3	MG/KG	0.22	1.0
		Antimony, Total	0.26 u	MG/KG	0.26	1.0
		Selenium, Total	0.39 u	MG/KG	0.39	1.0
		Thallium, Total	0.84	MG/KG	0.56	1.0
		Vanadium, Total	38.0	MG/KG	0.06	1.0
		Zinc, Total	43.2	MG/KG	0.08	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/11/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L051

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0W9V2	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	6.6	MG/KG	0.32	1.0
		Barium, Total	92.7	MG/KG	0.03	1.0
		Beryllium, Total	0.46	MG/KG	0.01	1.0
		Cadmium, Total	0.08	MG/KG	0.03	1.0
		Chromium, Total	10.5	MG/KG	0.08	1.0
		Copper, Total	16.5	MG/KG	0.12	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	11.4	MG/KG	0.12	1.0
		Lead, Total	7.2	MG/KG	0.20	1.0
		Antimony, Total	0.24 u	MG/KG	0.24	1.0
		Selenium, Total	0.55	MG/KG	0.36	1.0
		Thallium, Total	0.52 u	MG/KG	0.52	1.0
		Vanadium, Total	39.2	MG/KG	0.06	1.0
		Zinc, Total	42.4	MG/KG	0.08	1.0
-004	B0W9V3	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	4.0	MG/KG	0.30	1.0
		Barium, Total	43.2	MG/KG	0.03	1.0
		Beryllium, Total	0.40	MG/KG	0.009	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	5.4	MG/KG	0.07	1.0
		Copper, Total	14.7	MG/KG	0.11	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	8.4	MG/KG	0.11	1.0
		Lead, Total	4.0	MG/KG	0.19	1.0
		Antimony, Total	0.23 u	MG/KG	0.23	1.0
		Selenium, Total	0.38	MG/KG	0.34	1.0
		Thallium, Total	0.48 u	MG/KG	0.48	1.0
		Vanadium, Total	40.7	MG/KG	0.05	1.0
		Zinc, Total	35.8	MG/KG	0.07	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/11/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L051

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	B0W9M0	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	2.0	MG/KG	0.33	1.0
		Barium, Total	82.2	MG/KG	0.03	1.0
		Beryllium, Total	0.41	MG/KG	0.01	1.0
		Cadmium, Total	1.7	MG/KG	0.03	1.0
		Chromium, Total	15.9	MG/KG	0.08	1.0
		Copper, Total	30.1	MG/KG	0.12	1.0
		Mercury, Total	0.03	MG/KG	0.02	1.0
		Nickel, Total	9.7	MG/KG	0.12	1.0
		Lead, Total	12.3	MG/KG	0.21	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.50	MG/KG	0.37	1.0
		Thallium, Total	1.0	MG/KG	0.54	1.0
		Vanadium, Total	49.6	MG/KG	0.06	1.0
		Zinc, Total	176	MG/KG	0.08	1.0
-006	B0W9M2	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	2.0	MG/KG	0.27	1.0
		Barium, Total	96.9	MG/KG	0.02	1.0
		Beryllium, Total	0.45	MG/KG	0.008	1.0
		Cadmium, Total	0.31	MG/KG	0.02	1.0
		Chromium, Total	10.0	MG/KG	0.07	1.0
		Copper, Total	12.9	MG/KG	0.1	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	11.6	MG/KG	0.1	1.0
		Lead, Total	5.2	MG/KG	0.17	1.0
		Antimony, Total	0.21 u	MG/KG	0.21	1.0
		Selenium, Total	0.67	MG/KG	0.31	1.0
		Thallium, Total	0.56	MG/KG	0.44	1.0
		Vanadium, Total	58.3	MG/KG	0.05	1.0
		Zinc, Total	94.9	MG/KG	0.07	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/11/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9909L051

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	B0W9M3	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Arsenic, Total	1.5	MG/KG	0.36	1.0
		Barium, Total	76.6	MG/KG	0.03	1.0
		Beryllium, Total	0.42	MG/KG	0.01	1.0
		Cadmium, Total	1.1	MG/KG	0.03	1.0
		Chromium, Total	10.8	MG/KG	0.09	1.0
		Copper, Total	12.6	MG/KG	0.13	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	9.1	MG/KG	0.13	1.0
		Lead, Total	5.2	MG/KG	0.23	1.0
		Antimony, Total	0.27 u	MG/KG	0.27	1.0
		Selenium, Total	0.40 u	MG/KG	0.40	1.0
		Thallium, Total	0.58	MG/KG	0.58	1.0
		Vanadium, Total	56.1	MG/KG	0.07	1.0
		Zinc, Total	146	MG/KG	0.09	1.0
-008	B0W9M4	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	1.8	MG/KG	0.24	1.0
		Barium, Total	54.2	MG/KG	0.02	1.0
		Beryllium, Total	0.38	MG/KG	0.007	1.0
		Cadmium, Total	0.02 u	MG/KG	0.02	1.0
		Chromium, Total	2.8	MG/KG	0.06	1.0
		Copper, Total	13.5	MG/KG	0.09	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	5.6	MG/KG	0.09	1.0
		Lead, Total	2.4	MG/KG	0.15	1.0
		Antimony, Total	0.18 u	MG/KG	0.18	1.0
		Selenium, Total	0.53	MG/KG	0.27	1.0
		Thallium, Total	0.76	MG/KG	0.38	1.0
		Vanadium, Total	46.9	MG/KG	0.04	1.0
		Zinc, Total	38.2	MG/KG	0.06	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/11/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L051

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	B0W9M5	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	1.9	MG/KG	0.27	1.0
		Barium, Total	66.1	MG/KG	0.02	1.0
		Beryllium, Total	0.41	MG/KG	0.008	1.0
		Cadmium, Total	0.02 u	MG/KG	0.02	1.0
		Chromium, Total	4.2	MG/KG	0.07	1.0
		Copper, Total	16.1	MG/KG	0.1	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	7.3	MG/KG	0.1	1.0
		Lead, Total	3.1	MG/KG	0.17	1.0
		Antimony, Total	0.20 u	MG/KG	0.20	1.0
		Selenium, Total	0.55	MG/KG	0.30	1.0
		Thallium, Total	0.65	MG/KG	0.43	1.0
		Vanadium, Total	49.5	MG/KG	0.05	1.0
		Zinc, Total	42.9	MG/KG	0.07	1.0
-010	B0W9R7	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Arsenic, Total	2.2	MG/KG	0.29	1.0
		Barium, Total	85.2	MG/KG	0.03	1.0
		Beryllium, Total	0.50	MG/KG	0.009	1.0
		Cadmium, Total	0.03	MG/KG	0.03	1.0
		Chromium, Total	7.2	MG/KG	0.07	1.0
		Copper, Total	12.5	MG/KG	0.11	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	8.6	MG/KG	0.11	1.0
		Lead, Total	4.7	MG/KG	0.19	1.0
		Antimony, Total	0.22 u	MG/KG	0.22	1.0
		Selenium, Total	0.51	MG/KG	0.33	1.0
		Thallium, Total	0.65	MG/KG	0.47	1.0
		Vanadium, Total	61.6	MG/KG	0.05	1.0
		Zinc, Total	49.0	MG/KG	0.07	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/11/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9909L051

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0654-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	0.04	MG/KG	0.03	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.08 u	MG/KG	0.08	1.0
		Copper, Total	0.12 u	MG/KG	0.12	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Lead, Total	0.21 u	MG/KG	0.21	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Thallium, Total	0.53 u	MG/KG	0.53	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.08 u	MG/KG	0.08	1.0
BLANK1	99C0282-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/11/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L051

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0W9V0	Silver, Total	4.0	0.09u	4.3	93.0	1.0
		Arsenic, Total	165	3.1	172	94.3	1.0
		Barium, Total	268	77.6	172	111.2	1.0
		Beryllium, Total	4.3	0.30	4.3	93.1	1.0
		Cadmium, Total	3.9	0.06	4.3	89.2	1.0
		Chromium, Total	26.2	6.7	17.2	113.4	1.0
		Copper, Total	34.2	11.4	21.4	106.5	1.0
		Mercury, Total	0.19	0.02u	0.17	109.4	1.0
		Nickel, Total	49.6	8.9	42.9	94.9	1.0
		Lead, Total	44.2	4.1	42.9	93.5	1.0
		Antimony, Total	17.8	0.21u	42.9	41.5	1.0
		Selenium, Total	158	0.31u	172	91.8	1.0
		Thallium, Total	156	0.45u	172	91.1	1.0
		Vanadium, Total	71.8	23.6	42.9	112.4	1.0
		Zinc, Total	74.2	29.5	42.9	104.2	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/11/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L051

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0W9V0	Silver, Total	0.09u	0.09u	NC	1.0
		Arsenic, Total	3.1	3.8	20.3	1.0
		Barium, Total	77.6	97.8	23.0	1.0
		Beryllium, Total	0.30	0.34	12.4	1.0
		Cadmium, Total	0.06	0.07	14.8	1.0
		Chromium, Total	6.7	9.9	38.6	1.0
		Copper, Total	11.4	13.0	13.1	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	8.9	10.9	20.2	1.0
		Lead, Total	4.1	5.9	36.0	1.0
		Antimony, Total	0.21u	0.22u	NC	1.0
		Selenium, Total	0.31u	0.33u	NC	1.0
		Thallium, Total	0.45u	0.47u	NC	1.0
		Vanadium, Total	23.6	29.6	22.6	1.0
		Zinc, Total	29.5	34.5	15.6	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/11/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L051

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0654-LC1	Silver, LCS	49.0	50.0	MG/KG	98.0
		Arsenic, LCS	960	1000	MG/KG	96.0
		Barium, LCS	493	500	MG/KG	98.6
		Beryllium, LCS	24.3	25.0	MG/KG	97.2
		Cadmium, LCS	24.3	25.0	MG/KG	97.2
		Chromium, LCS	49.7	50.0	MG/KG	99.4
		Copper, LCS	123	125	MG/KG	98.6
		Nickel, LCS	195	200	MG/KG	97.6
		Lead, LCS	242	250	MG/KG	97.0
		Antimony, LCS	289	300	MG/KG	96.4
		Selenium, LCS	937	1000	MG/KG	93.7
		Thallium, LCS	984	1000	MG/KG	98.4
		Vanadium, LCS	252	250	MG/KG	100.7
		Zinc, LCS	96.0	100	MG/KG	96.0
LCS1	99C0282-LC1	Mercury, LCS	1.0	1.0	MG/KG	105.0

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

DATE RECEIVED: 09/10/99 RFW LOT # :9909L051

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W9V0						
SILVER, TOTAL	001	S	99L0654	09/08/99	09/24/99	09/29/99
SILVER, TOTAL	001 REP	S	99L0654	09/08/99	09/24/99	09/29/99
SILVER, TOTAL	001 MS	S	99L0654	09/08/99	09/24/99	09/29/99
ARSENIC, TOTAL	001	S	99L0654	09/08/99	09/24/99	09/29/99
ARSENIC, TOTAL	001 REP	S	99L0654	09/08/99	09/24/99	09/29/99
ARSENIC, TOTAL	001 MS	S	99L0654	09/08/99	09/24/99	09/29/99
BARIUM, TOTAL	001	S	99L0654	09/08/99	09/24/99	09/29/99
BARIUM, TOTAL	001 REP	S	99L0654	09/08/99	09/24/99	09/29/99
BARIUM, TOTAL	001 MS	S	99L0654	09/08/99	09/24/99	09/29/99
BERYLLIUM, TOTAL	001	S	99L0654	09/08/99	09/24/99	09/29/99
BERYLLIUM, TOTAL	001 REP	S	99L0654	09/08/99	09/24/99	09/29/99
BERYLLIUM, TOTAL	001 MS	S	99L0654	09/08/99	09/24/99	09/29/99
CADMIUM, TOTAL	001	S	99L0654	09/08/99	09/24/99	09/29/99
CADMIUM, TOTAL	001 REP	S	99L0654	09/08/99	09/24/99	09/29/99
CADMIUM, TOTAL	001 MS	S	99L0654	09/08/99	09/24/99	09/29/99
CHROMIUM, TOTAL	001	S	99L0654	09/08/99	09/24/99	09/29/99
CHROMIUM, TOTAL	001 REP	S	99L0654	09/08/99	09/24/99	09/29/99
CHROMIUM, TOTAL	001 MS	S	99L0654	09/08/99	09/24/99	09/29/99
COPPER, TOTAL	001	S	99L0654	09/08/99	09/24/99	09/29/99
COPPER, TOTAL	001 REP	S	99L0654	09/08/99	09/24/99	09/29/99
COPPER, TOTAL	001 MS	S	99L0654	09/08/99	09/24/99	09/29/99
MERCURY, TOTAL	001	S	99C0282	09/08/99	09/30/99	10/01/99
MERCURY, TOTAL	001 REP	S	99C0282	09/08/99	09/30/99	10/01/99
MERCURY, TOTAL	001 MS	S	99C0282	09/08/99	09/30/99	10/01/99
NICKEL, TOTAL	001	S	99L0654	09/08/99	09/24/99	09/29/99
NICKEL, TOTAL	001 REP	S	99L0654	09/08/99	09/24/99	09/29/99
NICKEL, TOTAL	001 MS	S	99L0654	09/08/99	09/24/99	09/29/99
LEAD, TOTAL	001	S	99L0654	09/08/99	09/24/99	09/29/99
LEAD, TOTAL	001 REP	S	99L0654	09/08/99	09/24/99	09/29/99
LEAD, TOTAL	001 MS	S	99L0654	09/08/99	09/24/99	09/29/99
ANTIMONY, TOTAL	001	S	99L0654	09/08/99	09/24/99	09/29/99
ANTIMONY, TOTAL	001 REP	S	99L0654	09/08/99	09/24/99	09/29/99
ANTIMONY, TOTAL	001 MS	S	99L0654	09/08/99	09/24/99	09/29/99
SELENIUM, TOTAL	001	S	99L0654	09/08/99	09/24/99	09/29/99
SELENIUM, TOTAL	001 REP	S	99L0654	09/08/99	09/24/99	09/29/99

