RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

0052623

Client : TNU-HANFORD B99-078
RFW# : 9910L521
SDG/SAF #: H0596/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 10-27-99

RECEIVED
FEB 28 2000
EDMC

SEMIVOLATILE

Four (4) soil samples were collected on 10-25-99.

The samples and their associated QC samples were extracted on 11-08-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Methods 3550B and 8270B for TCL Semivolatile target compounds on 11-12-99.

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

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

JAN 2000
RECEIVED
Data
Log In

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

01-04-00
Date

pef\gorup\data\bna\tnu10521.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 11 pages.

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

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

mmz\10-94\gloss.bna

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.bna

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

RFW Batch Number: **9910L521** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Report Date: 12/24/99 17:09 Page: 1a

	Cust ID:	B0WMF1		B0WMF1		B0WMF1		B0WMF2		B0WMF3		B0WMF6	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		004	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	77	%	72	%	70	%	82	%	82	%	89	%
	2-Fluorobiphenyl	81	%	70	%	72	%	82	%	82	%	81	%
	Terphenyl-d14	93	%	84	%	86	%	95	%	91	%	81	%
	Phenol-d5	74	%	70	%	69	%	75	%	77	%	73	%
	2-Fluorophenol	72	%	66	%	64	%	74	%	73	%	70	%
	2,4,6-Tribromophenol	66	%	64	%	55	%	51	%	53	%	89	%
Phenol		380	U	70	%	67	%	350	U	340	U	340	U
bis(2-Chloroethyl)ether		380	U	380	U	380	U	350	U	340	U	340	U
2-Chlorophenol		380	U	70	%	71	%	350	U	340	U	340	U
1,3-Dichlorobenzene		380	U	380	U	380	U	350	U	340	U	340	U
1,4-Dichlorobenzene		380	U	67	%	67	%	350	U	340	U	340	U
1,2-Dichlorobenzene		380	U	380	U	380	U	350	U	340	U	340	U
2-Methylphenol		380	U	380	U	380	U	350	U	340	U	340	U
2,2'-oxybis(1-Chloropropane)		380	U	380	U	380	U	350	U	340	U	340	U
4-Methylphenol		380	U	380	U	380	U	350	U	340	U	340	U
N-Nitroso-di-n-propylamine		380	U	76	%	75	%	350	U	340	U	340	U
Hexachloroethane		380	U	380	U	380	U	350	U	340	U	340	U
Nitrobenzene		380	U	380	U	380	U	350	U	340	U	340	U
Isophorone		380	U	380	U	380	U	350	U	340	U	340	U
2-Nitrophenol		380	U	380	U	380	U	350	U	340	U	340	U
2,4-Dimethylphenol		380	U	380	U	380	U	350	U	340	U	340	U
bis(2-Chloroethoxy)methane		380	U	380	U	380	U	350	U	340	U	340	U
2,4-Dichlorophenol		380	U	380	U	380	U	350	U	340	U	340	U
1,2,4-Trichlorobenzene		380	U	70	%	71	%	350	U	340	U	340	U
Naphthalene		380	U	380	U	380	U	350	U	340	U	340	U
4-Chloroaniline		380	U	380	U	380	U	350	U	340	U	340	U
Hexachlorobutadiene		380	U	380	U	380	U	350	U	340	U	340	U
4-Chloro-3-methylphenol		380	U	72	%	67	%	350	U	340	U	340	U
2-Methylnaphthalene		380	U	380	U	380	U	350	U	340	U	340	U
Hexachlorocyclopentadiene		380	U	380	U	380	U	350	U	340	U	340	U
2,4,6-Trichlorophenol		380	U	380	U	380	U	350	U	340	U	340	U
2,4,5-Trichlorophenol		960	U	960	U	960	U	870	U	850	U	850	U

*= Outside of EPA CLP QC limits.

Cust ID:	B0WMF1		B0WMF1		B0WMF1		B0WMF2		B0WMF3		B0WMF6	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	380	U	380	U	380	U	350	U	340	U	340	U
2-Nitroaniline	960	U	960	U	960	U	870	U	850	U	850	U
Dimethylphthalate	380	U	380	U	380	U	350	U	340	U	340	U
Acenaphthylene	380	U	380	U	380	U	350	U	340	U	340	U
2,6-Dinitrotoluene	380	U	380	U	380	U	350	U	340	U	340	U
3-Nitroaniline	960	U	960	U	960	U	870	U	850	U	850	U
Acenaphthene	380	U	70	%	70	%	350	U	340	U	340	U
2,4-Dinitrophenol	960	U	960	U	960	U	870	U	850	U	850	U
4-Nitrophenol	960	U	70	%	65	%	870	U	850	U	850	U
Dibenzofuran	380	U	380	U	380	U	350	U	340	U	340	U
2,4-Dinitrotoluene	380	U	72	%	70	%	350	U	340	U	340	U
Diethylphthalate	380	U	380	U	380	U	350	U	340	U	340	U
4-Chlorophenyl-phenylether	380	U	380	U	380	U	350	U	340	U	340	U
Fluorene	380	U	380	U	380	U	350	U	340	U	340	U
4-Nitroaniline	960	U	960	U	960	U	870	U	850	U	850	U
4,6-Dinitro-2-methylphenol	960	U	960	U	960	U	870	U	850	U	850	U
N-Nitrosodiphenylamine (1)	380	U	380	U	380	U	350	U	340	U	340	U
4-Bromophenyl-phenylether	380	U	380	U	380	U	350	U	340	U	340	U
Hexachlorobenzene	380	U	380	U	380	U	350	U	340	U	340	U
Pentachlorophenol	960	U	64	%	52	%	870	U	850	U	850	U
Phenanthrene	380	U	380	U	380	U	350	U	340	U	340	U
Anthracene	380	U	380	U	380	U	350	U	340	U	340	U
Carbazole	380	U	380	U	380	U	350	U	340	U	340	U
Di-n-butylphthalate	380	U	380	U	380	U	350	U	340	U	340	U
Fluoranthene	380	U	380	U	380	U	350	U	340	U	340	U
Pyrene	380	U	87	%	91	%	350	U	340	U	340	U
Butylbenzylphthalate	380	U	380	U	380	U	350	U	340	U	340	U
3,3'-Dichlorobenzidine	380	U	380	U	380	U	350	U	340	U	340	U
Benzo(a)anthracene	380	U	380	U	380	U	350	U	340	U	340	U
Chrysene	380	U	380	U	380	U	350	U	340	U	340	U
bis(2-Ethylhexyl)phthalate	380	U	380	U	380	U	350	U	340	U	340	U
Di-n-octyl phthalate	380	U	380	U	380	U	350	U	340	U	340	U
Benzo(b)fluoranthene	380	U	380	U	380	U	350	U	340	U	340	U
Benzo(k)fluoranthene	380	U	380	U	380	U	350	U	340	U	340	U
Benzo(a)pyrene	380	U	380	U	380	U	350	U	340	U	340	U
Indeno(1,2,3-cd)pyrene	380	U	380	U	380	U	350	U	340	U	340	U
Dibenz(a,h)anthracene	380	U	380	U	380	U	350	U	340	U	340	U
Benzo(g,h,i)perylene	380	U	380	U	380	U	350	U	340	U	340	U

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

	Cust ID:	SBLKFW		SBLKFW BS	
Sample Information	RFW#:	99LE1350-MB1		99LE1350-MB1	
	Matrix:	SOIL		SOIL	
	D.F.:	1.00		1.00	
	Units:	UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	82	%	83	%
	2-Fluorobiphenyl	85	%	82	%
	Terphenyl-d14	91	%	86	%
	Phenol-d5	78	%	79	%
	2-Fluorophenol	75	%	75	%
	2,4,6-Tribromophenol	72	%	77	%
Phenol		330	U	77	%
bis(2-Chloroethyl)ether		330	U	330	U
2-Chlorophenol		330	U	79	%
1,3-Dichlorobenzene		330	U	330	U
1,4-Dichlorobenzene		330	U	81	%
1,2-Dichlorobenzene		330	U	330	U
2-Methylphenol		330	U	330	U
2,2'-oxybis(1-Chloropropane)		330	U	330	U
4-Methylphenol		330	U	330	U
N-Nitroso-di-n-propylamine		330	U	88	%
Hexachloroethane		330	U	330	U
Nitrobenzene		330	U	330	U
Isophorone		330	U	330	U
2-Nitrophenol		330	U	330	U
2,4-Dimethylphenol		330	U	330	U
bis(2-Chloroethoxy)methane		330	U	330	U
2,4-Dichlorophenol		330	U	330	U
1,2,4-Trichlorobenzene		330	U	84	%
Naphthalene		330	U	330	U
4-Chloroaniline		330	U	330	U
Hexachlorobutadiene		330	U	330	U
4-Chloro-3-methylphenol		330	U	83	%
2-Methylnaphthalene		330	U	330	U
Hexachlorocyclopentadiene		330	U	330	U
2,4,6-Trichlorophenol		330	U	330	U
2,4,5-Trichlorophenol		840	U	840	U

*= Outside of EPA CLP QC limits.

Cust ID:	SBLKFW		SBLKFW BS	
RFW#:	99LE1350-MB1		99LE1350-MB1	
2-Chloronaphthalene	330	U	330	U
2-Nitroaniline	840	U	840	U
Dimethylphthalate	330	U	330	U
Acenaphthylene	330	U	330	U
2,6-Dinitrotoluene	330	U	330	U
3-Nitroaniline	840	U	840	U
Acenaphthene	330	U	81	%
2,4-Dinitrophenol	840	U	840	U
4-Nitrophenol	840	U	88	%
Dibenzofuran	330	U	330	U
2,4-Dinitrotoluene	330	U	85	%
Diethylphthalate	330	U	330	U
4-Chlorophenyl-phenylether	330	U	330	U
Fluorene	330	U	330	U
4-Nitroaniline	840	U	840	U
4,6-Dinitro-2-methylphenol	840	U	840	U
N-Nitrosodiphenylamine (1)	330	U	330	U
4-Bromophenyl-phenylether	330	U	330	U
Hexachlorobenzene	330	U	330	U
Pentachlorophenol	840	U	81	%
Phenanthrene	330	U	330	U
Anthracene	330	U	330	U
Carbazole	330	U	330	U
Di-n-butylphthalate	330	U	330	U
Fluoranthene	330	U	330	U
Pyrene	330	U	94	%
Butylbenzylphthalate	330	U	330	U
3,3'-Dichlorobenzidine	330	U	330	U
Benzo(a)anthracene	330	U	330	U
Chrysene	330	U	330	U
bis(2-Ethylhexyl)phthalate	330	U	330	U
Di-n-octyl phthalate	330	U	330	U
Benzo(b)fluoranthene	330	U	330	U
Benzo(k)fluoranthene	330	U	330	U
Benzo(a)pyrene	330	U	330	U
Indeno(1,2,3-cd)pyrene	330	U	330	U
Dibenz(a,h)anthracene	330	U	330	U
Benzo(g,h,i)perylene	330	U	330	U

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

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

DATE RECEIVED: 10/27/99 RFW LOT # :9910L521

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WMF1	001	S	99LE1350	10/25/99	11/08/99	11/12/99
B0WMF1	001 MS	S	99LE1350	10/25/99	11/08/99	11/12/99
B0WMF1	001 MSD	S	99LE1350	10/25/99	11/08/99	11/12/99
B0WMF2	002	S	99LE1350	10/25/99	11/08/99	11/12/99
B0WMF3	003	S	99LE1350	10/25/99	11/08/99	11/12/99
B0WMF6	004	S	99LE1350	10/25/99	11/08/99	11/12/99

LAB QC:

SBLKFW	MB1	S	99LE1350	N/A	11/08/99	11/12/99
SBLKFW	MB1 BS	S	99LE1350	N/A	11/08/99	11/12/99

RECRA LabNet Use Only

9910L521

Custody Transfer Record/Lab Work Request

Page 1 of 1

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

60

Client: TNU Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: AJ

QC: Spec Del: std TAT: 30 days

Date Rec'd: 10.27.99 Date Due: 11/26/99

Account #:

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

ANALYSES REQUESTED →

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	ORGANIC VOA	BNA	Pest/PCB	Herb	#	8010/8021		INORG ICP Metal	CN	#
								8024 OGCSQ	8025 ODRO	8015		Ang D			Met D	ICNTO	IPH
S - Soil	001	BOWMF1			S	10/25/99	1257	X	X	X		X			X	✓	X
SE - Sediment	002	BOWMF2					1328	X	X	X		X			X	✓	X
SO - Solid	003	BOWMF3					1340	X	X	X		X			X	✓	X
SL - Sludge	004	BOWMF6					1355	X	X	X		X			X	✓	X
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

Special Instructions:

Saf # B99-078

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
2. Met D = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
3. Se, Ag, V, Zn, Hg
4. Ang D = IN3N2, INH3N, ICCL, ICFL, IC SO4,
5. ICNO2, ICNO3, ICPO4, ICPL, ISFD
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. 2.8 °C

Relinquished by	Received by	Date	Time
HDEx	D. Yman	10/27/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

NOTES:

4235 7953 1090

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

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: ERC 99-027	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA/RECRA~~ CT 10/25/99 RECRA	Offsite Property No.: A000011		Bill of Lading/Air Bill No.: 42357953 1090
			COA: B20CW1 671C

Price Code: 8N

Data Turnaround: 45 Days

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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										
BOWMF1	Soil	10/25/99	1257		X	X	X	X	X				BOW8C1
BOWMF2	Soil	10/25/99	1328		X	X	X	X	X				BOW8C1
BOWMF3	Soil	10/25/99	1340		X	X	X	X	X				BOW8C1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers / Doug Bowers	Date/Time: 10-25-99/1500	Received By: Ref 3C	Date/Time: 10-25-99/1500
Relinquished By: Ref#3C	Date/Time: 10.26.99/0800	Received By: R Thoren / R THoren	Date/Time: 10.26.99/0800
Relinquished By: Kinki Thoren / R. Thoren	Date/Time: 10.26.99/1430	Received By: FEDEX	Date/Time:
Relinquished By: FEDEX	Date/Time: 10.27.99/09:30	Received By: D. [illegible]	Date/Time: 10.27.99/09:30

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

9910L521

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

temp. 2.8°

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

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector Bowers/Trice	**Company Contact** Chris Cearlock	**Telephone No.** 372-9574	**Project Coordinator** TRENT, SJ
Price Code 8N	**Data Turnaround** 45 Days		
Project Designation 200 Area Source characterization - 200-CW-1 OU	**Sampling Location** 200 B pond		**SAF No.** B99-078
Ice Chest No.	**Field Logbook No.** EL-1511		**Method of Shipment** FED EX
Shipped To TMA/RECRA B70 10-25-99	**Offsite Property No.** A000011		**Bill of Lading/Air Bill No.** 42357953 1090
			COA B20CW167C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

Sample No.	Matrix *	Sample Date	Sample Time										
BOW4F6	Soil	10-25-99	1355					X	X	X	X	X	

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

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers	10-25-99/1500	Ref 3C	10-25-99/1500
Ref #3C	10-26-99/0800	Rikki Thorne	10-26-99/0800
Rikki Thorne	10-26-99/1430	FED EX	
FED EX	10-27-99/09:30		10-27-99/09:30

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

use Bow801 to ship

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION — Received By — Title — Date/Time

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

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

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW # : 9910L521
SDG/SAF #: H0596/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 10-27-99

GC/MS VOLATILE

Four (4) soil samples were collected on 10-25-99.

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 11-02,03-99.

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 not detected in the samples.

4. Five (5) of twenty-four (24) surrogate recoveries were outside EPA QC limits. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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

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

7. The method blank contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than 2x the CRQL.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-30-99
Date

JAN 2000
RECEIVED
Data
Log In

som\group\data\voa\tnu10521.doc

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

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

GLOSSARY OF VOA DATA

DATA QUALIFIERS

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

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

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

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

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

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

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

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

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

mmz\10-94\gloss.voa

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.voa

Recra LabNet Philadelphia **Sample Discrepancy Report (SDR)** SDR #: 99VT202

Initiator: DRUSNOK RFW Batch: 9910521 Parameter: 0624
Date: 11/3/99 Samples: 1-4 MS/MSD Matrix: SOIL
Client: TNO Method: SW846/MCAWW/CLP/ Prep Batch: —

1. Reason for SDR

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

b. General Discrepancy

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

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

c. QC Problem (Include all relevant specific results; attach data if necessary) 1,2 DCE surrogate Recoveries are out high in all samples except MS. Probable matrix effect. Would like to note in narrative. All Internals and spike recoveries were acceptable.