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

DATE RECEIVED: 09/10/99 RFW LOT # :9909L051

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001 MS	S	99L0654	09/08/99	09/24/99	09/29/99
THALLIUM, TOTAL	001	S	99L0654	09/08/99	09/24/99	09/29/99
THALLIUM, TOTAL	001 REP	S	99L0654	09/08/99	09/24/99	09/29/99
THALLIUM, TOTAL	001 MS	S	99L0654	09/08/99	09/24/99	09/29/99
VANADIUM, TOTAL	001	S	99L0654	09/08/99	09/24/99	09/29/99
VANADIUM, TOTAL	001 REP	S	99L0654	09/08/99	09/24/99	09/29/99
VANADIUM, TOTAL	001 MS	S	99L0654	09/08/99	09/24/99	09/29/99
ZINC, TOTAL	001	S	99L0654	09/08/99	09/24/99	09/29/99
ZINC, TOTAL	001 REP	S	99L0654	09/08/99	09/24/99	09/29/99
ZINC, TOTAL	001 MS	S	99L0654	09/08/99	09/24/99	09/29/99
B0W9V1						
SILVER, TOTAL	002	S	99L0654	09/08/99	09/24/99	09/29/99
ARSENIC, TOTAL	002	S	99L0654	09/08/99	09/24/99	09/29/99
BARIUM, TOTAL	002	S	99L0654	09/08/99	09/24/99	09/29/99
BERYLLIUM, TOTAL	002	S	99L0654	09/08/99	09/24/99	09/29/99
CADMIUM, TOTAL	002	S	99L0654	09/08/99	09/24/99	09/29/99
CHROMIUM, TOTAL	002	S	99L0654	09/08/99	09/24/99	09/29/99
COPPER, TOTAL	002	S	99L0654	09/08/99	09/24/99	09/29/99
MERCURY, TOTAL	002	S	99C0282	09/08/99	09/30/99	10/01/99
NICKEL, TOTAL	002	S	99L0654	09/08/99	09/24/99	09/29/99
LEAD, TOTAL	002	S	99L0654	09/08/99	09/24/99	09/29/99
ANTIMONY, TOTAL	002	S	99L0654	09/08/99	09/24/99	09/29/99
SELENIUM, TOTAL	002	S	99L0654	09/08/99	09/24/99	09/29/99
THALLIUM, TOTAL	002	S	99L0654	09/08/99	09/24/99	09/29/99
VANADIUM, TOTAL	002	S	99L0654	09/08/99	09/24/99	09/29/99
ZINC, TOTAL	002	S	99L0654	09/08/99	09/24/99	09/29/99
B0W9V2						
SILVER, TOTAL	003	S	99L0654	09/08/99	09/24/99	09/29/99
ARSENIC, TOTAL	003	S	99L0654	09/08/99	09/24/99	09/29/99
BARIUM, TOTAL	003	S	99L0654	09/08/99	09/24/99	09/29/99
BERYLLIUM, TOTAL	003	S	99L0654	09/08/99	09/24/99	09/29/99
CADMIUM, TOTAL	003	S	99L0654	09/08/99	09/24/99	09/29/99
CHROMIUM, TOTAL	003	S	99L0654	09/08/99	09/24/99	09/29/99
COPPER, TOTAL	003	S	99L0654	09/08/99	09/24/99	09/29/99

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

DATE RECEIVED: 09/10/99 RFW LOT # :9909L051

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	003	S	99C0282	09/08/99	09/30/99	10/01/99
NICKEL, TOTAL	003	S	99L0654	09/08/99	09/24/99	09/29/99
LEAD, TOTAL	003	S	99L0654	09/08/99	09/24/99	09/29/99
ANTIMONY, TOTAL	003	S	99L0654	09/08/99	09/24/99	09/29/99
SELENIUM, TOTAL	003	S	99L0654	09/08/99	09/24/99	09/29/99
THALLIUM, TOTAL	003	S	99L0654	09/08/99	09/24/99	09/29/99
VANADIUM, TOTAL	003	S	99L0654	09/08/99	09/24/99	09/29/99
ZINC, TOTAL	003	S	99L0654	09/08/99	09/24/99	09/29/99
B0W9V3						
SILVER, TOTAL	004	S	99L0654	09/08/99	09/24/99	09/29/99
ARSENIC, TOTAL	004	S	99L0654	09/08/99	09/24/99	09/29/99
BARIUM, TOTAL	004	S	99L0654	09/08/99	09/24/99	09/29/99
BERYLLIUM, TOTAL	004	S	99L0654	09/08/99	09/24/99	09/29/99
CADMIUM, TOTAL	004	S	99L0654	09/08/99	09/24/99	09/29/99
CHROMIUM, TOTAL	004	S	99L0654	09/08/99	09/24/99	09/29/99
COPPER, TOTAL	004	S	99L0654	09/08/99	09/24/99	09/29/99
MERCURY, TOTAL	004	S	99C0282	09/08/99	09/30/99	10/01/99
NICKEL, TOTAL	004	S	99L0654	09/08/99	09/24/99	09/29/99
LEAD, TOTAL	004	S	99L0654	09/08/99	09/24/99	09/29/99
ANTIMONY, TOTAL	004	S	99L0654	09/08/99	09/24/99	09/29/99
SELENIUM, TOTAL	004	S	99L0654	09/08/99	09/24/99	09/29/99
THALLIUM, TOTAL	004	S	99L0654	09/08/99	09/24/99	09/29/99
VANADIUM, TOTAL	004	S	99L0654	09/08/99	09/24/99	09/29/99
ZINC, TOTAL	004	S	99L0654	09/08/99	09/24/99	09/29/99
B0W9M0						
SILVER, TOTAL	005	S	99L0654	09/07/99	09/24/99	09/29/99
ARSENIC, TOTAL	005	S	99L0654	09/07/99	09/24/99	09/29/99
BARIUM, TOTAL	005	S	99L0654	09/07/99	09/24/99	09/29/99
BERYLLIUM, TOTAL	005	S	99L0654	09/07/99	09/24/99	09/29/99
CADMIUM, TOTAL	005	S	99L0654	09/07/99	09/24/99	09/29/99
CHROMIUM, TOTAL	005	S	99L0654	09/07/99	09/24/99	09/29/99
COPPER, TOTAL	005	S	99L0654	09/07/99	09/24/99	09/29/99
MERCURY, TOTAL	005	S	99C0282	09/07/99	09/30/99	10/01/99
NICKEL, TOTAL	005	S	99L0654	09/07/99	09/24/99	09/29/99

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

DATE RECEIVED: 09/10/99 RFW LOT # :9909L051

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TOTAL	005	S	99L0654	09/07/99	09/24/99	09/29/99
ANTIMONY, TOTAL	005	S	99L0654	09/07/99	09/24/99	09/29/99
SELENIUM, TOTAL	005	S	99L0654	09/07/99	09/24/99	09/29/99
THALLIUM, TOTAL	005	S	99L0654	09/07/99	09/24/99	09/29/99
VANADIUM, TOTAL	005	S	99L0654	09/07/99	09/24/99	09/29/99
ZINC, TOTAL	005	S	99L0654	09/07/99	09/24/99	09/29/99
B0W9M2						
SILVER, TOTAL	006	S	99L0654	09/07/99	09/24/99	09/29/99
ARSENIC, TOTAL	006	S	99L0654	09/07/99	09/24/99	09/29/99
BARIUM, TOTAL	006	S	99L0654	09/07/99	09/24/99	09/29/99
BERYLLIUM, TOTAL	006	S	99L0654	09/07/99	09/24/99	09/29/99
CADMIUM, TOTAL	006	S	99L0654	09/07/99	09/24/99	09/29/99
CHROMIUM, TOTAL	006	S	99L0654	09/07/99	09/24/99	09/29/99
COPPER, TOTAL	006	S	99L0654	09/07/99	09/24/99	09/29/99
MERCURY, TOTAL	006	S	99C0282	09/07/99	09/30/99	10/01/99
NICKEL, TOTAL	006	S	99L0654	09/07/99	09/24/99	09/29/99
LEAD, TOTAL	006	S	99L0654	09/07/99	09/24/99	09/29/99
ANTIMONY, TOTAL	006	S	99L0654	09/07/99	09/24/99	09/29/99
SELENIUM, TOTAL	006	S	99L0654	09/07/99	09/24/99	09/29/99
THALLIUM, TOTAL	006	S	99L0654	09/07/99	09/24/99	09/29/99
VANADIUM, TOTAL	006	S	99L0654	09/07/99	09/24/99	09/29/99
ZINC, TOTAL	006	S	99L0654	09/07/99	09/24/99	09/29/99
B0W9M3						
SILVER, TOTAL	007	S	99L0654	09/07/99	09/24/99	09/29/99
ARSENIC, TOTAL	007	S	99L0654	09/07/99	09/24/99	09/29/99
BARIUM, TOTAL	007	S	99L0654	09/07/99	09/24/99	09/29/99
BERYLLIUM, TOTAL	007	S	99L0654	09/07/99	09/24/99	09/29/99
CADMIUM, TOTAL	007	S	99L0654	09/07/99	09/24/99	09/29/99
CHROMIUM, TOTAL	007	S	99L0654	09/07/99	09/24/99	09/29/99
COPPER, TOTAL	007	S	99L0654	09/07/99	09/24/99	09/29/99
MERCURY, TOTAL	007	S	99C0282	09/07/99	09/30/99	10/01/99
NICKEL, TOTAL	007	S	99L0654	09/07/99	09/24/99	09/29/99
LEAD, TOTAL	007	S	99L0654	09/07/99	09/24/99	09/29/99
ANTIMONY, TOTAL	007	S	99L0654	09/07/99	09/24/99	09/29/99

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

DATE RECEIVED: 09/10/99 RFW LOT # :9909L051

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	007	S	99L0654	09/07/99	09/24/99	09/29/99
THALLIUM, TOTAL	007	S	99L0654	09/07/99	09/24/99	09/29/99
VANADIUM, TOTAL	007	S	99L0654	09/07/99	09/24/99	09/29/99
ZINC, TOTAL	007	S	99L0654	09/07/99	09/24/99	09/29/99
B0W9M4						
SILVER, TOTAL	008	S	99L0654	09/07/99	09/24/99	09/29/99
ARSENIC, TOTAL	008	S	99L0654	09/07/99	09/24/99	09/29/99
BARIUM, TOTAL	008	S	99L0654	09/07/99	09/24/99	09/29/99
BERYLLIUM, TOTAL	008	S	99L0654	09/07/99	09/24/99	09/29/99
CADMIUM, TOTAL	008	S	99L0654	09/07/99	09/24/99	09/29/99
CHROMIUM, TOTAL	008	S	99L0654	09/07/99	09/24/99	09/29/99
COPPER, TOTAL	008	S	99L0654	09/07/99	09/24/99	09/29/99
MERCURY, TOTAL	008	S	99C0282	09/07/99	09/30/99	10/01/99
NICKEL, TOTAL	008	S	99L0654	09/07/99	09/24/99	09/29/99
LEAD, TOTAL	008	S	99L0654	09/07/99	09/24/99	09/29/99
ANTIMONY, TOTAL	008	S	99L0654	09/07/99	09/24/99	09/29/99
SELENIUM, TOTAL	008	S	99L0654	09/07/99	09/24/99	09/29/99
THALLIUM, TOTAL	008	S	99L0654	09/07/99	09/24/99	09/29/99
VANADIUM, TOTAL	008	S	99L0654	09/07/99	09/24/99	09/29/99
ZINC, TOTAL	008	S	99L0654	09/07/99	09/24/99	09/29/99
B0W9M5						
SILVER, TOTAL	009	S	99L0654	09/07/99	09/24/99	09/29/99
ARSENIC, TOTAL	009	S	99L0654	09/07/99	09/24/99	09/29/99
BARIUM, TOTAL	009	S	99L0654	09/07/99	09/24/99	09/29/99
BERYLLIUM, TOTAL	009	S	99L0654	09/07/99	09/24/99	09/29/99
CADMIUM, TOTAL	009	S	99L0654	09/07/99	09/24/99	09/29/99
CHROMIUM, TOTAL	009	S	99L0654	09/07/99	09/24/99	09/29/99
COPPER, TOTAL	009	S	99L0654	09/07/99	09/24/99	09/29/99
MERCURY, TOTAL	009	S	99C0282	09/07/99	09/30/99	10/01/99
NICKEL, TOTAL	009	S	99L0654	09/07/99	09/24/99	09/29/99
LEAD, TOTAL	009	S	99L0654	09/07/99	09/24/99	09/29/99
ANTIMONY, TOTAL	009	S	99L0654	09/07/99	09/24/99	09/29/99
SELENIUM, TOTAL	009	S	99L0654	09/07/99	09/24/99	09/29/99
THALLIUM, TOTAL	009	S	99L0654	09/07/99	09/24/99	09/29/99