BDWMF1, MF2, MF3 + MF6

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

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

Juliette G. Johnson 11/3/99

4. Project Manager Instructions...signature/date:

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
✓ Client Contacted:
Date/Person Levi Johnson 11/3/99
__ Add
__ Cancel

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

__ Verified re-[log][leach][extract][digest][analysis] (circle) 11-22-99
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

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

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

L-WI-006/E-03/99

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 11/29/99 16:42

RFW Batch Number: **9910L521** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

	Cust ID:	B0WMF1	B0WMF2	B0WMF3	B0WMF6	B0WMF6	B0WMF6
Sample Information	RFW#:	001	002	003	004	004 MS	004 MSD
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	0.943	1.02	1.00	1.00	0.943
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Toluene-d8	96 %	99 %	102 %	95 %	94 %	93 %
	Bromofluorobenzene	102 %	105 %	110 %	102 %	86 %	103 %
	1,2-Dichloroethane-d4	126 * %	129 * %	136 * %	128 * %	82 %	127 * %
Chloromethane		11 U	10 U	10 U	10 U	10 U	10 U
Bromomethane		11 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride		11 U	10 U	10 U	10 U	10 U	10 U
Chloroethane		11 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride		6 B	4 JB	6 B	5 JB	12 B	11 B
Acetone		13 B	9 JB	10 B	10 U	10 U	10 U
Carbon Disulfide		6 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene		6 U	5 U	5 U	5 U	114 %	120 %
1,1-Dichloroethane		6 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene (total)		6 U	5 U	5 U	5 U	5 U	5 U
Chloroform		6 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane		6 U	5 U	5 U	5 U	5 U	5 U
2-Butanone		11 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		6 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride		6 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane		6 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane		6 U	5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene		6 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene		6 U	5 U	5 U	5 U	94 %	98 %
Dibromochloromethane		6 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane		6 U	5 U	5 U	5 U	5 U	5 U
Benzene		6 U	5 U	5 U	5 U	100 %	98 %
Trans-1,3-Dichloropropene		6 U	5 U	5 U	5 U	5 U	5 U
Bromoform		6 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone		11 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		11 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene		6 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane		6 U	5 U	5 U	5 U	5 U	5 U
Toluene		6 U	5 U	5 U	5 U	96 %	98 %

*= Outside of EPA CLP QC limits.

pw 11-29-99

RFW Batch Number: **9910L521** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1b

90

Cust ID:	B0WMF1	B0WMF2	B0WMF3	B0WMF6	B0WMF6	B0WMF6
RFW#:	001	002	003	004	004 MS	004 MSD
Chlorobenzene	6 U	5 U	5 U	5 U	95 %	98 %
Ethylbenzene	6 U	5 U	5 U	5 U	5 U	5 U
Styrene	6 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	6 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory
Volatiles by GC/MS, HSL List

Report Date: 11/29/99 16:42

RFW Batch Number: **9910L521** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 2a

	Cust ID:	**VBLKAF**		**VBLKAF BS**		
Sample Information	RFW#:	**99LVH513-MB1**		**99LVH513-MB1**		
	Matrix:	SOIL		SOIL		
	D.F.:	1.00		1.00		
	Units:	UG/KG		UG/KG		
Surrogate Recovery	Toluene-d8	97	%	97	%	
	Bromofluorobenzene	102	%	99	%	
	1,2-Dichloroethane-d4	116	%	113	%	
Chloromethane		10	U	10	U	
Bromomethane		10	U	10	U	
Vinyl Chloride		10	U	10	U	
Chloroethane		10	U	10	U	
Methylene Chloride		7		4	JB	
Acetone		4	J	5	JB	
Carbon Disulfide		5	U	5	U	
1,1-Dichloroethene		5	U	104	%	
1,1-Dichloroethane		5	U	5	U	
1,2-Dichloroethene (total)		5	U	5	U	
Chloroform		5	U	5	U	
1,2-Dichloroethane		5	U	5	U	
2-Butanone		10	U	10	U	
1,1,1-Trichloroethane		5	U	5	U	
Carbon Tetrachloride		5	U	5	U	
Bromodichloromethane		5	U	5	U	
1,2-Dichloropropane		5	U	5	U	
cis-1,3-Dichloropropene		5	U	5	U	
Trichloroethene		5	U	99	%	
Dibromochloromethane		5	U	5	U	
1,1,2-Trichloroethane		5	U	5	U	
Benzene		5	U	96	%	
Trans-1,3-Dichloropropene		5	U	5	U	
Bromoform		5	U	5	U	
4-Methyl-2-pentanone		10	U	10	U	
2-Hexanone		10	U	10	U	
Tetrachloroethene		5	U	5	U	
1,1,2,2-Tetrachloroethane		5	U	5	U	
Toluene		5	U	100	%	

*= Outside of EPA CLP QC limits.

Cust ID:	**VBLKAF**	**VBLKAF BS**
RFW#:	**99LVH513-MB1**	**99LVH513-MB1**

Chlorobenzene	5	U	101	%
Ethylbenzene	5	U	5	U
Styrene	5	U	5	U
Xylene (total)	5	U	5	U

*= Outside of EPA CLP QC limits.

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

DATE RECEIVED: 10/27/99 RFW LOT # :9910L521

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WMF1	001	S	99LVH513	10/25/99	N/A	11/02/99
B0WMF2	002	S	99LVH513	10/25/99	N/A	11/03/99
B0WMF3	003	S	99LVH513	10/25/99	N/A	11/03/99
B0WMF6	004	S	99LVH513	10/25/99	N/A	11/03/99
B0WMF6	004 MS	S	99LVH513	10/25/99	N/A	11/03/99
B0WMF6	004 MSD	S	99LVH513	10/25/99	N/A	11/03/99
LAB QC:						
VBLKAF	MB1	S	99LVH513	N/A	N/A	11/02/99
VBLKAF	MB1 BS	S	99LVH513	N/A	N/A	11/02/99

AW 11-27-99

RECRA LabNet Use Only: 9910L521

Custody Transfer Record/Lab Work Request

Page 1 of 1

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) 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 days
Date Rec'd: 10.27.99 Date Due: 11/26/99
Account #:

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

ANALYSES REQUESTED →

	ORGANIC							INORG		
	VOA	BNA	Pest/PCB	Herb	#	# 10/27/99		ICP 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	8021 4H 8260	8270 SIM 8 DRO	8082 PCB		Anion			Metals	ICP TO	IPH				
001	BOWMF1			S	10/25/99	1257	X	X	X		X			X	✓	X				
002	BOWMF2					1328	X	X	X		X			X	✓	X				
003	BOWMF3					1340	X	X	X		X			X	✓	X				
004	BOWMF6					1355	X	X	X		X			X	✓	X				

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

Special Instructions:
saf # B99-078

COMPOSITE WASTE

DATE/REVISIONS:
1. Run matrix QC
Met ① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
3. Se, Ag, V, Zn, Hg
Anion ① = IN3N2, INH3N, ICCL, ICFL, IC SO4,
5. ICNO2, ICNO3, ICPO4, ICR6, ISFD

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. 2.8 °C

Relinquished by	Received by	Date	Time
FedEx	D. Yonian	10/27/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7953 1090

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

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: ERC 99-027	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA/RECRA~~ CT 10/25/99 RECRA	Offsite Property No.: A000011		Bill of Lading/Air Bill No.: 42357953 1090
			COA: B20CW1 67/C

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

Sample No.	Matrix *	Sample Date	Sample Time										
10WMF1	Soil	10/25/99	1257		X	X	X	X	X				BOWBC1
BOWMF2	Soil	10/25/99	1328		X	X	X	X	X				BOWBC1
BOWMF3	Soil	10/25/99	1340		X	X	X	X	X				BOWBC1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 10-25-99/1700	Received By: Ref 3C	Date/Time: 10-25-99/1700
Relinquished By: Ref 3C	Date/Time: 10-26-99/0800	Received By: R Thoren/R Thoren	Date/Time: 10-26-99/0800
Relinquished By: R Thoren/R Thoren	Date/Time: 10-26-99/1430	Received By: FEDEX	Date/Time:
Relinquished By: FedEx	Date/Time: 10-27-99/09:30	Received By: D. Jones	Date/Time: 10-27-99/09:30

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

9910L521

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

temp 2C

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-145	Page 1 of 1

Collector Bowers/Trice	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location 200 B pond		SAF No. B99-078
Ice Chest No.	Field Logbook No. EL-1511		Method of Shipment FED EX
Shipped To TMA/RECRA 10-25-99	Offsite Property No. A00001		Bill of Lading/Air Bill No. 42357953 1090
			COA B20CW1 67JC

Price Code 8N

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.
Sample No.	Matrix * / Sample Date / Sample Time										
BOW4F6	Soil / 10-25-99 / 1355					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers	Date/Time 10-25-99/1500	Received By Rif 3C	Date/Time 10-25-99/1500
Relinquished By Ref #3C	Date/Time 10-26-99/0800	Received By Rikki Thorer	Date/Time 10-26-99/0800
Relinquished By Rikki Thorer	Date/Time 10-26-99/1430	Received By FED EX	Date/Time
Relinquished By FED EX	Date/Time 10-27-99/09:30	Received By	Date/Time 10-27-99/09:30

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

use BOW801 to ship

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# : 9910L521
SDG/SAF#: H0596/B99-078

W.O #: 10985-001-001-9999-00
Date Received: 10-27-99

DIESEL RANGE ORGANICS

The set of samples consisted of four (4) soil samples collected on 10-25-99.

The sample and its associated QC samples were prepared on 10-29-99 and analyzed by methodology based on EPA Method 8015B for Diesel Range Petroleum Hydrocarbons on 11-12-99. The analysis met the intent of method WTPH-D.

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

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

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

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

5. All surrogate recoveries were within acceptance criteria.

6. The blank spike recovery was within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

JAN 2000
RECEIVED
Data
Log In

Pat G

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-22-99
Date

R:\SHARE\LC\GCSCAN\10-521d.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 6 pages.
7 11/22/99

GLOSSARY OF DIESEL DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Recra LabNet - Lionville Laboratory

DIESEL RANGE ORGANICS BY GC

Report Date: 11/18/99 08:54

RFW Batch Number: **9910L521** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

03

	Cust ID:	B0WMF1	B0WMF1	B0WMF1	B0WMF2	B0WMF3	B0WMF6
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	92 %	86 %	93 %	88 %	96 %	86 %
Diesel Range Organics		4.6 U	84 %	91 %	4.2 U	4.1 U	4.1 U

	Cust ID:	BLK	BLK BS
Sample Information	RFW#:	99LE1315-MB1	99LE1315-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	mg/kg	mg/kg
Surrogate:	p-Terphenyl	54 %	81 %
Diesel Range Organics		4.0 U	78 %

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

11/18/99

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

DATE RECEIVED: 10/27/99 RFW LOT # :9910L521

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WMF1	001	S	99LE1315	10/25/99	10/29/99	11/12/99
B0WMF1	001 MS	S	99LE1315	10/25/99	10/29/99	11/12/99
B0WMF1	001 MSD	S	99LE1315	10/25/99	10/29/99	11/12/99
B0WMF2	002	S	99LE1315	10/25/99	10/29/99	11/12/99
B0WMF3	003	S	99LE1315	10/25/99	10/29/99	11/12/99
B0WMF6	004	S	99LE1315	10/25/99	10/29/99	11/12/99
LAB QC:						
BLK	MB1	S	99LE1315	N/A	10/29/99	11/12/99
BLK	MB1 BS	S	99LE1315	N/A	10/29/99	11/12/99

RECRA LabNet Use Only

9910L521

Custody Transfer Record/Lab Work Request

Page 1 of 1

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) 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 days

Date Rec'd: 10.27.99 Date Due: 11/26/99

Account #:

Refrigerator #		1	2			1			2		2						
#/Type Container	Liquid																
	Solid	1AG	1AG			1			1AG		1AG						
Volume	Liquid																
	Solid	250	250			1			250		250						
Preservatives		—	—			—			—		—						
ANALYSES REQUESTED		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb	~~TPH~~ 8015 10/29/99			ICP Metal	CN	TPH						
		RECRA LabNet Use Only															
		8260 24H	8270SG	8270 25H	8 DRO	8082B	Amg 1		Metal 1	ICNITO	1PH						

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8260 24H	8270SG	8270 25H	8 DRO	8082B	Amg 1		Metal 1	ICNITO	1PH					
001	BOWMF1			S	10/25/99	1257	X	X	X			X		X	✓	X					
002	BOWMF2					1328	X	X	X			X		X	✓	X					
003	BOWMF3					1340	X	X	X			X		X	✓	X					
004	BOWMF6					1355	X	X	X			X		X	✓	X					

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

Special Instructions:

saf # B99-078

COMPOSITE WASTE

DATE/REVISIONS:

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

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. 2.8 °C

Relinquished by	Received by	Date	Time
FedEx	D. Yman	10/27/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

NOTES:

4235 7953 1090

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

Collector Bowers/Trice	**Company Contact** Chris Cearlock	**Telephone No.** 372-9574	**Project Coordinator** TRENT, SJ
Project Designation 200 Area Source characterization - 200-CW-1 OU	**Sampling Location** 200 B pond		**SAF No.** B99-078
Ice Chest No. ERC 99-027	**Field Logbook No.** EL-1511		**Method of Shipment** FED EX
Shipped To ~~TMA/RECRA~~ CT 10/25/99 RECRA	**Offsite Property No.** A000011		**Bill of Lading/Air Bill No.** 42357953 1090
			COA B20CW1 67/C

Price Code 8N **Data Turnaround** 45 Days 90

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										
BOWMF1	Soil	10/25/99	1257		X	X	X	X	X				BOW8C1
BOWMF2	Soil	10/25/99	1328		X	X	X	X	X				BOW8C1
BOWMF3	Soil	10/25/99	1340		X	X	X	X	X				BOW8C1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Date/Time Doug Bowers 10-25-99/1500	Received By Ref 3C Date/Time 10-25-99/1500		
Relinquished By Ref#3C Date/Time 10-26-99/0800	Received By R Thoren/R Thoren Date/Time 10-26-99/0800		
Relinquished By Rinki Thoren Date/Time R. Thoren 10-26-99/1430	Received By FEDEX Date/Time		
Relinquished By FEDEX Date/Time 10-27-99/09:30	Received By [signature] Date/Time 10-27-99/09:30		

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

9910L521

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

temp 28

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-145	Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA/RECRA~~ 10-25-99	Offsite Property No.: A000011		Bill of Lading/Air Bill No.: 42357953 1090
			COA B20CW167C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.
Sample No.	Matrix * / Sample Date / Sample Time										
BOW4F6	Soil / 10-25-99 / 1355					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 10-25-99/1500	Received By: Ref 3C	Date/Time: 10-25-99/1500
Relinquished By: Ref #3C	Date/Time: 10-26-99/0800	Received By: Rikki Thoren	Date/Time: 10-26-99/0800
Relinquished By: Rikki Thoren	Date/Time: 10-26-99/1430	Received By: FED EX	Date/Time:
Relinquished By: FED EX	Date/Time: 10-27-99/09:30	Received By:	Date/Time: 10-27-99/09:30

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

use BOW8C1 to ship

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

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

Recra LabNet Philadelphia
Analytical Report

Client: TNU HANFORD B99-078
RFW #: 9910L521
SDG/SAF#: H0596/B99-078

W.O. #: #: 10985-001-001-9999-00
Date Received: 10-27-99

GC SCAN

The set of samples consisted of four (4) soil samples collected on 10-25-99.

The samples and their associated QC samples were prepared on 11-03-99 and analyzed by methodology based on EPA Method 8015B for Ethanol and 1-Propanol on 11-04-99.

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

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

2. The required holding time for analysis was met.

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

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

5. Surrogates were not used for this analysis.

6. All blank spike recoveries were within advisory control limits of 50%-150%.

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

JAN 2000

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-22-99
Date

r:\share\lc\gcscan\10-521.doc

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

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

GLOSSARY OF OGCSC DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Recra LabNet - Lionville Laboratory

GC SCAN

Report Date: 11/16/99 17:08

RFW Batch Number: **9910L521** Client: **TNU-HANFORD B99-078** Work Order: **10985-001-001-9999-00** Page: 1

003

	Cust ID:	B0WMF1	B0WMF1	B0WMF1	B0WMF2	B0WMF3	B0WMF6
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
n-Propyl Alcohol		5.5 U	136 %	119 %	5.0 U	4.8 U	4.8 U
Ethanol		5.5 U	5.5 U	5.5 U	5.0 U	4.8 U	4.8 U

	Cust ID:	BLK	BLK BS
Sample Information	RFW#:	99LLC168-MB1	99LLC168-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	mg/kg	mg/kg
n-Propyl Alcohol		5.0 U	131 %
Ethanol		5.0 U	5.0 U

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

11/16/99

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

DATE RECEIVED: 10/27/99 RFW LOT # :9910L521

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WMF1	001	S	99LLC168	10/25/99	11/03/99	11/04/99
B0WMF1	001 MS	S	99LLC168	10/25/99	11/03/99	11/04/99
B0WMF1	001 MSD	S	99LLC168	10/25/99	11/03/99	11/04/99
B0WMF2	002	S	99LLC168	10/25/99	11/03/99	11/04/99
B0WMF3	003	S	99LLC168	10/25/99	11/03/99	11/04/99
B0WMF6	004	S	99LLC168	10/25/99	11/03/99	11/04/99

LAB QC:

BLK	MB1	S	99LLC168	N/A	11/03/99	11/04/99
BLK	MB1 BS	S	99LLC168	N/A	11/03/99	11/04/99

RECRA LabNet Use Only: 9910L521

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 #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: AT
QC: spec Del: std TAT: 30 day
Date Rec'd: 10.27.99 Date Due: 11/26/99
Account #:

Refrigerator #		1	2			1			2		2						
#/Type Container	Liquid																
	Solid	1AG	1AG			1			1AG		1AG						
Volume	Liquid																
	Solid	250	250			1			250		250						
Preservatives		—	—			—			—		—						
ANALYSES REQUESTED		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb	#	$ 10/27/99		ICP Metal	CN	#						
RECRA LabNet Use Only		8024H 8015C	8025H 8DRO	8PCB		Anion			Metal	ICNTO	IPH						

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected												
S - Soil	001	BOWMF1			S	10/25/99	1257	X	X	X		X			X	✓	X		
SE - Sediment	002	BOWMF2					1328	X	X	X		X			X	✓	X		
SO - Solid	003	BOWMF3					1340	X	X	X		X			X	✓	X		
SL - Sludge	004	BOWMF6					1355	X	X	X		X			X	✓	X		
W - Water																			
O - Oil																			
A - Air																			
DS - Drum Solids																			
DL - Drum Liquids																			
L - EP/TCLP Leachate																			
WI - Wipe																			
X - Other																			
F - Fish																			