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

DATE RECEIVED: 09/10/99 RFW LOT # :9909L051

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
VANADIUM, TOTAL	009	S	99L0654	09/07/99	09/24/99	09/29/99
ZINC, TOTAL	009	S	99L0654	09/07/99	09/24/99	09/29/99
B0W9R7						
SILVER, TOTAL	010	S	99L0654	09/08/99	09/24/99	09/29/99
ARSENIC, TOTAL	010	S	99L0654	09/08/99	09/24/99	09/29/99
BARIUM, TOTAL	010	S	99L0654	09/08/99	09/24/99	09/29/99
BERYLLIUM, TOTAL	010	S	99L0654	09/08/99	09/24/99	09/29/99
CADMIUM, TOTAL	010	S	99L0654	09/08/99	09/24/99	09/29/99
CHROMIUM, TOTAL	010	S	99L0654	09/08/99	09/24/99	09/29/99
COPPER, TOTAL	010	S	99L0654	09/08/99	09/24/99	09/29/99
MERCURY, TOTAL	010	S	99C0282	09/08/99	09/30/99	10/01/99
NICKEL, TOTAL	010	S	99L0654	09/08/99	09/24/99	09/29/99
LEAD, TOTAL	010	S	99L0654	09/08/99	09/24/99	09/29/99
ANTIMONY, TOTAL	010	S	99L0654	09/08/99	09/24/99	09/29/99
SELENIUM, TOTAL	010	S	99L0654	09/08/99	09/24/99	09/29/99
THALLIUM, TOTAL	010	S	99L0654	09/08/99	09/24/99	09/29/99
VANADIUM, TOTAL	010	S	99L0654	09/08/99	09/24/99	09/29/99
ZINC, TOTAL	010	S	99L0654	09/08/99	09/24/99	09/29/99

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0654	N/A	09/24/99	09/29/99
SILVER, TOTAL	MB1	S	99L0654	N/A	09/24/99	09/29/99
ARSENIC LABORATORY	LC1 BS	S	99L0654	N/A	09/24/99	09/29/99
ARSENIC, TOTAL	MB1	S	99L0654	N/A	09/24/99	09/29/99
BARIUM LABORATORY	LC1 BS	S	99L0654	N/A	09/24/99	09/29/99
BARIUM, TOTAL	MB1	S	99L0654	N/A	09/24/99	09/29/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0654	N/A	09/24/99	09/29/99
BERYLLIUM, TOTAL	MB1	S	99L0654	N/A	09/24/99	09/29/99
CADMIUM LABORATORY	LC1 BS	S	99L0654	N/A	09/24/99	09/29/99
CADMIUM, TOTAL	MB1	S	99L0654	N/A	09/24/99	09/29/99
CHROMIUM LABORATORY	LC1 BS	S	99L0654	N/A	09/24/99	09/29/99
CHROMIUM, TOTAL	MB1	S	99L0654	N/A	09/24/99	09/29/99
COPPER LABORATORY	LC1 BS	S	99L0654	N/A	09/24/99	09/29/99
COPPER, TOTAL	MB1	S	99L0654	N/A	09/24/99	09/29/99
MERCURY LABORATORY	LC1 BS	S	99C0282	N/A	09/30/99	10/01/99

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

DATE RECEIVED: 09/10/99 RFW LOT # :9909L051

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	MB1	S	99C0282	N/A	09/30/99	10/01/99
NICKEL LABORATORY	LC1 BS	S	99L0654	N/A	09/24/99	09/29/99
NICKEL, TOTAL	MB1	S	99L0654	N/A	09/24/99	09/29/99
LEAD LABORATORY	LC1 BS	S	99L0654	N/A	09/24/99	09/29/99
LEAD, TOTAL	MB1	S	99L0654	N/A	09/24/99	09/29/99
ANTIMONY LABORATORY	LC1 BS	S	99L0654	N/A	09/24/99	09/29/99
ANTIMONY, TOTAL	MB1	S	99L0654	N/A	09/24/99	09/29/99
SELENIUM LABORATORY	LC1 BS	S	99L0654	N/A	09/24/99	09/29/99
SELENIUM, TOTAL	MB1	S	99L0654	N/A	09/24/99	09/29/99
THALLIUM LABORATORY	LC1 BS	S	99L0654	N/A	09/24/99	09/29/99
THALLIUM, TOTAL	MB1	S	99L0654	N/A	09/24/99	09/29/99
VANADIUM LABORATORY	LC1 BS	S	99L0654	N/A	09/24/99	09/29/99
VANADIUM, TOTAL	MB1	S	99L0654	N/A	09/24/99	09/29/99
ZINC LABORATORY	LC1 BS	S	99L0654	N/A	09/24/99	09/29/99
ZINC, TOTAL	MB1	S	99L0654	N/A	09/24/99	09/29/99

RECRA LabNet Use Only

9909L051

Custody Transfer Record/Lab Work Request

Page 1 of 1

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) ~~gems VOA~~ ~~BNA~~ ~~PCB~~ ~~Schnell~~ ~~perrone~~ ~~wet lab~~ metals

RECRA LabNet

Client: TNU-Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: spec Del: std TAT: 30 day

Date Rec'd: 9.10.99 Date Due: 10/10/99

Account #:

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

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H	0625H	OPCB		OGCSC	ODRO		Met①		IPH	Inorg①	
001	BOW9V0			S	9/8/99	0739	X	X	X		X	X		X		X	X	
002	BOW9V1					0755												
003	BOW9V2					0806												
004	BOW9V3					0820												
005	BOW9M0				9/7/99	0840												
006	BOW9M2					0900												
007	BOW9M3					0924												
008	BOW9M4					0936												
009	BOW9M5					0944							9/15/99					9/15/99
010	BOW9R7				9/8/99	1007												

Special Instructions:

Saf# B99-078

9/15/99 5-9 Logged for metals + ICR6 only per Client coc

COMPOSITE WASTE

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

DATE/REVISIONS:

Met ① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg, ICR6
Inorg ① 3. 1N3N2, 1CCL, 1CFL, 1CNO2, 1CNO3,
4. 1CPO4, 1CSO4, 1SFD, 1NH3N, 1CNTO
OGCSC 5. ethanol + ypropanol
6. Run Matrix QC

RECRA LabNet Use Only

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

COC Tape was: 1) Present on Outer Package Y or N
2) Unbroken on Outer Package Y or N
3) Present on Sample Y or N
4) Unbroken on Sample Y or N
COC Record Present Upon Sample Rec't Y or N
Cooler Temp. 2.4 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: *423579529182 / 3.8" 423579529171

Relinquished by	Received by		
Fed Ex	[signature]	9/10/99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-115	Page 1 of 2

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 CW1, GP-10		SAF No.: B99-078
Ice Chest No.: ERC 96 013	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA/RECRA~~ RECRA labnet	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 4235795291 82
			COA: B20CW1671C

Price Code: 8N

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

	Sample No.	Matrix *	Sample Date	Sample Time										
1	B0W9V0	Soil	9/8/99	0739		X	X	X	X	X				B0W928
2	B0W9V1	Soil	9/8/99	0755		X	X	X	X	X				
3	B0W9V2	Soil	9/8/99	0806		X	X	X	X	X				
4	B0W9V3	Soil	9/8/99	0820		X	X	X	X	X				
	~~B0W9V4~~	~~Soil~~ RJN 9/8/99												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/8/99 12:20	Received By: Refer 1B	Date/Time: 9/8/99 12:20
Relinquished By: REF 1B	Date/Time: 9999 1300	Received By: SJONALC Mtr	Date/Time: 9999 1300
Relinquished By: SJONALC Mtr	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 09:45	Received By: D Johnson	Date/Time: 9/10/99 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC.

(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

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

3.8° 2.4°

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	B99-078-109	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: GP-1		SAF No.: B99-078
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ FED EX
Shipped To: TMA/RECRA	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 4235795291 71
			COA: B20CW1 6716

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										
B0W9M0	Soil	9-7-99	0840	X				B0W808					
~~B0W9M1~~	~~Soil~~	~~9-7-99~~	~~0852~~	X				B0W809					
~~B0W9M2~~	~~Soil~~	~~9-7-99~~	~~0900~~	X				B0W5M1					
~~B0W9M3~~	~~Soil~~	~~9-7-99~~	~~0924~~	X									
~~B0W9M4~~	~~Soil~~	~~9-7-99~~	~~0936~~	X									

5

RTB 9-9-99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-7-99/1600	Received By: R.A.B	Date/Time: 9-7-99/1600
Relinquished By: REF 1B	Date/Time: 9999 1300	Received By: SJOHLE	Date/Time: 9999 1300
Relinquished By: SJOHLE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By: D. Johnson	Date/Time: 9/10/99 0945

SPECIAL INSTRUCTIONS
See chain of custody comments on SAF B99-078.
COLLECTOR UNAVAILABLE TO SIGN COC.
(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)
C.O.C. SAME because of lt qty. shipment, this a copy

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

003

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-109	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: GP-1		SAF No.: B99-078
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ FED EX
Shipped To: TMA/RECRA	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 4235 7952 9171
			COA: B20CW1 671C

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										
	~~B0W9M0~~	~~Soil~~	~~9-7-99~~	~~0890~~	~~X~~									
	~~B0W9M1~~ DF 9999	~~Soil~~	~~9-7-99~~	~~0852~~	~~X~~									
6	B0W9M2	Soil	9-7-99	0900	X									
7	B0W9M3	Soil	9-7-99	0924	X									
8	B0W9M4	Soil	9-7-99	0936	X									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-7-99/1600	Received By: R.P.B	Date/Time: 9-7-99/1600
Relinquished By: REF/B	Date/Time: 9999 1300	Received By: SJGALE	Date/Time: 9999 1300
Relinquished By: SJGALE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By:	Date/Time: 9/10/99 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) Gamma Spec - Complete {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

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

084

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-109	Page 2 of 2 RAB 9-7-99

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-1		SAF No.: B99-078	
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ FED EX	
Shipped To: TMA/RECRA RAB 9-7-99	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 42357952 9171	
			COA: B20CW1 671C	

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										
B0W9M5	Soil	9-7-99	0944	X			17.5-18.5'		B0W5M1				
B0W9M6	Soil												
B0W9M7	Soil												
B0W9M8 RAB 9-7-99	Soil												
B0W9M9	Soil												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-7-99/1600	Received By: R.F. IB	Date/Time: 9-7-99/1600
Relinquished By: IBEK IB	Date/Time: 9999 1300	Received By: SJGALE	Date/Time: 9999
Relinquished By: SJGALE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By: D. Smith	Date/Time: 9/10/99/0945

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

COLLECTOR UNAVAILABLE TO SIGN COL.

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	B99-078-113	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		SAF No.: B99-078
Ice Chest No.: GWS 124	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA RECRA labnet	Offsite Property No.: A990247		Bill of Lading/Air Bill No.: 4235795291 7/
			COA: B20CW1671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

	Sample No.	Matrix *	Sample Date	Sample Time										
10	B0W9R7	Soil	9/8/99	1007		X	X	X	X	X				B0W528
	~~B0W9R8~~	~~Soil~~												
	~~B0W9R9~~	~~Soil~~	RJN 9/8/99											
	~~B0W9T0~~	~~Soil~~												
	~~B0W9T1~~	~~Soil~~												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/8/99 12:20	Received By: Refer 1B	Date/Time: 9/8/99 12:20
Relinquished By: REF 1B	Date/Time: 9999 1300	Received By: SJONKE	Date/Time: 9999 1300
Relinquished By: SJONKE	Date/Time: 9999 1300	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 9/10/99 0945	Received By: [signature]	Date/Time: 9/10/99 - 0945

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

COLLECTOR UNAVAILABLE TO SIGN COC

(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

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

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

020

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9909L166
SDG/SAF# : H0541/B99-078

W.O.# : 10985-001-001-9999-00
Date Received: 09-23-99

JAN 2000
RECEIVED
Data
Log In

REVISION

METALS CASE NARRATIVE

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

1. This narrative covers the analyses of 1 soil sample.

2. The sample was 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 014 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
B0WBT3	Antimony	100	101.4

12. The duplicate analyses for 3 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.

for Pat Ec

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-11-99
Date

mld/m09-166r

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9909L166

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

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

Metals Analysis Methods

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

Other:_____ Method:_____

L-WI-033/M-03/98

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L166

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WBT3	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	1.4	MG/KG	0.35	1.0
		Barium, Total	71.7	MG/KG	0.03	1.0
		Beryllium, Total	0.14	MG/KG	0.01	1.0
		Cadmium, Total	0.08	MG/KG	0.03	1.0
		Chromium, Total	8.1	MG/KG	0.08	1.0
		Copper, Total	9.6	MG/KG	0.13	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Nickel, Total	7.8	MG/KG	0.13	1.0
		Lead, Total	3.1	MG/KG	0.22	1.0
		Antimony, Total	0.26 u	MG/KG	0.26	1.0
		Selenium, Total	0.39 u	MG/KG	0.39	1.0
		Thallium, Total	0.56 u	MG/KG	0.56	1.0
		Vanadium, Total	35.2	MG/KG	0.06	1.0
		Zinc, Total	25.1	MG/KG	0.08	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/09/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9909L166

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0674-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Barium, Total	0.05	MG/KG	0.03	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.10	MG/KG	0.08	1.0
		Copper, Total	0.12 u	MG/KG	0.12	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Lead, Total	0.21 u	MG/KG	0.21	1.0
		Antimony, Total	0.25 u	MG/KG	0.25	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
		Thallium, Total	0.53 u	MG/KG	0.53	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.08 u	MG/KG	0.08	1.0
BLANK1	99C0290-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L166

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WBT3	Silver, Total	4.6	0.10u	5.0	92.0	1.0
		Arsenic, Total	187	1.4	200	93.0	1.0
		Barium, Total	245	71.7	200	86.8	1.0
		Beryllium, Total	4.8	0.14	5.0	93.3	1.0
		Cadmium, Total	4.7	0.08	5.0	92.4	1.0
		Chromium, Total	26.8	8.1	20.0	93.5	1.0
		Copper, Total	31.0	9.6	25.0	85.6	1.0
		Mercury, Total	0.16	0.01u	0.15	106.7	1.0
		Nickel, Total	53.3	7.8	49.9	91.2	1.0
		Lead, Total	49.8	3.1	49.9	93.6	1.0
		Antimony, Total	28.3	0.26u	49.9	56.7	1.0
		Selenium, Total	181	0.39u	200	90.6	1.0
		Thallium, Total	190	0.56u	200	95.3	1.0
		Vanadium, Total	79.3	35.2	49.9	88.4	1.0
		Zinc, Total	67.8	25.1	49.9	85.6	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9909L166