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

Special Instructions:
saf # B99-078

COMPOSITE WASTE

DATE/REVISIONS:
1. Run matrix QC
Met (1) = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
3. Se, Ag, V, Zn, Hg
Anion (1) 4. = IN3N2, INH3N, ICCL, ICFL, IC SO4,
5. ICNO2, ICNO3, ICPO4, ICR6, ISFD
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'l (Y) or N
Cooler Temp. 2.8 C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7953 1090

Relinquished by	Received by	Date	Time
FedEx	D. Ymar	10/27/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: ERC 99-027	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA~~/RECRA CT 10/25/99 RECRA	Offsite Property No.: A000011		Bill of Lading/Air Bill No.: 4235795 3 1090
			COA: B20CW1 67/C

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.			
Sample No.	Matrix *	Sample Date	Sample Time								
BOWMF1	Soil	10/25/99	1257		X	X	X	X	X		BOWBC1
BOWMF2	Soil	10/25/99	1328		X	X	X	X	X		BOWBC1
BOWMF3	Soil	10/25/99	1340		X	X	X	X	X		BOWBC1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 10-25-99/1500	Received By: Ref 3C	Date/Time: 10-25-99/1500
Relinquished By: Ref 3C	Date/Time: 10-26-99/0800	Received By: RThoren/RThoren	Date/Time: 10-26-99/0800
Relinquished By: RThoren/R. Thoren	Date/Time: 10-26-99/1430	Received By: FEDEX	Date/Time:
Relinquished By: FEDEX	Date/Time: 10-27-99/09:30	Received By: [illegible]	Date/Time: 10-27-99/09:30

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

9910L521

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

temp 2°

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-145	Page 1 of 1

Collector Bowers/Trice	**Company Contact** Chris Cearlock	**Telephone No.** 372-9574	**Project Coordinator** TRENT, SJ
Project Designation 200 Area Source characterization - 200-CW-1 OU	**Sampling Location** 200 B pond		**SAF No.** B99-078
Ice Chest No.	**Field Logbook No.** EL-1511		**Method of Shipment** FED EX
Shipped To ~~TMA~~/RECRA [illegible] 10-25-99	**Offsite Property No.** A000011		**Bill of Lading/Air Bill No.** 42357953 1090
			COA B20CW1 67JC

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

007

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

Sample No.	Matrix *	Sample Date	Sample Time										
BOW4F6	Soil	10-25-99	1355					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Date/Time [signature] 10-25-99/1500	Received By Ref 3C Date/Time 10-25-99/1500		
Relinquished By Ref #3C Date/Time 10-26-99/0800	Received By Rikki Thoren Date/Time [signature] 10-26-99/0800		
Relinquished By Rikki Thoren Date/Time [signature] 10-26-99/1430	Received By FED EX Date/Time		
Relinquished By FED EX Date/Time 10-27-99/09:30	Received By [signature] Date/Time 10-27-99/09:30		

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

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

use BOW801 to ship

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#: 9910L521
SDG/SAF#: H0596/B99-078

W.O.#: 10985-001-001-9999-00
Date Received: 10-27-99

PCB

The set of samples consisted of four (4) soil samples collected on 10-25-99.

The samples and their associated QC samples were extracted on 11-04-99 and analyzed according to Recra OPs based on SW846, 3rd Edition procedures on 11-11-99. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

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

1. All cooler temperatures have been recorded on the chain-of-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. Two (2) of sixteen (16) surrogate recoveries were outside QC limits; however, the surrogate recovery acceptance criteria were met (i.e., no more than one outlier per sample).
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.

Pg [signature]
J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-22-99
Date

JAN 2000
RECEIVED
Data
Log

pcf\r:\group\data\pest\10L521.pcb

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

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

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

P	=	This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
D	=	This flag identifies all compounds identified in an analysis at a secondary dilution factor.
C	=	This flag applies to a compound that has been confirmed by GC/MS.

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 11/16/99 17:38

RFW Batch Number: **9910L521** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1

	Cust ID:	B0WMF1	B0WMF1	B0WMF1	B0WMF2	B0WMF3	B0WMF6
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	120 * %	122 * %	108 %	115 %	95 %	108 %
	Decachlorobiphenyl	109 %	91 %	87 %	107 %	98 %	103 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		38 U	38 U	38 U	35 U	34 U	34 U
Aroclor-1221		77 U	77 U	77 U	70 U	68 U	68 U
Aroclor-1232		38 U	38 U	38 U	35 U	34 U	34 U
Aroclor-1242		38 U	38 U	38 U	35 U	34 U	34 U
Aroclor-1248		38 U	38 U	38 U	35 U	34 U	34 U
Aroclor-1254		38 U	92 %	90 %	35 U	34 U	34 U
Aroclor-1260		38 U	38 U	38 U	35 U	34 U	34 U

	Cust ID:	PBLKYT	PBLKYT BS
Sample Information	RFW#:	99LE1341-MB1	99LE1341-MB1
	Matrix:	SOIL	SOIL
	D.F.:	1.00	1.00
	Units:	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	90 %	102 %
	Decachlorobiphenyl	86 %	101 %
		fl	fl
Aroclor-1016		33 U	33 U
Aroclor-1221		67 U	67 U
Aroclor-1232		33 U	33 U
Aroclor-1242		33 U	33 U
Aroclor-1248		33 U	33 U
Aroclor-1254		33 U	96 %
Aroclor-1260		33 U	33 U

AW 11-19-99

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

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

DATE RECEIVED: 10/27/99 RFW LOT # :9910L521

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WMF1	001	S	99LE1341	10/25/99	11/04/99	11/11/99
B0WMF1	001 MS	S	99LE1341	10/25/99	11/04/99	11/11/99
B0WMF1	001 MSD	S	99LE1341	10/25/99	11/04/99	11/11/99
B0WMF2	002	S	99LE1341	10/25/99	11/04/99	11/11/99
B0WMF3	003	S	99LE1341	10/25/99	11/04/99	11/11/99
B0WMF6	004	S	99LE1341	10/25/99	11/04/99	11/11/99

LAB QC:

PBLKYT	MB1	S	99LE1341	N/A	11/04/99	11/11/99
PBLKYT	MB1 BS	S	99LE1341	N/A	11/04/99	11/11/99

11-19-99

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

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: ERC 99-027	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA/RECRA~~ CT 10/26/99 RECRA	Offsite Property No.: A000011		Bill of Lading/Air Bill No.: 42357953 1090
			COA: B20CW1 67/C

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

Sample No.	Matrix *	Sample Date	Sample Time										
BOWMF1	Soil	10/25/99	1257		X	X	X	X	X				BOWBC1
BOWMF2	Soil	10/25/99	1328		X	X	X	X	X				BOWBC1
BOWMF3	Soil	10/25/99	1340		X	X	X	X	X				BOWBC1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 10-25-99/1700	Received By: Ref 3C	Date/Time: 10-25-99/1700
Relinquished By: Ref 3C	Date/Time: 10-26-99/0800	Received By: R Thoren/R Thoren	Date/Time: 10-26-99/0800
Relinquished By: Rikki Thoren/R. Thoren	Date/Time: 10-26-99/1430	Received By: FEDEX	Date/Time:
Relinquished By: FedEx	Date/Time: 10-27-99/09:30	Received By: S. Jones	Date/Time: 10-27-99/09:30

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

9910L521

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

temp. 20°

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-145	Page 1 of 1

Collector Bowers/Trice	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ	Price Code 8N Data Turnaround 45 Days
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location 200 B pond		SAF No. B99-078	
Ice Chest No.	Field Logbook No. EL-1511		Method of Shipment FED EX	
Shipped To TMA/RECRA [illegible] 10-25-99	Offsite Property No. A000011		Bill of Lading/Air Bill No. 42357953 1090	
			COA B20CW1 67JC	

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

Sample No.	Matrix *	Sample Date	Sample Time										
BOWMF6	Soil	10-25-99	1355					X	X	X	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers [signature]	10-25-99/1500	Ref 3C	10-25-99/1500
Ref #3C	10-26-99/0800	Rikki Thoren [signature]	10-26-99/0800
Rikki Thoren [signature]	10-26-99/1430	FED EX	
FED EX	10-27-99/09:30	[signature]	10-27-99/09:30

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

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

use BOW801 to ship

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# : 9910L521
SDG# : H0596
SAF# : B99-078

W.O. # : 10985-001-001-9999-00
Date Received: 10-27-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 4 soil samples.

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

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

4. The cooler temperature was 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.

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

JAN 2000
RECEIVED
Data
Log In

12-15-99
Date

njp\i10-521

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 17 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 12/08/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L521

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WMF1	% Solids	87.1		%	0.01	1.0
		Chloride by IC	4.7		MG/KG	1.4	1.0
		Fluoride by IC	2.9	u	MG/KG	2.9	1.0
		Nitrite by IC	1.4	u	MG/KG	1.4	1.0
		Nitrate by IC	210		MG/KG	14	10
		Cyanide, Total	0.57	u	MG/KG	0.57	1.0
		Phosphate by IC	1.4	u	MG/KG	1.4	1.0
		Chromium VI	0.46	u	MG/KG	0.46	1.0
		Sulfate by IC	35.9		MG/KG	1.4	1.0
		Nitrate Nitrite	47.3		MG/KG	2.3	10.0
		Ammonia, as N	1.4	u	MG/KG	1.4	1.0
		pH	9.1		SOIL PH	0.01	1.0
		Sulfide	8.8		MG/KG	2.3	1.0
-002	B0WMF2	% Solids	95.7		%	0.01	1.0
		Chloride by IC	10.9		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	44		MG/KG	1.3	1.0
		Cyanide, Total	0.52	u	MG/KG	0.52	1.0
		Phosphate by IC	1.9		MG/KG	1.3	1.0
		Chromium VI	0.42	u	MG/KG	0.42	1.0
		Sulfate by IC	55.1		MG/KG	6.5	5.0
		Nitrate Nitrite	8.3		MG/KG	0.21	1.0
		Ammonia, as N	1.3	u	MG/KG	1.3	1.0
		pH	9.3		SOIL PH	0.01	1.0
		Sulfide	4.0		MG/KG	2.1	1.0
-003	B0WMF3	% Solids	98.0		%	0.01	1.0
		Chloride by IC	1.3	u	MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	1.3	u	MG/KG	1.3	1.0
		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	4.0		MG/KG	1.3	1.0
		Nitrate Nitrite	0.19	u	MG/KG	0.19	1.0
		Ammonia, as N	1.2	u	MG/KG	1.2	1.0
		pH	9.1		SOIL PH	0.01	1.0

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INORGANICS DATA SUMMARY REPORT 12/08/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9910L521

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0WMF3	Sulfide	4.0		MG/KG	2.0	1.0
-004	B0WMF6	% Solids	97.8		%	0.01	1.0
		Chloride by IC	1.3	u	MG/KG	1.3	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	1.3	u	MG/KG	1.3	1.0
		Nitrate by IC	1.3	u	MG/KG	1.3	1.0
		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	3.5		MG/KG	1.3	1.0
		Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
		Ammonia, as N	1.2	u	MG/KG	1.2	1.0
		pH	9.1		SOIL PH	0.01	1.0
		Sulfide	3.9		MG/KG	2.0	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/08/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L521

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LIC097-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.2	u	MG/KG	1.2	1.0
		Nitrate by IC	1.2	u	MG/KG	1.2	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK10	99LIC098-MB1	Chloride by IC	1.2	u	MG/KG	1.2	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	1.2	u	MG/KG	1.2	1.0
		Nitrate by IC	1.2	u	MG/KG	1.2	1.0
		Phosphate by IC	1.2	u	MG/KG	1.2	1.0
		Sulfate by IC	1.2	u	MG/KG	1.2	1.0
BLANK1	99LC123-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	99LVI082-MB1	Chromium VI	0.40	u	MG/KG	0.40	1.0
BLANK10	99LANA55-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	99LAM043-MB1	Ammonia, as N	1.2	u	MG/KG	1.2	1.0
BLANK10	99LSD064-MB1	Sulfide	2.0	u	MG/KG	2.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/08/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9910L521

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WMF1	Cyanide, Total	5.9	0.57u	5.7	102.6	1.0
		Ammonia, as N	78.7	1.4 u	79.7	98.8	1.0
-003	B0WMF3	Chloride by IC	25.7	1.2	25.5	96.3	1.0
		Fluoride by IC	53.6	0.0	51.0	105.1	1.0
		Nitrite by IC	25	1.3 u	26	97.3	1.0
		Nitrate by IC	25	1.3 u	26	98.3	1.0
		Phosphate by IC	27.1	1.3 u	25.5	106.2	1.0
		Sulfate by IC	29.3	4.0	25.5	99.2	1.0
-004	B0WMF6	Soluble Chromium VI	4.1	0.41u	4.1	99.9	1.0
		Insoluble Chromium VI	1100	0.41u	1180	93.9	100
		Nitrate Nitrite	5.0	0.20u	4.7	105.6	1.0
		Sulfide	341	3.9	409	82.4	1.0
BLANK10	99LIC097-MB1	Chloride by IC	23.8	1.2 u	25.0	95.1	1.0
		Fluoride by IC	52.4	2.5 u	50.0	104.8	1.0
		Nitrite by IC	24	1.2 u	25	96.8	1.0
		Nitrate by IC	24	1.2 u	25	97.3	1.0
		Phosphate by IC	25.6	1.2 u	25.0	102.3	1.0
		Sulfate by IC	23.9	1.2 u	25.0	95.6	1.0
BLANK10	99LIC098-MB1	Chloride by IC	23.5	1.2 u	25.0	94.0	1.0
		Fluoride by IC	48.7	2.5 u	50.0	97.3	1.0
		Nitrite by IC	24	1.2 u	25	96.1	1.0
		Nitrate by IC	24	1.2 u	25	94.6	1.0
		Phosphate by IC	25.3	1.2 u	25.0	101.2	1.0
		Sulfate by IC	23.9	1.2 u	25.0	95.5	1.0
BLANK10	99LVI082-MB1	Soluble Chromium VI	3.9	0.40u	4.0	98.6	1.0
		Insoluble Chromium VI	1090	0.40u	1160	93.9	100
BLANK10	99LANA55-MB1	Nitrate Nitrite	4.9	0.20u	5.0	98.4	1.0
		Nitrate Nitrite MSD	5.0	0.20u	5.0	100.8	1.0
BLANK10	99LAM043-MB1	Ammonia, as N	50.0	1.2 u	50.0	100	1.0
		Ammonia, as N MSD	48.0	1.2 u	50.0	96.0	1.0
BLANK10	99LSD064-MB1	Sulfide	9.6	2.0 u	10.0	96.0	1.0

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INORGANICS DUPLICATE SPIKE REPORT 12/08/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L521

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	99LANA55-MB1	Nitrate Nitrite	98.4	100.8	2.4
BLANK10	99LAM043-MB1	Ammonia, as N	100	96.0	4.1

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INORGANICS PRECISION REPORT 12/08/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L521

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WMF1	Cyanide, Total	0.57u	0.57u	NC	1.0
		Ammonia, as N	1.4 u	1.4 u	NC	1.0
		pH	9.1	9.0	0.2	1.0
-003REP	B0WMF3	Chloride by IC	1.3 u	1.3 u	NC	1.0
		Fluoride by IC	2.6 u	2.6 u	NC	1.0
		Nitrite by IC	1.3 u	1.3 u	NC	1.0
		Nitrate by IC	1.3 u	1.5	NC	1.0
		Phosphate by IC	1.3 u	1.3 u	NC	1.0
		Sulfate by IC	4.0	3.9	2.5	1.0
-004REP	B0WMF6	% Solids	97.8	97.9	0.13	1.0
		Chromium VI	0.41u	0.41u	NC	1.0
		Nitrate Nitrite	0.20u	0.18u	NC	1.0
		Sulfide	3.9	3.9	0.38	1.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/08/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L521

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99LC123-LC1	Cyanide, Total LCS	9.1	10	MG/KG	90.6
LCS2	99LC123-LC2	Cyanide, Total LCS	9.1	10	MG/KG	90.6

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

DATE RECEIVED: 10/27/99 RFW LOT # :9910L521

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WMF1						
% SOLIDS	001	S	99L%S144	10/25/99	10/29/99	10/29/99
CHLORIDE BY IC	001	S	99LIC097	10/25/99	11/16/99	11/16/99
FLUORIDE BY IC	001	S	99LIC097	10/25/99	11/16/99	11/16/99
NITRITE BY IC	001	S	99LIC097	10/25/99	11/16/99	11/16/99
NITRATE BY IC	001	S	99LIC098	10/25/99	11/17/99	11/17/99
TOTAL CYANIDE	001	S	99LC123	10/25/99	11/03/99	11/03/99
TOTAL CYANIDE	001 REP	S	99LC123	10/25/99	11/03/99	11/03/99
TOTAL CYANIDE	001 MS	S	99LC123	10/25/99	11/03/99	11/03/99
PHOSPHATE BY IC	001	S	99LIC097	10/25/99	11/16/99	11/16/99
CHROMIUM VI	001	S	99LVI082	10/25/99	11/09/99	11/09/99
SULFATE BY IC	001	S	99LIC097	10/25/99	11/16/99	11/16/99
NITRATE NITRITE	001	S	99LANA55	10/25/99	11/17/99	11/18/99
AMMONIA	001	S	99LAM043	10/25/99	11/08/99	11/08/99
AMMONIA	001 REP	S	99LAM043	10/25/99	11/08/99	11/08/99
AMMONIA	001 MS	S	99LAM043	10/25/99	11/08/99	11/08/99
PH	001	S	99LPH117	10/25/99	10/29/99	10/29/99
PH	001 REP	S	99LPH117	10/25/99	10/29/99	10/29/99
SULFIDE	001	S	99LSD064	10/25/99	10/29/99	10/29/99
B0WMF2						
% SOLIDS	002	S	99L%S144	10/25/99	10/29/99	10/29/99
CHLORIDE BY IC	002	S	99LIC097	10/25/99	11/16/99	11/16/99
FLUORIDE BY IC	002	S	99LIC097	10/25/99	11/16/99	11/16/99
NITRITE BY IC	002	S	99LIC097	10/25/99	11/16/99	11/16/99
NITRATE BY IC	002	S	99LIC097	10/25/99	11/16/99	11/16/99
TOTAL CYANIDE	002	S	99LC123	10/25/99	11/03/99	11/03/99
PHOSPHATE BY IC	002	S	99LIC097	10/25/99	11/16/99	11/16/99
CHROMIUM VI	002	S	99LVI082	10/25/99	11/09/99	11/09/99
SULFATE BY IC	002	S	99LIC098	10/25/99	11/17/99	11/17/99
NITRATE NITRITE	002	S	99LANA55	10/25/99	11/17/99	11/18/99
AMMONIA	002	S	99LAM043	10/25/99	11/08/99	11/08/99
PH	002	S	99LPH117	10/25/99	10/29/99	10/29/99
SULFIDE	002	S	99LSD064	10/25/99	10/29/99	10/29/99
B0WMF3						
% SOLIDS	003	S	99L%S144	10/25/99	10/29/99	10/29/99