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WBT3	Silver, Total	0.10u	0.09u	NC	1.0
		Arsenic, Total	1.4	1.2	15.4	1.0
		Barium, Total	71.7	77.7	8.0	1.0
		Beryllium, Total	0.14	0.14	0.66	1.0
		Cadmium, Total	0.08	0.04	65.9	1.0
		Chromium, Total	8.1	7.9	2.5	1.0
		Copper, Total	9.6	9.6	0.00	1.0
		Mercury, Total	0.01u	0.02u	NC	1.0
		Nickel, Total	7.8	7.7	1.3	1.0
		Lead, Total	3.1	3.9	22.9	1.0
		Antimony, Total	0.26u	0.22u	NC	1.0
		Selenium, Total	0.39u	0.32u	NC	1.0
		Thallium, Total	0.56u	0.46u	NC	1.0
		Vanadium, Total	35.2	41.0	15.2	1.0
		Zinc, Total	25.1	32.0	24.2	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/09/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9909L166

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0674-LC1	Silver, LCS	48.8	50.0	MG/KG	97.6
		Arsenic, LCS	952	1000	MG/KG	95.2
		Barium, LCS	500	500	MG/KG	100.0
		Beryllium, LCS	24.3	25.0	MG/KG	97.2
		Cadmium, LCS	24.2	25.0	MG/KG	96.8
		Chromium, LCS	50.8	50.0	MG/KG	101.6
		Copper, LCS	126	125	MG/KG	100.7
		Nickel, LCS	195	200	MG/KG	97.4
		Lead, LCS	242	250	MG/KG	96.8
		Antimony, LCS	292	300	MG/KG	97.2
		Selenium, LCS	921	1000	MG/KG	92.1
		Thallium, LCS	974	1000	MG/KG	97.4
		Vanadium, LCS	259	250	MG/KG	103.4
		Zinc, LCS	95.2	100	MG/KG	95.2
LCS1	99C0290-LC1	Mercury, LCS	1.0	1.0	MG/KG	102.5

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

DATE RECEIVED: 09/23/99 RFW LOT # :9909L166

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBT3						
SILVER, TOTAL	001	S	99L0674	09/21/99	10/04/99	10/15/99
SILVER, TOTAL	001 REP	S	99L0674	09/21/99	10/04/99	10/15/99
SILVER, TOTAL	001 MS	S	99L0674	09/21/99	10/04/99	10/15/99
ARSENIC, TOTAL	001	S	99L0674	09/21/99	10/04/99	10/15/99
ARSENIC, TOTAL	001 REP	S	99L0674	09/21/99	10/04/99	10/15/99
ARSENIC, TOTAL	001 MS	S	99L0674	09/21/99	10/04/99	10/15/99
BARIUM, TOTAL	001	S	99L0674	09/21/99	10/04/99	10/15/99
BARIUM, TOTAL	001 REP	S	99L0674	09/21/99	10/04/99	10/15/99
BARIUM, TOTAL	001 MS	S	99L0674	09/21/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	001	S	99L0674	09/21/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	001 REP	S	99L0674	09/21/99	10/04/99	10/15/99
BERYLLIUM, TOTAL	001 MS	S	99L0674	09/21/99	10/04/99	10/15/99
CADMIUM, TOTAL	001	S	99L0674	09/21/99	10/04/99	10/15/99
CADMIUM, TOTAL	001 REP	S	99L0674	09/21/99	10/04/99	10/15/99
CADMIUM, TOTAL	001 MS	S	99L0674	09/21/99	10/04/99	10/15/99
CHROMIUM, TOTAL	001	S	99L0674	09/21/99	10/04/99	10/15/99
CHROMIUM, TOTAL	001 REP	S	99L0674	09/21/99	10/04/99	10/15/99
CHROMIUM, TOTAL	001 MS	S	99L0674	09/21/99	10/04/99	10/15/99
COPPER, TOTAL	001	S	99L0674	09/21/99	10/04/99	10/15/99
COPPER, TOTAL	001 REP	S	99L0674	09/21/99	10/04/99	10/15/99
COPPER, TOTAL	001 MS	S	99L0674	09/21/99	10/04/99	10/15/99
MERCURY, TOTAL	001	S	99C0290	09/21/99	10/06/99	10/07/99
MERCURY, TOTAL	001 REP	S	99C0290	09/21/99	10/06/99	10/07/99
MERCURY, TOTAL	001 MS	S	99C0290	09/21/99	10/06/99	10/07/99
NICKEL, TOTAL	001	S	99L0674	09/21/99	10/04/99	10/15/99
NICKEL, TOTAL	001 REP	S	99L0674	09/21/99	10/04/99	10/15/99
NICKEL, TOTAL	001 MS	S	99L0674	09/21/99	10/04/99	10/15/99
LEAD, TOTAL	001	S	99L0674	09/21/99	10/04/99	10/15/99
LEAD, TOTAL	001 REP	S	99L0674	09/21/99	10/04/99	10/15/99
LEAD, TOTAL	001 MS	S	99L0674	09/21/99	10/04/99	10/15/99
ANTIMONY, TOTAL	001	S	99L0674	09/21/99	10/04/99	10/15/99
ANTIMONY, TOTAL	001 REP	S	99L0674	09/21/99	10/04/99	10/15/99
ANTIMONY, TOTAL	001 MS	S	99L0674	09/21/99	10/04/99	10/15/99
SELENIUM, TOTAL	001	S	99L0674	09/21/99	10/04/99	10/15/99
SELENIUM, TOTAL	001 REP	S	99L0674	09/21/99	10/04/99	10/15/99

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

DATE RECEIVED: 09/23/99 RFW LOT # :9909L166

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001 MS	S	99L0674	09/21/99	10/04/99	10/15/99
THALLIUM, TOTAL	001	S	99L0674	09/21/99	10/04/99	10/15/99
THALLIUM, TOTAL	001 REP	S	99L0674	09/21/99	10/04/99	10/15/99
THALLIUM, TOTAL	001 MS	S	99L0674	09/21/99	10/04/99	10/15/99
VANADIUM, TOTAL	001	S	99L0674	09/21/99	10/04/99	10/15/99
VANADIUM, TOTAL	001 REP	S	99L0674	09/21/99	10/04/99	10/15/99
VANADIUM, TOTAL	001 MS	S	99L0674	09/21/99	10/04/99	10/15/99
ZINC, TOTAL	001	S	99L0674	09/21/99	10/04/99	10/15/99
ZINC, TOTAL	001 REP	S	99L0674	09/21/99	10/04/99	10/15/99
ZINC, TOTAL	001 MS	S	99L0674	09/21/99	10/04/99	10/15/99

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
SILVER, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
ARSENIC LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
ARSENIC, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
BARIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
BARIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
BERYLLIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
CADMIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
CADMIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
CHROMIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
CHROMIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
COPPER LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
COPPER, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
MERCURY LABORATORY	LC1 BS	S	99C0290	N/A	10/06/99	10/07/99
MERCURY, TOTAL	MB1	S	99C0290	N/A	10/06/99	10/07/99
NICKEL LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
NICKEL, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
LEAD LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
LEAD, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
ANTIMONY LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
ANTIMONY, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
SELENIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
SELENIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
THALLIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99

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

DATE RECEIVED: 09/23/99 RFW LOT # :9909L166

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
THALLIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
VANADIUM LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
VANADIUM, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99
ZINC LABORATORY	LC1 BS	S	99L0674	N/A	10/04/99	10/15/99
ZINC, TOTAL	MB1	S	99L0674	N/A	10/04/99	10/15/99

RECRA LabNet Use Only

9909L1606

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS (8) metals

Client: TRU Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: OJ

QC: Spec Del: Std TAT: 30 day

Date Rec'd: 9-23-99 Date Due: 10/23/99

Account #:

Refrigerator #		1	6													
#/Type Container	Liquid															
	Solid	1 AG	1 AG						1 AG							
Volume	Liquid															
	Solid	100 mL	250 mL						500 mL							
Preservatives		–	–						–							
ANALYSES REQUESTED	ORGANIC: VOA	BNA	Pest/PCB	Herb					INORG: Metal	CN						

MATRIX CODES	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8260 24H 8260SC	8260 25H 8260	8260B				ICRG	Metals	ICAL TO	INH3N/2	ISFD	IPH	IACL	ICFL ICSO4 ICPO4 ICNO3 ICNO2			
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	001	BOWBT3	X	X	S	9-21-99	1250	✓	✓	X				X	✓	X	X	X	X	X				

Special Instructions:

COMPOSITE WASTE

saf# B99-078

DATE/REVISIONS:

1. Met (1) = Recra + Be, Cu, Ni, V, Zn
2.
3. 11/3/99 SB and TL added to all metals samples per client
4.
5.
6.

RECRA LabNet Use Only

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

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

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

Cooler Temp. 5.5 °C

Relinquished by	Received by	Date	Time
Fed Ex	TTurney	9-23-99	0945

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

NOTES:

013

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-122	Page 1 of 1

Collector Bowers/Trice	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ	Price Code 8N Data Turnaround 45 Days
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location 200 B pond (B8758) >15'		SAF No. B99-078	
Ice Chest No. ERC 96-068	Field Logbook No. EL-1511		Method of Shipment Fed Ex	
Shipped To ~~TMA/RECRA~~ DJB 9-21-99 RECRA	Offsite Property No. A990266		Bill of Lading/Air Bill No. 4235 1952 9664	
			COA B20CW1 67/C	

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

Sample No.	Matrix *	Sample Date	Sample Time										
B0WBT2 DJB 9-21-99	Soil												
B0WBT3	Soil	9-21-99	1250	X	X		X			Bow CRI			
B0WBT4 DJB	Soil												
B0WBT5 9-21-99	Soil												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers	Date/Time 9-21-99/1630	Received By BoF 1B	Date/Time 9-21-99/1630
Relinquished By Ref 1B	Date/Time 9-22-99 1100	Received By C Trice	Date/Time 9/22/99 1100
Relinquished By C Trice	Date/Time 9-22-99 1400	Received By ~~C Trice~~ FEDEX	Date/Time 9-22-99 1400
Relinquished By FedEx	Date/Time 9-23-99 0945	Received By CT 9-22-99 T Murray	Date/Time 9-23-99 0945

SPECIAL INSTRUCTIONS

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

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

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

014 ~~013~~

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0525 is composed of ten 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 Checklist. Results for the original testing were faxed to BHI on October 28, 1999 while the add-on Strontiums were faxed to BHI on November 9, 1999 with the reanalyses for those tests being reported to BHI via facsimile on November 19, 1999.

2.0 ANALYSIS NOTES

2.1 Gamma Scan Analyses

No problems were encountered during the course of the analyses though recounts were taken on samples B0W9M3, B0W9R7, B0W9V2 and B0W9V3.

2.2 Total Strontium Analyses

No problems were encountered during the course of the analyses though a reanalysis was performed on sample B0W9M0 and the duplicate.

2.3 Americium-241 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 though a recount was performed for sample B0W9V2.

2.5 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses though a recount was taken on sample B0W9V2.

2.6 Total and Isotopic Uranium Analyses

Isotopic Uranium was to be ordered by BHI after reviewing data from the Total Uranium testing. No Isotopic Uranium analysis was requested. No problems were encountered during the course of the analyses.

NOV 1999
RECEIVED
Data
Log In

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

SAMPLE SUMMARY

SDG 7204
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0W9M0	GP-1	SOLID		N909081-01	B99-078	B99-078-109	09/07/99 08:40
B0W9M2	GP-1	SOLID		N909081-02	B99-078	B99-078-109	09/07/99 09:00
B0W9M3	GP-1	SOLID		N909081-03	B99-078	B99-078-109	09/07/99 09:24
B0W9M4	GP-1	SOLID		N909081-04	B99-078	B99-078-109	09/07/99 09:36
B0W9M5	GP-1	SOLID		N909081-05	B99-078	B99-078-109	09/07/99 09:44
B0W9R7	GP-1	SOLID		N909081-06	B99-078	B99-078-113	09/08/99 10:07
B0W9V0	GP-1	SOLID		N909081-07	B99-078	B99-078-115	09/08/99 07:39
B0W9V1	GP-1	SOLID		N909081-08	B99-078	B99-078-115	09/08/99 07:55
B0W9V2	GP-1	SOLID		N909081-09	B99-078	B99-078-115	09/08/99 08:06
B0W9V3	GP-1	SOLID		N909081-10	B99-078	B99-078-115	09/08/99 08:20
Method Blank		SOLID		N909081-12	B99-078		
Method Blank		SOLID		N909081-15	B99-078		
Lab Control Sample		SOLID		N909081-11	B99-078		
Lab Control Sample		SOLID		N909081-14	B99-078		
Duplicate (N909081-01)	GP-1	SOLID		N909081-16	B99-078		09/07/99 08:40
Duplicate (N909081-01)	GP-1	SOLID		N909081-17	B99-078		09/07/99 08:40
Duplicate (N909081-06)	GP-1	SOLID		N909081-13	B99-078		09/08/99 10:07