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

DATE RECEIVED: 10/27/99 RFW LOT # :9910L521

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	003	S	99LIC097	10/25/99	11/16/99	11/16/99
CHLORIDE BY IC	003 REP	S	99LIC097	10/25/99	11/16/99	11/16/99
CHLORIDE BY IC	003 MS	S	99LIC098	10/25/99	11/17/99	11/17/99
FLUORIDE BY IC	003	S	99LIC097	10/25/99	11/16/99	11/16/99
FLUORIDE BY IC	003 REP	S	99LIC097	10/25/99	11/16/99	11/16/99
FLUORIDE BY IC	003 MS	S	99LIC098	10/25/99	11/17/99	11/17/99
NITRITE BY IC	003	S	99LIC097	10/25/99	11/16/99	11/16/99
NITRITE BY IC	003 REP	S	99LIC097	10/25/99	11/16/99	11/16/99
NITRITE BY IC	003 MS	S	99LIC098	10/25/99	11/17/99	11/17/99
NITRATE BY IC	003	S	99LIC097	10/25/99	11/16/99	11/16/99
NITRATE BY IC	003 REP	S	99LIC097	10/25/99	11/16/99	11/16/99
NITRATE BY IC	003 MS	S	99LIC098	10/25/99	11/17/99	11/17/99
TOTAL CYANIDE	003	S	99LC123	10/25/99	11/03/99	11/03/99
PHOSPHATE BY IC	003	S	99LIC097	10/25/99	11/16/99	11/16/99
PHOSPHATE BY IC	003 REP	S	99LIC097	10/25/99	11/16/99	11/16/99
PHOSPHATE BY IC	003 MS	S	99LIC098	10/25/99	11/17/99	11/17/99
CHROMIUM VI	003	S	99LVI082	10/25/99	11/09/99	11/09/99
SULFATE BY IC	003	S	99LIC097	10/25/99	11/16/99	11/16/99
SULFATE BY IC	003 REP	S	99LIC097	10/25/99	11/16/99	11/16/99
SULFATE BY IC	003 MS	S	99LIC098	10/25/99	11/17/99	11/17/99
NITRATE NITRITE	003	S	99LANA55	10/25/99	11/17/99	11/18/99
AMMONIA	003	S	99LAM043	10/25/99	11/08/99	11/08/99
PH	003	S	99LPH117	10/25/99	10/29/99	10/29/99
SULFIDE	003	S	99LSD064	10/25/99	10/29/99	10/29/99
B0WMF6						
% SOLIDS	004	S	99L%S144	10/25/99	10/29/99	10/29/99
% SOLIDS	004 REP	S	99L%S144	10/25/99	10/29/99	10/29/99
CHLORIDE BY IC	004	S	99LIC097	10/25/99	11/16/99	11/16/99
FLUORIDE BY IC	004	S	99LIC097	10/25/99	11/16/99	11/16/99
NITRITE BY IC	004	S	99LIC097	10/25/99	11/16/99	11/16/99
NITRATE BY IC	004	S	99LIC097	10/25/99	11/16/99	11/16/99
TOTAL CYANIDE	004	S	99LC123	10/25/99	11/03/99	11/03/99
PHOSPHATE BY IC	004	S	99LIC097	10/25/99	11/16/99	11/16/99
CHROMIUM VI	004	S	99LVI082	10/25/99	11/09/99	11/09/99
CHROMIUM VI	004 REP	S	99LVI082	10/25/99	11/09/99	11/09/99
CHROMIUM VI	004 MS	S	99LVI082	10/25/99	11/09/99	11/09/99

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

DATE RECEIVED: 10/27/99 RFW LOT # :9910L521

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	004 MSD	S	99LVI082	10/25/99	11/09/99	11/09/99
SULFATE BY IC	004	S	99LIC097	10/25/99	11/16/99	11/16/99
NITRATE NITRITE	004	S	99LANA55	10/25/99	11/17/99	11/18/99
NITRATE NITRITE	004 REP	S	99LANA55	10/25/99	11/17/99	11/18/99
NITRATE NITRITE	004 MS	S	99LANA55	10/25/99	11/17/99	11/18/99
AMMONIA	004	S	99LAM043	10/25/99	11/08/99	11/08/99
PH	004	S	99LPH117	10/25/99	10/29/99	10/29/99
SULFIDE	004	S	99LSD064	10/25/99	10/29/99	10/29/99
SULFIDE	004 REP	S	99LSD064	10/25/99	10/29/99	10/29/99
SULFIDE	004 MS	S	99LSD064	10/25/99	10/29/99	10/29/99

LAB QC:

CHLORIDE BY IC	MB1	S	99LIC097	N/A	11/16/99	11/16/99
CHLORIDE BY IC	MB1 BS	S	99LIC097	N/A	11/16/99	11/16/99
FLUORIDE BY IC	MB1	S	99LIC097	N/A	11/16/99	11/16/99
FLUORIDE BY IC	MB1 BS	S	99LIC097	N/A	11/16/99	11/16/99
NITRITE BY IC	MB1	S	99LIC097	N/A	11/16/99	11/16/99
NITRITE BY IC	MB1 BS	S	99LIC097	N/A	11/16/99	11/16/99
NITRATE BY IC	MB1	S	99LIC097	N/A	11/16/99	11/16/99
NITRATE BY IC	MB1 BS	S	99LIC097	N/A	11/16/99	11/16/99
NITRITE BY IC	MB1	S	99LIC098	N/A	11/17/99	11/17/99
NITRITE BY IC	MB1 BS	S	99LIC098	N/A	11/17/99	11/17/99
NITRATE BY IC	MB1	S	99LIC098	N/A	11/17/99	11/17/99
NITRATE BY IC	MB1 BS	S	99LIC098	N/A	11/17/99	11/17/99
TOTAL CYANIDE	LC1 L	S	99LC123	N/A	11/03/99	11/03/99
TOTAL CYANIDE	LC2 L	S	99LC123	N/A	11/03/99	11/03/99
TOTAL CYANIDE	MB1	S	99LC123	N/A	11/03/99	11/03/99
PHOSPHATE BY IC	MB1	S	99LIC097	N/A	11/16/99	11/16/99
PHOSPHATE BY IC	MB1 BS	S	99LIC097	N/A	11/16/99	11/16/99
CHROMIUM VI	MB1	S	99LVI082	N/A	11/09/99	11/09/99
CHROMIUM VI	MB1 BS	S	99LVI082	N/A	11/09/99	11/09/99
CHROMIUM VI	MB1 BSD	S	99LVI082	N/A	11/09/99	11/09/99
SULFATE BY IC	MB1	S	99LIC097	N/A	11/16/99	11/16/99
SULFATE BY IC	MB1 BS	S	99LIC097	N/A	11/16/99	11/16/99
NITRATE NITRITE	MB1	S	99LANA55	N/A	11/17/99	11/18/99
NITRATE NITRITE	MB1 BS	S	99LANA55	N/A	11/17/99	11/18/99
NITRATE NITRITE	MB1 BSD	S	99LANA55	N/A	11/17/99	11/18/99