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

QC SUMMARY

SDG 7204
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

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
7204	B99-078-109	B0W9M0	SOLID	97.2			09/10/99	3	N909081-01	7204-001
		B0W9M2	SOLID	85.2			09/10/99	3	N909081-02	7204-002
		B0W9M3	SOLID	82.5			09/10/99	3	N909081-03	7204-003
		B0W9M4	SOLID	96.1			09/10/99	3	N909081-04	7204-004
		B0W9M5	SOLID	94.0			09/10/99	3	N909081-05	7204-005
	B99-078-113	B0W9R7	SOLID	94.4			09/10/99	2	N909081-06	7204-006
	B99-078-115	B0W9V0	SOLID	86.7			09/10/99	2	N909081-07	7204-007
		B0W9V1	SOLID	82.6			09/10/99	2	N909081-08	7204-008
		B0W9V2	SOLID	86.5			09/10/99	2	N909081-09	7204-009
		B0W9V3	SOLID	94.6			09/10/99	2	N909081-10	7204-010
		Method Blank	SOLID						N909081-12	7204-012
		Method Blank	SOLID						N909081-15	7204-015
		Lab Control Sample	SOLID						N909081-11	7204-011
		Lab Control Sample	SOLID						N909081-14	7204-014
		Duplicate (N909081-01)	SOLID				09/10/99	3	N909081-16	7204-016
		Duplicate (N909081-01)	SOLID				09/10/99	3	N909081-17	7204-017
		Duplicate (N909081-06)	SOLID	94.4			09/10/99	2	N909081-13	7204-013

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

PREP BATCH SUMMARY

SDG 7204
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

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	6893-174	5.0	5			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6893-174	5.0	5			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6893-174	5.0	5			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6893-174	10.0	5			1	1	1/1		
			6893-175	10.0	4			1	1	1/0		
			6893-176	10.0	1					1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6893-174	15.0	10			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6893-174	9.0	5			1	1	1/1		

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

SDG 7204
Contact Kevin C. Johnson

WORK SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0W9M0			N909081-01	7204-001	GAM		10/18/99	10/28/99	NJV	Gamma Scan
GP-1		SOLID	09/07/99	7204-001	SR	A1	11/19/99	11/19/99	NJV	Total Strontium in Soil
B99-078-109	B99-078		09/10/99							
B0W9M2			N909081-02	7204-002	GAM		10/18/99	10/28/99	NJV	Gamma Scan
GP-1		SOLID	09/07/99	7204-002	SR		11/06/99	11/08/99	NJV	Total Strontium in Soil
B99-078-109	B99-078		09/10/99							
B0W9M3			N909081-03	7204-003	GAM		10/22/99	10/28/99	NJV	Gamma Scan
GP-1		SOLID	09/07/99	7204-003	SR		11/06/99	11/08/99	NJV	Total Strontium in Soil
B99-078-109	B99-078		09/10/99							
B0W9M4			N909081-04	7204-004	GAM		10/18/99	10/28/99	NJV	Gamma Scan
GP-1		SOLID	09/07/99	7204-004	SR		11/06/99	11/08/99	NJV	Total Strontium in Soil
B99-078-109	B99-078		09/10/99							
B0W9M5			N909081-05	7204-005	GAM		10/18/99	10/28/99	NJV	Gamma Scan
GP-1		SOLID	09/07/99	7204-005	SR		11/06/99	11/08/99	NJV	Total Strontium in Soil
B99-078-109	B99-078		09/10/99							
B0W9R7			N909081-06	7204-006	AM		10/22/99	10/26/99	NJV	Americium 241 in Soil
GP-1		SOLID	09/08/99	7204-006	GAM		10/26/99	10/28/99	NJV	Gamma Scan
B99-078-113	B99-078		09/10/99	7204-006	PU		10/20/99	10/26/99	KCJ	Plutonium, Isotopic in Solids
				7204-006	SR		10/20/99	10/28/99	NJV	Total Strontium in Soil
				7204-006	TH		10/20/99	10/26/99	NJV	Thorium, Isotopic in Soil
				7204-006	U_T		10/11/99	10/26/99	NJV	Uranium, Total in Soil
B0W9V0			N909081-07	7204-007	AM		10/22/99	10/26/99	NJV	Americium 241 in Soil
GP-1		SOLID	09/08/99	7204-007	GAM		10/19/99	10/28/99	NJV	Gamma Scan
B99-078-115	B99-078		09/10/99	7204-007	PU		10/20/99	10/26/99	KCJ	Plutonium, Isotopic in Solids
				7204-007	SR		10/20/99	10/26/99	NJV	Total Strontium in Soil
				7204-007	TH		10/20/99	10/26/99	NJV	Thorium, Isotopic in Soil
				7204-007	U_T		10/11/99	10/26/99	NJV	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

SDG 7204
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0W9V1			N909081-08	7204-008	AM		10/22/99	10/26/99	NJV	Americium 241 in Soil
GP-1		SOLID	09/08/99	7204-008	GAM		10/19/99	10/28/99	NJV	Gamma Scan
B99-078-115	B99-078		09/10/99	7204-008	PU		10/21/99	10/26/99	KCJ	Plutonium, Isotopic in Solids
				7204-008	SR		10/20/99	10/26/99	NJV	Total Strontium in Soil
				7204-008	TH		10/20/99	10/26/99	NJV	Thorium, Isotopic in Soil
				7204-008	U_T		10/11/99	10/26/99	NJV	Uranium, Total in Soil
B0W9V2			N909081-09	7204-009	AM		10/22/99	10/26/99	NJV	Americium 241 in Soil
GP-1		SOLID	09/08/99	7204-009	GAM		10/22/99	10/28/99	NJV	Gamma Scan
B99-078-115	B99-078		09/10/99	7204-009	PU		10/22/99	10/26/99	KCJ	Plutonium, Isotopic in Solids
				7204-009	SR		10/20/99	10/26/99	NJV	Total Strontium in Soil
				7204-009	TH		10/21/99	10/26/99	NJV	Thorium, Isotopic in Soil
				7204-009	U_T		10/11/99	10/26/99	NJV	Uranium, Total in Soil
B0W9V3			N909081-10	7204-010	AM		10/22/99	10/26/99	NJV	Americium 241 in Soil
GP-1		SOLID	09/08/99	7204-010	GAM		10/23/99	10/28/99	NJV	Gamma Scan
B99-078-115	B99-078		09/10/99	7204-010	PU		10/21/99	10/26/99	KCJ	Plutonium, Isotopic in Solids
				7204-010	SR		10/20/99	10/26/99	NJV	Total Strontium in Soil
				7204-010	TH		10/20/99	10/26/99	NJV	Thorium, Isotopic in Soil
				7204-010	U_T		10/11/99	10/26/99	NJV	Uranium, Total in Soil
Method Blank			N909081-12	7204-012	AM		10/22/99	10/26/99	NJV	Americium 241 in Soil
		SOLID		7204-012	GAM		10/19/99	10/28/99	NJV	Gamma Scan
	B99-078			7204-012	PU		10/21/99	10/26/99	KCJ	Plutonium, Isotopic in Solids
				7204-012	SR		10/20/99	10/26/99	NJV	Total Strontium in Soil
				7204-012	TH		10/20/99	10/26/99	NJV	Thorium, Isotopic in Soil
				7204-012	U_T		10/11/99	10/26/99	NJV	Uranium, Total in Soil
Method Blank			N909081-15	7204-015	SR		11/06/99	11/08/99	NJV	Total Strontium in Soil
		SOLID								
	B99-078									
Lab Control Sample			N909081-11	7204-011	AM		10/22/99	10/26/99	NJV	Americium 241 in Soil
		SOLID		7204-011	GAM		10/19/99	10/28/99	NJV	Gamma Scan
	B99-078			7204-011	PU		10/21/99	10/26/99	KCJ	Plutonium, Isotopic in Solids
				7204-011	SR		10/20/99	10/26/99	NJV	Total Strontium in Soil
				7204-011	TH		10/20/99	10/26/99	NJV	Thorium, Isotopic in Soil
				7204-011	U_T		10/11/99	10/26/99	NJV	Uranium, Total in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

SDG 7204
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample	B99-078	SOLID	N909081-14	7204-014	SR		11/06/99	11/08/99	NJV	Total Strontium in Soil
Duplicate (N909081-01) GP-1	B99-078	SOLID	N909081-16 09/07/99 09/10/99	7204-016	SR		11/06/99	11/08/99	NJV	Total Strontium in Soil
Duplicate (N909081-01) GP-1	B99-078	SOLID	N909081-17 09/07/99 09/10/99	7204-017	SR		11/19/99	11/19/99	NJV	Total Strontium in Soil
Duplicate (N909081-06) GP-1	B99-078	SOLID	N909081-13 09/08/99 09/10/99	7204-013	AM		10/22/99	10/28/99	NJV	Americium 241 in Soil
				7204-013	GAM		10/23/99	10/28/99	NJV	Gamma Scan
				7204-013	PU		10/21/99	10/28/99	KCJ	Plutonium, Isotopic in Solids
				7204-013	SR		10/20/99	10/28/99	NJV	Total Strontium in Soil
				7204-013	TH		10/20/99	10/28/99	NJV	Thorium, Isotopic in Soil
				7204-013	U_T		10/11/99	10/28/99	NJV	Uranium, Total in Soil

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B99-078	Americium 241 in Soil	AM/CMPLATE	5			1	1	1	8
GAM	B99-078	Gamma Scan	GAMMAHI	10			1	1	1	13
PU	B99-078	Plutonium, Isotopic in Solids	PUPLATE	5			1	1	1	8
SR	B99-078	Total Strontium in Soil	SRTOTAL	10			2	2	3	17
TH	B99-078	Thorium, Isotopic in Soil	THPLATE	5			1	1	1	8
U_T	B99-078	Uranium, Total in Soil	UKPA	5			1	1	1	8
TOTALS				40			7	7	8	62

Lab id TMANC
Protocol Hanford
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

N909081-12 Method Blank

METHOD BLANK

SDG	7204	Client/Case no	Hanford	SDG H0525	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909081-12	Client sample id	Method Blank		
Dept sample id	7204-012	Material/Matrix		SOLID	
		SAF No	B99-078		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	-0.003	0.003	0.007	1.0	U	U_T
Plutonium 238	13981-16-3	-0.008	0.016	0.044	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.008	0.030	1.0	U	PU
Americium 241	14596-10-2	0.007	0.014	0.026	1.0	U	AM
Total Strontium	SR-RAD	-0.015	0.14	0.19	1.0	U	SR
Thorium 228	14274-82-9	-0.012	0.093	0.18	1.0	U	TH
Thorium 230	14269-63-7	0.152	0.14	0.17	1.0	U	TH
Thorium 232	TH-232	0.012	0.023	0.089	1.0	U	TH
Potassium 40	13966-00-2	U		0.091		U	GAM
Cobalt 60	10198-40-0	U		0.008	0.050	U	GAM
Cesium 137	10045-97-3	U		0.006	0.10	U	GAM
Europium 152	14683-23-9	U		0.018	0.10	U	GAM
Europium 154	15585-10-1	U		0.018	0.10	U	GAM
Europium 155	14391-16-3	U		0.016	0.10	U	GAM
Radium 226	13982-63-3	U		0.015	0.10	U	GAM
Radium 228	15262-20-1	U		0.027	0.20	U	GAM
Thorium 228	14274-82-9	U		0.011		U	GAM
Thorium 232	TH-232	U		0.027		U	GAM
Americium 241	14596-10-2	U		0.015		U	GAM
Uranium 238	U-238	U		0.84		U	GAM
Uranium 235	15117-96-1	U		0.024		U	GAM

200 Area Source chrctztn-200-CW-1 OU

QC-BLANK 31935

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

N909081-15 Method Blank

METHOD BLANK

SDG	7204	Client/Case no	Hanford	SDG H0525	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909081-15	Client sample id	Method Blank		
Dept sample id	7204-015	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
Total Strontium	SR-RAD	-0.086	0.13	0.23	1.0	U	SR

200 Area Source chrctztn-200-CW-1 OU

QC-BLANK 32154

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

N909081-11 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7204 Client/Case no Hanford SDG H0525

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

Lab sample id N909081-11 Client sample id Lab Control Sample

Dept sample id 7204-011 Material/Matrix SOLID

SAF No B99-078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Uranium (ug/g)	29.0	3.1	0.072	1.0		U_T	33.0	1.3	88	81-119	80-120
Plutonium 238	9.19	0.67	0.043	1.0		PU	10.0	0.40	92	86-114	80-120
Plutonium 239/240	9.94	0.72	0.039	1.0		PU	10.6	0.42	94	86-114	80-120
Americium 241	9.76	0.65	0.036	1.0		AM	9.58	0.38	102	86-114	80-120
Total Strontium	12.0	0.42	0.19	1.0		SR	11.2	0.45	107	82-118	
Thorium 230	21.0	1.4	0.16	1.0		TH	20.4	0.82	103	86-114	
Cobalt 60	0.362	0.039	0.024	0.050		GAM	0.367	0.015	99	72-128	80-120
Cesium 137	0.376	0.036	0.029	0.10		GAM	0.377	0.015	100	73-127	80-120

200 Area Source chrctztn-200-CW-1 OU

QC-LCS 31934

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

N909081-14

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7204

Contact Kevin C. Johnson

Client/Case no Hanford SDG H0525

Case no TRB-SBB-207925

Lab sample id N909081-14

Dept sample id 7204-014

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
Total Strontium	11.6	0.64	0.41	1.0		SR	11.2	0.45	104	81-119	

200 Area Source chrctztn-200-CW-1 OU

QC-LCS 32153

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

N909081-16

B0W9M0

DUPLICATE

SDG	7204			Client/Case no	Hanford SDG H0525
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N909081-16	Lab sample id	N909081-01	Client sample id	B0W9M0
Dept sample id	7204-016	Dept sample id	7204-001	Location/Matrix	GP-1 SOLID
		Received	09/10/99	Collected	09/07/99 08:40
		% solids	97.2	Custody/SAF No	B99-078-109 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	6.22	0.85	0.45	1.0		SR	5.95	0.28	0.16		4	31	

200 Area Source chrctztn-200-CW-1 OU

QC-DUP#1 32155

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

N909081-17

B0W9M0

DUPLICATE

SDG	7204			Client/Case no	Hanford SDG H0525
Contact	Kevin C. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N909081-17	Lab sample id	N909081-01	Client sample id	B0W9M0
Dept sample id	7204-017	Dept sample id	7204-001	Location/Matrix	GP-1 SOLID
		Received	09/10/99	Collected	09/07/99 08:40
		% solids	97.2	Custody/SAF No	B99-078-109 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
Total Strontium	6.11	0.29	0.17	1.0		SR	5.95	0.28	0.16		3	23

200 Area Source chrctztn-200-CW-1 OU

QC-DUP#1 32374

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

N909081-13 B0W9R7

DUPLICATE

SDG	7204	Client/Case no	Hanford SDG H0525
Contact	Kevin C. Johnson	Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL	
Lab sample id	N909081-13	Lab sample id	N909081-06
Dept sample id	7204-013	Dept sample id	7204-006
		Received	09/10/99
% solids	94.4	% solids	94.4
Client sample id	B0W9R7		
Location/Matrix	GP-1 SOLID		
Collected	09/08/99 10:07		
Custody/SAF No	B99-078-113 B99-078		

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Total Uranium (ug/g)	0.596	0.064	0.007	1.0	J	U_T	0.582	0.062	0.008	J	2	30	
Plutonium 238	0.011	0.023	0.037	1.0	U	PU	0.009	0.017	0.033	U	-		
Plutonium 239/240	0.015	0.023	0.037	1.0	U	PU	0.009	0.017	0.041	U	-		
Americium 241	0.007	0.022	0.034	1.0	U	AM	0.038	0.038	0.048	U	-		
Total Strontium	0.144	0.12	0.16	1.0	U	SR	0.098	0.12	0.20	U	-		
Thorium 228	0.229	0.19	0.32	1.0	U	TH	0.217	0.22	0.32	U	-		
Thorium 230	0.248	0.19	0.18	1.0	J	TH	0.343	0.22	0.26	J	32	148	
Thorium 232	0.267	0.15	0.15	1.0	J	TH	0.271	0.18	0.22	J	1	131	
Potassium 40	11.9	0.46	0.19			GAM	12.5	0.61	0.29		5	33	
Cobalt 60	U		0.020	0.050	U	GAM	U		0.029	U	-		
Cesium 137	0.302	0.026	0.022	0.10		GAM	0.308	0.038	0.035		2	39	
Europium 152	U		0.052	0.10	U	GAM	U		0.073	U	-		
Europium 154	U		0.067	0.10	U	GAM	U		0.10	U	-		
Europium 155	U		0.053	0.10	U	GAM	U		0.11	U	-		
Radium 226	0.562	0.046	0.042	0.10		GAM	0.596	0.062	0.059		6	38	
Radium 228	0.783	0.096	0.090	0.20		GAM	0.871	0.16	0.15		11	46	
Thorium 228	0.718	0.029	0.027			GAM	0.721	0.038	0.036		0	33	
Thorium 232	0.783	0.096	0.090			GAM	0.871	0.16	0.15		11	46	
Americium 241	U		0.066		U	GAM	U		0.26	U	-		
Uranium 238	U		2.4		U	GAM	U		3.5	U	-		
Uranium 235	U		0.085		U	GAM	U		0.13	U	-		

200 Area Source chrctztn-200-CW-1 OU

QC-DUP#6 31936

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

N909081-01 B0W9M0

DATA SHEET

SDG	7204	Client/Case no	Hanford	SDG H0525	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909081-01	Client sample id	B0W9M0		
Dept sample id	7204-001	Location/Matrix	GP-1	SOLID	
Received	09/10/99	Collected	09/07/99 08:40		
% solids	97.2	Custody/SAF No	B99-078-109	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	5.95	0.28	0.16	1.0		SR
Potassium 40	13966-00-2	13.5	0.61	0.32			GAM
Cobalt 60	10198-40-0	0.048	0.032	0.036	0.050	J	GAM
Cesium 137	10045-97-3	2460	2.0	0.42	0.10		GAM
Europium 152	14683-23-9	U		1.6	0.10	U	GAM
Europium 154	15585-10-1	2.42	0.24	0.20	0.10		GAM
Europium 155	14391-16-3	1.18	0.60	0.88	0.10		GAM
Radium 226	13982-63-3	1.43	0.40	0.55	0.10		GAM
Radium 228	15262-20-1	0.924	0.23	0.28	0.20		GAM
Thorium 228	14274-82-9	0.925	0.43	0.64			GAM
Thorium 232	TH-232	0.924	0.23	0.28			GAM
Americium 241	14596-10-2	U		1.8		U	GAM
Uranium 238	U-238	U		11		U	GAM
Uranium 235	15117-96-1	U		1.5		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	11/19/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0525

N909081-02 B0W9M2

DATA SHEET

SDG	7204	Client/Case no	Hanford	SDG H0525	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909081-02	Client sample id	B0W9M2		
Dept sample id	7204-002	Location/Matrix	GP-1	SOLID	
Received	09/10/99	Collected	09/07/99 09:00		
% solids	85.2	Custody/SAF No	B99-078-109	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	1.61	0.20	0.18	1.0		SR
Potassium 40	13966-00-2	12.7	0.49	0.24			GAM
Cobalt 60	10198-40-0	U		0.026	0.050	U	GAM
Cesium 137	10045-97-3	98.8	0.29	0.096	0.10		GAM
Europium 152	14683-23-9	U		0.29	0.10	U	GAM
Europium 154	15585-10-1	0.215	0.081	0.097	0.10		GAM
Europium 155	14391-16-3	0.197	0.13	0.20	0.10	U	GAM
Radium 226	13982-63-3	0.713	0.13	0.17	0.10		GAM
Radium 228	15262-20-1	0.859	0.12	0.12	0.20		GAM
Thorium 228	14274-82-9	0.961	0.12	0.15			GAM
Thorium 232	TH-232	0.859	0.12	0.12			GAM
Americium 241	14596-10-2	U		0.27		U	GAM
Uranium 238	U-238	U		2.9		U	GAM
Uranium 235	15117-96-1	U		0.31		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	11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

N909081-03 B0W9M3

DATA SHEET

SDG	7204	Client/Case no	Hanford	SDG H0525	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909081-03	Client sample id	B0W9M3		
Dept sample id	7204-003	Location/Matrix	GP-1	SOLID	
Received	09/10/99	Collected	09/07/99 09:24		
% solids	82.5	Custody/SAF No	B99-078-109	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	1.09	0.14	0.14	1.0		SR
Potassium 40	13966-00-2	13.0	0.79	0.39			GAM
Cobalt 60	10198-40-0	U		0.047	0.050	U	GAM
Cesium 137	10045-97-3	26.1	0.23	0.075	0.10		GAM
Europium 152	14683-23-9	U		0.23	0.10	U	GAM
Europium 154	15585-10-1	0.432	0.14	0.13	0.10		GAM
Europium 155	14391-16-3	0.340	0.12	0.16	0.10		GAM
Radium 226	13982-63-3	0.780	0.093	0.10	0.10		GAM
Radium 228	15262-20-1	0.951	0.19	0.18	0.20		GAM
Thorium 228	14274-82-9	1.17	0.13	0.14			GAM
Thorium 232	TH-232	0.951	0.19	0.18			GAM
Americium 241	14596-10-2	U		0.096		U	GAM
Uranium 238	U-238	U		6.3		U	GAM
Uranium 235	15117-96-1	U		0.24		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	11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

N909081-04 B0W9M4

DATA SHEET

SDG	7204	Client/Case no	Hanford SDG H0525
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909081-04	Client sample id	B0W9M4
Dept sample id	7204-004	Location/Matrix	GP-1 SOLID
Received	09/10/99	Collected	09/07/99 09:36
% solids	96.1	Custody/SAF No	B99-078-109 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	23.3	1.1	0.36	1.0		SR
Potassium 40	13966-00-2	9.82	0.32	0.15			GAM
Cobalt 60	10198-40-0	U		0.015	0.050	U	GAM
Cesium 137	10045-97-3	5.86	0.059	0.024	0.10		GAM
Europium 152	14683-23-9	U		0.062	0.10	U	GAM
Europium 154	15585-10-1	U		0.053	0.10	U	GAM
Europium 155	14391-16-3	U		0.083	0.10	U	GAM
Radium 226	13982-63-3	0.403	0.033	0.035	0.10		GAM
Radium 228	15262-20-1	0.530	0.061	0.058	0.20		GAM
Thorium 228	14274-82-9	0.496	0.027	0.033			GAM
Thorium 232	TH-232	0.530	0.061	0.058			GAM
Americium 241	14596-10-2	U		0.20		U	GAM
Uranium 238	U-238	U		1.9		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	11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

N909081-05 B0W9M5

DATA SHEET

SDG	7204	Client/Case no	Hanford	SDG H0525	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909081-05	Client sample id	B0W9M5		
Dept sample id	7204-005	Location/Matrix	GP-1	SOLID	
Received	09/10/99	Collected	09/07/99 09:44		
% solids	94.0	Custody/SAF No	B99-078-109	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	37.9	2.0	0.76	1.0		SR
Potassium 40	13966-00-2	10.7	1.6	0.14			GAM
Cobalt 60	10198-40-0	U		0.013	0.050	U	GAM
Cesium 137	10045-97-3	19.0	0.090	0.030	0.10		GAM
Europium 152	14683-23-9	U		0.076	0.10	U	GAM
Europium 154	15585-10-1	U		0.045	0.10	U	GAM
Europium 155	14391-16-3	U		0.060	0.10	U	GAM
Radium 226	13982-63-3	0.462	0.035	0.051	0.10		GAM
Radium 228	15262-20-1	0.665	0.059	0.092	0.20		GAM
Thorium 228	14274-82-9	0.603	0.024	0.049			GAM
Thorium 232	TH-232	0.665	0.059	0.092			GAM
Americium 241	14596-10-2	U		0.033		U	GAM
Uranium 238	U-238	U		1.5		U	GAM
Uranium 235	15117-96-1	U		0.087		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	11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

N909081-06 B0W9R7

DATA SHEET

SDG	7204	Client/Case no	Hanford SDG H0525
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909081-06	Client sample id	B0W9R7
Dept sample id	7204-006	Location/Matrix	GP-1 SOLID
Received	09/10/99	Collected	09/08/99 10:07
% solids	94.4	Custody/SAF No	B99-078-113 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.582	0.062	0.008	1.0	J	U_T
Plutonium 238	13981-16-3	0.009	0.017	0.033	1.0	U	PU
Plutonium 239/240	PU-239/240	0.009	0.017	0.041	1.0	U	PU
Americium 241	14596-10-2	0.038	0.038	0.048	1.0	U	AM
Total Strontium	SR-RAD	0.098	0.12	0.20	1.0	U	SR
Thorium 228	14274-82-9	0.217	0.22	0.32	1.0	U	TH
Thorium 230	14269-63-7	0.343	0.22	0.26	1.0	J	TH
Thorium 232	TH-232	0.271	0.18	0.22	1.0	J	TH
Potassium 40	13966-00-2	12.5	0.61	0.29			GAM
Cobalt 60	10198-40-0	U		0.029	0.050	U	GAM
Cesium 137	10045-97-3	0.308	0.038	0.035	0.10		GAM
Europium 152	14683-23-9	U		0.073	0.10	U	GAM
Europium 154	15585-10-1	U		0.10	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Radium 226	13982-63-3	0.596	0.062	0.059	0.10		GAM
Radium 228	15262-20-1	0.871	0.16	0.15	0.20		GAM
Thorium 228	14274-82-9	0.721	0.038	0.036			GAM
Thorium 232	TH-232	0.871	0.16	0.15			GAM
Americium 241	14596-10-2	U		0.26		U	GAM
Uranium 238	U-238	U		3.5		U	GAM
Uranium 235	15117-96-1	U		0.13		U	GAM

200 Area Source chrctztn-200-CW-1 OU

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

N909081-07 B0W9V0

DATA SHEET

SDG	7204	Client/Case no	Hanford SDG H0525
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909081-07	Client sample id	B0W9V0
Dept sample id	7204-007	Location/Matrix	GP-1 SOLID
Received	09/10/99	Collected	09/08/99 07:39
% solids	86.7	Custody/SAF No	B99-078-115 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.936	0.095	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	-0.008	0.024	0.054	1.0	U	PU
Plutonium 239/240	PU-239/240	0.004	0.016	0.039	1.0	U	PU
Americium 241	14596-10-2	0.007	0.020	0.032	1.0	U	AM
Total Strontium	SR-RAD	-0.070	0.12	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.374	0.17	0.20	1.0	J	TH
Thorium 230	14269-63-7	0.705	0.22	0.19	1.0	J	TH
Thorium 232	TH-232	0.512	0.17	0.11	1.0	J	TH
Potassium 40	13966-00-2	14.6	0.43	0.17			GAM
Cobalt 60	10198-40-0	U		0.019	0.050	U	GAM
Cesium 137	10045-97-3	U		0.019	0.10	U	GAM
Europium 152	14683-23-9	U		0.045	0.10	U	GAM
Europium 154	15585-10-1	U		0.066	0.10	U	GAM
Europium 155	14391-16-3	U		0.062	0.10	U	GAM
Radium 226	13982-63-3	0.696	0.042	0.037	0.10		GAM
Radium 228	15262-20-1	0.982	0.092	0.082	0.20		GAM
Thorium 228	14274-82-9	0.857	0.028	0.023			GAM
Thorium 232	TH-232	0.982	0.092	0.082			GAM
Americium 241	14596-10-2	U		0.061		U	GAM
Uranium 238	U-238	U		2.3		U	GAM
Uranium 235	15117-96-1	U		0.079		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	11/19/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0525

N909081-08 B0W9V1

DATA SHEET

SDG	7204	Client/Case no	Hanford SDG H0525
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909081-08	Client sample id	B0W9V1
Dept sample id	7204-008	Location/Matrix	GP-1 SOLID
Received	09/10/99	Collected	09/08/99 07:55
% solids	82.6	Custody/SAF No	B99-078-115 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	1.57	0.16	0.007	1.0		U_T
Plutonium 238	13981-16-3	0	0.013	0.032	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.013	0.032	1.0	U	PU
Americium 241	14596-10-2	0.010	0.019	0.025	1.0	U	AM
Total Strontium	SR-RAD	-0.059	0.11	0.17	1.0	U	SR
Thorium 228	14274-82-9	0.424	0.35	0.54	1.0	U	TH
Thorium 230	14269-63-7	0.374	0.25	0.28	1.0	J	TH
Thorium 232	TH-232	0.374	0.20	0.24	1.0	J	TH
Potassium 40	13966-00-2	17.6	0.61	0.27			GAM
Cobalt 60	10198-40-0	U		0.029	0.050	U	GAM
Cesium 137	10045-97-3	U		0.028	0.10	U	GAM
Europium 152	14683-23-9	U		0.068	0.10	U	GAM
Europium 154	15585-10-1	U		0.096	0.10	U	GAM
Europium 155	14391-16-3	U		0.10	0.10	U	GAM
Radium 226	13982-63-3	0.884	0.063	0.059	0.10		GAM
Radium 228	15262-20-1	1.18	0.15	0.14	0.20		GAM
Thorium 228	14274-82-9	1.03	0.038	0.035			GAM
Thorium 232	TH-232	1.18	0.15	0.14			GAM
Americium 241	14596-10-2	U		0.25		U	GAM
Uranium 238	U-238	U		3.5		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	11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

N909081-09 B0W9V2

DATA SHEET

SDG	7204	Client/Case no	Hanford SDG H0525
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909081-09	Client sample id	B0W9V2
Dept sample id	7204-009	Location/Matrix	GP-1 SOLID
Received	09/10/99	Collected	09/08/99 08:06
% solids	86.5	Custody/SAF No	B99-078-115 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.970	0.10	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	0	0.016	0.037	1.0	U	PU
Plutonium 239/240	PU-239/240	0.004	0.016	0.030	1.0	U	PU
Americium 241	14596-10-2	-0.020	0.024	0.060	1.0	U	AM
Total Strontium	SR-RAD	0.014	0.12	0.16	1.0	U	SR
Thorium 228	14274-82-9	0.570	0.31	0.42	1.0	J	TH
Thorium 230	14269-63-7	0.388	0.26	0.20	1.0	J	TH
Thorium 232	TH-232	0.233	0.16	0.20	1.0	J	TH
Potassium 40	13966-00-2	15.7	0.40	0.21			GAM
Cobalt 60	10198-40-0	U		0.019	0.050	U	GAM
Cesium 137	10045-97-3	U		0.016	0.10	U	GAM
Europium 152	14683-23-9	U		0.044	0.10	U	GAM
Europium 154	15585-10-1	U		0.065	0.10	U	GAM
Europium 155	14391-16-3	U		0.11	0.10	U	GAM
Radium 226	13982-63-3	0.791	0.044	0.039	0.10		GAM
Radium 228	15262-20-1	0.924	0.082	0.077	0.20		GAM
Thorium 228	14274-82-9	0.942	0.026	0.025			GAM
Thorium 232	TH-232	0.924	0.082	0.077			GAM
Americium 241	14596-10-2	U		0.16		U	GAM
Uranium 238	U-238	U		3.4		U	GAM
Uranium 235	15117-96-1	U		0.077		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	11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

N909081-10 B0W9V3

DATA SHEET

SDG	7204	Client/Case no	Hanford SDG H0525
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909081-10	Client sample id	B0W9V3
Dept sample id	7204-010	Location/Matrix	GP-1 SOLID
Received	09/10/99	Collected	09/08/99 08:20
% solids	94.6	Custody/SAF No	B99-078-115 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.900	0.094	0.007	1.0	J	U_T
Plutonium 238	13981-16-3	-0.008	0.008	0.039	1.0	U	PU
Plutonium 239/240	PU-239/240	0.004	0.016	0.039	1.0	U	PU
Americium 241	14596-10-2	0.014	0.028	0.052	1.0	U	AM
Total Strontium	SR-RAD	0.125	0.12	0.15	1.0	U	SR
Thorium 228	14274-82-9	0.316	0.25	0.39	1.0	U	TH
Thorium 230	14269-63-7	0.295	0.21	0.20	1.0	J	TH
Thorium 232	TH-232	0.253	0.17	0.16	1.0	J	TH
Potassium 40	13966-00-2	11.2	0.65	0.34			GAM
Cobalt 60	10198-40-0	U		0.034	0.050	U	GAM
Cesium 137	10045-97-3	U		0.029	0.10	U	GAM
Europium 152	14683-23-9	U		0.073	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.064	0.10	U	GAM
Radium 226	13982-63-3	0.472	0.061	0.058	0.10		GAM
Radium 228	15262-20-1	0.621	0.17	0.16	0.20		GAM
Thorium 228	14274-82-9	0.657	0.039	0.036			GAM
Thorium 232	TH-232	0.621	0.17	0.16			GAM
Americium 241	14596-10-2	U		0.049		U	GAM
Uranium 238	U-238	U		4.5		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	11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

Test	AM
Matrix	SOLID
SDG	7204
Contact	Kevin C. Johnson

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0525

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6893-174						
B0W9R7	N909081-06			7204-006	U	
B0W9V0	N909081-07			7204-007	U	
B0W9V1	N909081-08			7204-008	U	
B0W9V2	N909081-09			7204-009	U	
B0W9V3	N909081-10			7204-010	U	
BLK (QC ID=31935)	N909081-12			7204-012	U	
LCS (QC ID=31934)	N909081-11			7204-011	ok	
Duplicate (N909081-06)	N909081-13			7204-013	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200 Area Source chrctztn-200-CW-1 OU						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6893-174	2σ prep error 5.0 %				Reference Lab Notebook 6893 pg.174											
B0W9R7	N909081-06			0.048	0.500			46		818			44	10/22/99	10/22	SS-009
B0W9V0	N909081-07			0.032	0.500			83		818			44	10/22/99	10/22	SS-010
B0W9V1	N909081-08			0.025	0.500			94		818			44	10/22/99	10/22	SS-011
B0W9V2	N909081-09			0.060	0.500			75		818			44	10/22/99	10/22	SS-012
B0W9V3	N909081-10			0.052	0.500			63		818			44	10/22/99	10/22	SS-013
BLK (QC ID=31935)	N909081-12			0.026	0.500			88		818				10/22/99	10/22	SS-015
LCS (QC ID=31934)	N909081-11			0.036	0.500			88		818				10/22/99	10/22	SS-014
Duplicate (N909081-06) (QC ID=31936)	N909081-13			0.034	0.500			82		818			44	10/22/99	10/22	SS-016
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	11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

Test	AM
Matrix	SOLID
SDG	7204
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0525

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	0.039	±	0.026
FOR 8 SAMPLES	YIELD	77	±	32

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

Test PU Matrix SOLID
SDG 7204
Contact Kevin C. Johnson

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6893-174								
B0W9R7	N909081-06			7204-006	U		U	
B0W9V0	N909081-07			7204-007	U		U	
B0W9V1	N909081-08			7204-008	U		U	
B0W9V2	N909081-09			7204-009	U		U	
B0W9V3	N909081-10			7204-010	U		U	
BLK (QC ID=31935)	N909081-12			7204-012	U		U	
LCS (QC ID=31934)	N909081-11			7204-011	ok		ok	
Duplicate (N909081-06)	N909081-13			7204-013	-	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 6893-174	2σ prep error 5.0 %				Reference Lab Notebook 6893 pg.174											
B0W9R7	N909081-06			0.041	0.500			89		633			42	10/20/99	10/20	SS-016
B0W9V0	N909081-07			0.054	0.500			94		599			42	10/20/99	10/20	SS-064
B0W9V1	N909081-08			0.032	0.500			97		745			43	10/20/99	10/21	SS-002
B0W9V2	N909081-09			0.037	0.500			77		819			44	10/20/99	10/22	SS-001
B0W9V3	N909081-10			0.039	0.500			74		745			43	10/20/99	10/21	SS-006
BLK (QC ID=31935)	N909081-12			0.044	0.500			80		745				10/20/99	10/21	SS-008
LCS (QC ID=31934)	N909081-11			0.043	0.500			91		739				10/20/99	10/21	SS-057
Duplicate (N909081-06) (QC ID=31936)	N909081-13			0.037	0.500			80		738			43	10/20/99	10/21	SS-010
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 11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

Test	PU
Matrix	SOLID
SDG	7204
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0525

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	0.041	±	0.013
FOR 8 SAMPLES	YIELD	85	±	17

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

Test	TH
Matrix	SOLID
SDG	7204
Contact	Kevin C. Johnson

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0525

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6893-174							
B0W9R7	N909081-06			7204-006	U	0.343 J	0.271 J
B0W9V0	N909081-07			7204-007	0.374 J	0.705 J	0.512 J
B0W9V1	N909081-08			7204-008	U	0.374 J	0.374 J
B0W9V2	N909081-09			7204-009	0.570 J	0.388 J	0.233 J
B0W9V3	N909081-10			7204-010	U	0.295 J	0.253 J
BLK (QC ID=31935)	N909081-12			7204-012	U	U	U
LCS (QC ID=31934)	N909081-11			7204-011		ok	
Duplicate (N909081-06)	N909081-13			7204-013	- U	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 6893-174	2σ prep error 5.0 %			Reference Lab Notebook 6893 pg.174												
B0W9R7	N909081-06			0.32	0.250			43		622			42	10/20/99	10/20	SS-036
B0W9V0	N909081-07			0.20	0.250			57		622			42	10/20/99	10/20	SS-038
B0W9V1	N909081-08			0.54	0.250			36		512			42	10/20/99	10/20	SS-040
B0W9V2	N909081-09			0.42	0.250			31		609			43	10/20/99	10/21	SS-027
B0W9V3	N909081-10			0.39	0.250			35		619			42	10/20/99	10/20	SS-044
BLK (QC ID=31935)	N909081-12			0.18	0.250			64		615				10/20/99	10/20	SS-048
LCS (QC ID=31934)	N909081-11			0.16	0.250			60		619				10/20/99	10/20	SS-045
Duplicate (N909081-06) (QC ID=31936)	N909081-13			0.32	0.250			39		615			42	10/20/99	10/20	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	11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Test TH Matrix SOLID
SDG 7204
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

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	0.32	±	0.26
FOR 8 SAMPLES	YIELD	46	±	26

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

Test SR Matrix SOLID
SDG 7204
Contact Kevin C. Johnson

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 6893-174						
B0W9R7	N909081-06			7204-006	U	
B0W9V0	N909081-07			7204-007	U	
B0W9V1	N909081-08			7204-008	U	
B0W9V2	N909081-09			7204-009	U	
B0W9V3	N909081-10			7204-010	U	
BLK (QC ID=31935)	N909081-12			7204-012	U	
LCS (QC ID=31934)	N909081-11			7204-011	ok	
Duplicate (N909081-06)	N909081-13			7204-013	-	U
Preparation batch 6893-175						
B0W9M2	N909081-02			7204-002	1.61	
B0W9M3	N909081-03			7204-003	1.09	
B0W9M4	N909081-04			7204-004	23.3	
B0W9M5	N909081-05			7204-005	37.9	
BLK (QC ID=32154)	N909081-15			7204-015	U	
LCS (QC ID=32153)	N909081-14			7204-014	ok	
Duplicate (N909081-01)	N909081-16			7204-016	ok	
Preparation batch 6893-176						
B0W9M0	N909081-01		A1	7204-001	5.95	
Duplicate (N909081-01)	N909081-17			7204-017	ok	

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 11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

Test SR Matrix SOLID
SDG 7204
Contact Kevin C. Johnson

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

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 6893-174	2σ prep error 10.0 %	Reference Lab Notebook 6893 pg.174														
B0W9R7	N909081-06			0.20	1.00			87		200			42	10/19/99	10/20	GRB-227
B0W9V0	N909081-07			0.17	1.00			85		400			42	10/19/99	10/20	GRB-202
B0W9V1	N909081-08			0.17	1.00			84		400			42	10/19/99	10/20	GRB-203
B0W9V2	N909081-09			0.16	1.00			96		400			42	10/19/99	10/20	GRB-204
B0W9V3	N909081-10			0.15	1.00			100		400			42	10/19/99	10/20	GRB-229
BLK (QC ID=31935)	N909081-12			0.19	1.01			75		400				10/19/99	10/20	GRB-231
LCS (QC ID=31934)	N909081-11			0.19	1.01			70		400				10/19/99	10/20	GRB-230
Duplicate (N909081-06) (QC ID=31936)	N909081-13			0.16	1.00			85		400			42	10/19/99	10/20	GRB-232
Preparation batch 6893-175	2σ prep error 10.0 %	Reference Lab Notebook 6893 pg.174														
B0W9M2	N909081-02			0.18	1.02			96		200			60	11/03/99	11/06	GRB-223
B0W9M3	N909081-03			0.14	1.00			98		200			60	11/03/99	11/06	GRB-227
B0W9M4	N909081-04			0.36	1.01			94		400			60	11/03/99	11/06	GRB-202
B0W9M5	N909081-05			0.76	1.01			91		400			60	11/03/99	11/06	GRB-203
BLK (QC ID=32154)	N909081-15			0.23	1.01			81		200				11/03/99	11/06	GRB-232
LCS (QC ID=32153)	N909081-14			0.41	1.01			83		400				11/03/99	11/06	GRB-204
Duplicate (N909081-01) (QC ID=32155)	N909081-16			0.45	1.01			95		200			60	11/03/99	11/06	GRB-224
Preparation batch 6893-176	2σ prep error 10.0 %	Reference Lab Notebook 6893 pg.176														
B0W9M0	N909081-01		A1	0.16	1.00			95		400			73	11/18/99	11/19	GRB-217
Duplicate (N909081-01) (QC ID=32374)	N909081-17			0.17	1.00			92		400			73	11/18/99	11/19	GRB-218
Nominal values and limits from method				1.0	1.01					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 17 SAMPLES
MDA 0.25 ± 0.32
YIELD 89 ± 17

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

Test GAM Matrix SOLID
SDG 7204
Contact Kevin C. Johnson

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6893-174						
B0W9M0	N909081-01			7204-001	0.048 J	2460
B0W9M2	N909081-02			7204-002	U	98.8
B0W9M3	N909081-03			7204-003	U	26.1
B0W9M4	N909081-04			7204-004	U	5.86
B0W9M5	N909081-05			7204-005	U	19.0
B0W9R7	N909081-06			7204-006	U	0.308
B0W9V0	N909081-07			7204-007	U	U
B0W9V1	N909081-08			7204-008	U	U
B0W9V2	N909081-09			7204-009	U	U
B0W9V3	N909081-10			7204-010	U	U
BLK (QC ID=31935)	N909081-12			7204-012	U	U
LCS (QC ID=31934)	N909081-11			7204-011	ok	ok
Duplicate (N909081-06)	N909081-13			7204-013	- U	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 11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

Test GAM Matrix SOLID
SDG 7204
Contact Kevin C. Johnson

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

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 6893-174	2σ prep error 15.0 %	Reference Lab Notebook 6893 pg.174														
B0W9M0	N909081-01			0.16	568					492			41	09/28/99	10/18	02,01,00
B0W9M2	N909081-02			0.065	704					512			41	09/28/99	10/18	02,03,00
B0W9M3	N909081-03			0.12	705					232			45	09/28/99	10/22	02,01,00
B0W9M4	N909081-04			0.043	805					514			41	09/28/99	10/18	MB,05,00
B0W9M5	N909081-05			0.035	709					513			41	09/28/99	10/18	MB,07,00
B0W9R7	N909081-06			0.083	705					205			48	09/28/99	10/26	MB,05,00
B0W9V0	N909081-07			0.054	578					333			41	09/28/99	10/19	02,04,00
B0W9V1	N909081-08			0.089	598					333			41	09/28/99	10/19	MB,05,00
B0W9V2	N909081-09			0.055	633					699			44	09/28/99	10/22	MB,05,00
B0W9V3	N909081-10			0.11	821					207			45	09/28/99	10/23	02,01,00
BLK (QC ID=31935)	N909081-12			0.015	682					206				09/28/99	10/19	MB,04,00
LCS (QC ID=31934)	N909081-11			0.024	682					217				09/28/99	10/19	01,03,00
Duplicate (N909081-06) (QC ID=31936)	N909081-13			0.057	705					207			45	09/28/99	10/23	02,04,00
Nominal values and limits from method				0.050	682					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 13 SAMPLES
MDA 0.070 ± 0.083
YIELD _____ ± _____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

Test U T Matrix SOLID	Client Hanford
SDG 7204	Contract TRB-SBB-207925
Contact Kevin C. Johnson	Case no SDG H0525

METHOD SUMMARY

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 6893-174					
B0W9R7	N909081-06			7204-006	0.582 J
B0W9V0	N909081-07			7204-007	0.936 J
B0W9V1	N909081-08			7204-008	1.57
B0W9V2	N909081-09			7204-009	0.970 J
B0W9V3	N909081-10			7204-010	0.900 J
BLK (QC ID=31935)	N909081-12			7204-012	U
LCS (QC ID=31934)	N909081-11			7204-011	ok
Duplicate (N909081-06)	N909081-13			7204-013	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 6893-174	2σ prep error 9.0 %			Reference Lab Notebook 6893 pg.174												
B0W9R7	N909081-06			0.008	0.0500								33	10/11/99	10/11	KPA-001
B0W9V0	N909081-07			0.007	0.0500								33	10/11/99	10/11	KPA-001
B0W9V1	N909081-08			0.007	0.0500								33	10/11/99	10/11	KPA-001
B0W9V2	N909081-09			0.007	0.0500								33	10/11/99	10/11	KPA-001
B0W9V3	N909081-10			0.007	0.0500								33	10/11/99	10/11	KPA-001
BLK (QC ID=31935)	N909081-12			0.007	0.0500									10/11/99	10/11	KPA-001
LCS (QC ID=31934)	N909081-11			0.072	0.0500									10/11/99	10/11	KPA-001
Duplicate (N909081-06) (QC ID=31936)	N909081-13			0.007	0.0500								33	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	11/19/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0525

Test	U T
Matrix	SOLID
SDG	7204
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL

KINETIC PHOSPHORIMETRY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0525

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	0.015	±	0.046
FOR 8 SAMPLES	YIELD		±	

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/19/99

SDG 7204
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

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 11/19/99

SDG 7204
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

PREPARATION BATCH SUMMARY

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

The following notes apply to this report:

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

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

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

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

  These qualifiers should be reviewed as follows:

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

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

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

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

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Form DVD-RG
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SDG 7204
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

WORK SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

DATA SHEET

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

The following notes apply to this report:

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

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

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

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

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

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

The following qualifiers are defined by the DVD system:

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

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DATA SHEET

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

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

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

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

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

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

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

P The RESULT is 'preliminary'.

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

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

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

The following values are underlined to indicate possible problems:

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

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Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

DATA SHEET

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

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

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

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REPORT GUIDE

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LAB CONTROL SAMPLE

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

The following notes apply to this report:

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

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

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Protocol Hanford
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REPORT GUIDE

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DUPLICATE

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

The following notes apply to this report:

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

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

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

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

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

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

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

  This value reported for this limit is at most 999.

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

  1. A fixed percentage specified in the protocol.

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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.

SDG 7204
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

MATRIX SPIKE

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

The following notes apply to this report:

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

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

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

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

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

* The first, computed limits for the recovery reflect:

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

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

  2. The error of ADDED.

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

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

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Contact Kevin C. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0525

MATRIX SPIKE

for the recovery.

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

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

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
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SDG 7204
Contact Kevin C. Johnson

REPORT GUIDE

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Contract TRB-SBB-207925
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METHOD SUMMARY

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

The following notes apply to this report:

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

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

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

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

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

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

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

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

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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.

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-109	Page 1 of 2 DB 9-7-99

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-1		SAF No.: B99-078
Ice Chest No.: SML 256	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ FED EX
Shipped To: TMA/RECRA 09 9-7-99	Offsite Property No.: A990248		Bill of Lading/Air Bill No.: 4235 7952 9193
			COA: B20CW1 671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	Cool 4C	None									
Type of Container	aG	aG									
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										
B0W9M0	Soil	9-7-99	0840		X			7.5-8.5		B0W8B8			
~~B0W9M1~~	~~Soil~~	~~9-7-99~~	~~0852~~		X			10-11		B0W8B9			
~~B0W9M2~~	~~Soil~~	~~9-7-99~~	~~0900~~		X			12-13		B0W3M1			
~~B0W9M3~~	~~Soil~~	~~9-7-99~~	~~0924~~		X			13-13.5		↓			
~~B0W9M4~~	~~Soil~~	~~9-7-99~~	~~0936~~		X			14-15		↓			

DB 9-9-99

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 9-7-99/1600	Received By: REF 1B	Date/Time: 9-7-99/1600
Relinquished By: REF 1B	Date/Time: 9999 1100	Received By: SJOALE	Date/Time: 9999 1100
Relinquished By: SJOALE	Date/Time: 9999 1100	Received By: FED EX	Date/Time: 1100
Relinquished By: Fed Ex	Date/Time: 9-10-99 10:00	Received By: JRLorso JRLorso	Date/Time: 9-10-99 10:00

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.
COLLECTOR UNAVAILABLE TO SIGN COC.
(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}

Original C.O.C. split because of limited quanity shipment, this is a copy

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	B99-078-109	Page 1 of ~~2~~ 2 DJB 9-7-99

Collector: Bowers/Porter/Nielson	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 8N
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: GP-1		SAF No.: B99-078	Data Turnaround: 45 Days
Ice Chest No.: EML 256	Field Logbook No.: EL-1511		Method of Shipment: ~~gov vehicle~~ FED EX	
Shipped To: TMA/~~RECRA~~ DJB 9.7.99	Offsite Property No.: A990248		Bill of Lading/Air Bill No.: 423579529193	
			COA: B20CW1 671C	

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										
~~B0W9M0~~	~~Soil~~	~~9-7-99~~	~~0840~~		~~X~~	DJB 9-9-99		~~7.5-8.5~~		~~B0W8B8~~			
~~B0W9M1~~ DJB 9999	~~Soil~~	~~9-7-99~~	~~0852~~		~~X~~			~~10-11~~		~~B0W8B9~~			
✓ B0W9M2	Soil	9-7-99	0900		X			12-13		B0W5M1			
✓ B0W9M3	Soil	9-7-99	0924		X			13-13.5		↓			
✓ B0W9M4	Soil	9-7-99	0936		X			14-15		↓			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: Doug Bowers 9-7-99/1600	Received By: Ref 1B	Date/Time: 9-7-99/1600
Relinquished By: Ref B1	Date/Time: 9.9.99 0600	Received By: C Price	Date/Time: 9/9/99 0600
Relinquished By: C Price	Date/Time: 9/9/99 1400	Received By: FEDEX	Date/Time: 9/9/99 1400
Relinquished By: Fed Ex	Date/Time: 9-10-99 10:00	Received By: R Corso / R Corso	Date/Time: 10:00 9-10-99

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

COLLECTOR UNAVAILABLE TO SIGN COL

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	B99-078-109	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: GP-1	SAF No.: B99-078	
Ice Chest No.: SML 256	Field Logbook No.: EL-1511	Method of Shipment: ~~gov vehicle~~ FED EX	
Shipped To: TMA/RECRA	Offsite Property No.: A990248	Bill of Lading/Air Bill No.: 923579529193	
		COA: B20CW1 671C	

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										
B0W9M5	Soil	9-7-99	0944		X		12.5	-18.5		BOW5M1			
B0W9M6	Soil												
B0W9M7	Soil												
B0W9M8	Soil												
B0W9M9	Soil												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-7-99/1600	Received By:	Date/Time: 9-7-99/1600
Relinquished By:	Date/Time: 9/9/99 0600	Received By:	Date/Time: 9/9/99 0600
Relinquished By:	Date/Time: 9/9/99 1400	Received By: FEDEX	Date/Time: 9/9/99 1400
Relinquished By: Fed Ex	Date/Time: 9-10-99 10:00	Received By:	Date/Time: 9-10-99 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}

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	B99-078-113	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		SAF No. B99-078		
Ice Chest No. SML 528	Field Logbook No. EL-1511		Method of Shipment FED EX		
Shipped To TMA/RECRA Thermo Retec	Offsite Property No. A990248		Bill of Lading/Air Bill No. 4235 7952 9208		
			COA B20CW1671C		

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

Sample No.	Matrix *	Sample Date	Sample Time										
✓ B0W9R7	Soil	9/8/99	1007	X						X			B0W568
~~B0W9R8~~	~~Soil~~												
~~B0W9R9~~	~~Soil~~	RJN 9/8/99											
~~B0W9T0~~	~~Soil~~												
~~B0W9T1~~	~~Soil~~												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/8/99 12:20	Received By: Peter IB	Date/Time: 9/8/99 12:20
Relinquished By: Peter IB	Date/Time: 9/9/99 0700	Received By: C Arice	Date/Time: 9/9/99 0700
Relinquished By: C Arice	Date/Time: 9/9/99 1400	Received By: FEDEX	Date/Time: 9/9/99 1400
Relinquished By: Fed Ex	Date/Time: 9-10-99 10:00	Received By: J R Corso J R Corso	Date/Time: 9-10-99 10:00

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

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

COLLECTOR UNAVAILABLE TO 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	B99-078-115	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, GP-10		SAF No.: B99-078
Ice Chest No.: SMC 528	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA ThermoRetec	Offsite Property No.: A 99 0248		Bill of Lading/Air Bill No.: 9235795292 08
			COA: B20CW1671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

Sample No.	Matrix *	Sample Date	Sample Time										
B0W9V0	Soil	9/8/99	0739	X						X			B0W518
B0W9V1	Soil	9/8/99	0755	X						X			
B0W9V2	Soil	9/8/99	0806	X						X			
B0W9V3	Soil	9/8/99	0820	X						X			
~~B0W9V4~~	~~Soil~~	9/8/99 RIN											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Brent Porter	Date/Time: 9/8/99 12:20	Received By: Reefer 1B	Date/Time: 9/8/99 12:20
Relinquished By: Reefer 1B	Date/Time: 9/9/99 0700	Received By: C Price	Date/Time: 9/9/99 0700
Relinquished By: C Price	Date/Time: 9/9/99 1400	Received By: FEDEX	Date/Time: 9/9/99 1400
Relinquished By: Fed Ex	Date/Time: 9-10-99 10:00	Received By: J R Corso	Date/Time: 9-10-99 10:00
LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

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

COLLECTOR UNAVAILABLE TO SIGN (OK

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

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

CoC No. B99-078-109

Container I.D. No. SML-256 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: 5
7. Number of containers per sample: 1 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [✓] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by [signature] Date: 9-10-99 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 Date/Time received 9-10-99 10:00

CoC No. B99-078-113 & 115

Container I.D. No. SML 528 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: 5
7. Number of containers per sample: 2 (Or see CoC _____)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [✓] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by A R Corso Date: 9-10-99 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 _____