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

DATE RECEIVED: 10/27/99 RFW LOT # :9910L521

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
AMMONIA	MB1	S	99LAM043	N/A	11/08/99	11/08/99
AMMONIA	MB1 BS	S	99LAM043	N/A	11/08/99	11/08/99
AMMONIA	MB1 BSD	S	99LAM043	N/A	11/08/99	11/08/99
SULFIDE	MB1	S	99LSD064	N/A	10/29/99	10/29/99
SULFIDE	MB1 BS	S	99LSD064	N/A	10/29/99	10/29/99
SULFATE BY IC	MB1	S	99LIC098	N/A	11/17/99	11/17/99
SULFATE BY IC	MB1 BS	S	99LIC098	N/A	11/17/99	11/17/99
CHLORIDE BY IC	MB1	S	99LIC098	N/A	11/17/99	11/17/99
CHLORIDE BY IC	MB1 BS	S	99LIC098	N/A	11/17/99	11/17/99
FLUORIDE BY IC	MB1	S	99LIC098	N/A	11/17/99	11/17/99
FLUORIDE BY IC	MB1 BS	S	99LIC098	N/A	11/17/99	11/17/99
PHOSPHATE BY IC	MB1	S	99LIC098	N/A	11/17/99	11/17/99
PHOSPHATE BY IC	MB1 BS	S	99LIC098	N/A	11/17/99	11/17/99

RECRA LabNet Use Only

9910L521

Custody Transfer Record/Lab Work Request

Page 1 of 1

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

015

Client: Tru Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: AT

QC: spec Del: std TAT: 30 days

Date Rec'd: 10.27.99 Date Due: 11/26/99

Account #:

Refrigerator #		1	2						2		2
#/Type Container	Liquid										
	Solid	1AG	1AG						1AG		1AG
Volume	Liquid										
	Solid	250	250						250		250
Preservatives		—	—			—			—		—
ANALYSES REQUESTED		ORGANIC							INORG		
		VOA	BNA	~~Pest/~~ PCB	Herb	~~TPH~~ 8015 10/27/99			ICP Metal	CN	~~TPH~~

RECRA LabNet Use Only

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8015 24H 8015SG	8015 25H 8DRO	8PCB		AngO			MetO	ICNTO	IPH
S - Soil	001	BOWMF1			S	10/25/99	1257	X	X	X		X			X	✓	X
SE - Sediment	002	BOWMF2					1328	X	X	X		X			X	✓	X
SO - Solid	003	BOWMF3					1340	X	X	X		X			X	✓	X
SL - Sludge	004	BOWMF6					1355	X	X	X		X			X	✓	X
W - Water																	
O - Oil																	
A - Air																	
DS - Drum Solids																	
DL - Drum Liquids																	
L - EP/TCLP Leachate																	
Wi - Wipe																	
X - Other																	
F - Fish																	

Special Instructions:

saf # B99-078

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
Met O = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
3. Se, Ag, V, Zn, Hg
AngO 4. IN3N2, INH3N, ICCL, ICFL, IC SO4,
5. ICNO2, ICNO3, ICPO4, ICR6, ISFD
6.

Relinquished by	Received by	Date	Time
HDEx	D. Jones	10/27/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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. 2.8 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

4235 7953 1090

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

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: ERC 99-027	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA/RECRA~~ CT 10/28/99 RECRA	Offsite Property No.: A000011		Bill of Lading/Air Bill No.: 42357953 1090
			COA: B20CW1 671C

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										
BOWMF1	Soil	10/25/99	1257		X	X	X	X	X				BOWBC1
BOWMF2	Soil	10/25/99	1328		X	X	X	X	X				BOWBC1
BOWMF3	Soil	10/25/99	1340		X	X	X	X	X				BOWBC1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 10-25-99/1500	Received By: Rof 3C	Date/Time: 10-25-99/1500
Relinquished By: Rof 3C	Date/Time: 10-26-99/0800	Received By: K Thoren/R. Thoren	Date/Time: 10-26-99/0800
Relinquished By: Kikki Thoren / R. Thoren	Date/Time: 10-26-99/1430	Received By: FEDEX	Date/Time:
Relinquished By: FEDEX	Date/Time: 10-27-99/09:30	Received By: D. Jones	Date/Time: 10-27-99/09:30

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

9910L521

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

temp 2.2°

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-143

Collector Bowers/Trice	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ	Price Code 8N	Data Turnaround 45 Days
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location 200 B pond		SAF No. B99-078		
Ice Chest No.	Field Logbook No. EL-1511		Method of Shipment FED EX		
Shipped To TMA/RECRA B 20 10-25-99	Offsite Property No. A000011		Bill of Lading/Air Bill No. 42357953 1090		
			COA B20CW1 67JC		

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

Sample No.	Matrix *	Sample Date	Sample Time										
BOW4F6	Soil	10-25-99	1355					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers	Date/Time 10-25-99/1500	Received By Ref 3C	Date/Time 10-25-99/1500
Relinquished By Ref #3C	Date/Time 10-26-99/0800	Received By Rikki Thoren	Date/Time 10-26-99/0800
Relinquished By Rikki Thoren	Date/Time 10-26-99/1430	Received By FED EX	Date/Time
Relinquished By FED EX	Date/Time 10-27-99/09:30	Received By	Date/Time 10-27-99/09:30

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

use Bow801 to ship

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

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-078
RFW# : 9910L521
SDG/SAF# : H0596/B99-078

W.O.# : 10985-001-001-9999-00
Date Received: 10-27-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 4 soil samples.

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

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

4. All cooler temperatures have been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury) with the exception of the CCV following the last three samples for Cadmium (112.6%), Nickel (110.9%) and Lead (110.8%). All Cadmium results are non-detect so there is no significant bias to the results. The Nickel and Lead recoveries are just slightly outside the control limits so there should be no significant impact to the data.

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

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

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

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

10. The matrix spike (MS) recoveries for 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 17 pages.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
BOWMF1	Antimony	500	102.1

12. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-22-99
Date

mld/m10-521

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9910L521

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

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

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	✓6010B	__7041 [5]	✓200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	✓6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	✓6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	__7470A [3]	✓7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	✓6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	✓6010B	__7841 [5]	__200.7	__279.2__200.9			__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	✓6010B		__200.7				__99
Zinc	✓6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

11/22/99 JMB

Other:_____ Method:_____

L-WI-033/M-11/99

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9910L521

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0WMF1	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	6.0	MG/KG	0.27	1.0
		Barium, Total	85.4	MG/KG	0.02	1.0
		Beryllium, Total	0.31	MG/KG	0.03	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	13.6	MG/KG	0.07	1.0
		Copper, Total	15.1	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	13.2	MG/KG	0.1	1.0
		Lead, Total	5.3	MG/KG	0.21	1.0
		Antimony, Total	0.21 u	MG/KG	0.21	1.0
		Selenium, Total	0.41 u	MG/KG	0.41	1.0
		Thallium, Total	0.60	MG/KG	0.43	1.0
		Vanadium, Total	46.0	MG/KG	0.06	1.0
		Zinc, Total	44.3	MG/KG	0.05	1.0
-002	B0WMF2	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	3.1	MG/KG	0.25	1.0
		Barium, Total	61.6	MG/KG	0.02	1.0
		Beryllium, Total	0.26	MG/KG	0.03	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	3.7	MG/KG	0.06	1.0
		Copper, Total	13.8	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	7.3	MG/KG	0.09	1.0
		Lead, Total	2.9	MG/KG	0.19	1.0
		Antimony, Total	0.19 u	MG/KG	0.19	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0
		Thallium, Total	0.98	MG/KG	0.39	1.0
		Vanadium, Total	63.7	MG/KG	0.06	1.0
		Zinc, Total	47.8	MG/KG	0.05	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L521

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B0WMF3	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	2.0	MG/KG	0.24	1.0
		Barium, Total	47.5	MG/KG	0.02	1.0
		Beryllium, Total	0.22	MG/KG	0.03	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	7.7	MG/KG	0.06	1.0
		Copper, Total	8.4	MG/KG	0.04	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	7.5	MG/KG	0.09	1.0
		Lead, Total	3.3	MG/KG	0.19	1.0
		Antimony, Total	0.19 u	MG/KG	0.19	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
		Thallium, Total	0.38 u	MG/KG	0.38	1.0
		Vanadium, Total	26.8	MG/KG	0.05	1.0
		Zinc, Total	29.9	MG/KG	0.04	1.0
-004	B0WMF6	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	1.8	MG/KG	0.25	1.0
		Barium, Total	50.0	MG/KG	0.02	1.0
		Beryllium, Total	0.18	MG/KG	0.03	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	5.0	MG/KG	0.07	1.0
		Copper, Total	11.6	MG/KG	0.05	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	5.1	MG/KG	0.09	1.0
		Lead, Total	3.4	MG/KG	0.20	1.0
		Antimony, Total	0.20 u	MG/KG	0.20	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0
		Thallium, Total	0.40 u	MG/KG	0.40	1.0
		Vanadium, Total	31.0	MG/KG	0.06	1.0
		Zinc, Total	29.1	MG/KG	0.05	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/22/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9910L521

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0763-MB1	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Arsenic, Total	0.27 u	MG/KG	0.27	1.0
		Barium, Total	0.24	MG/KG	0.02	1.0
		Beryllium, Total	0.03 u	MG/KG	0.03	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.13	MG/KG	0.07	1.0
		Copper, Total	0.05 u	MG/KG	0.05	1.0
		Nickel, Total	0.10 u	MG/KG	0.10	1.0
		Lead, Total	0.21 u	MG/KG	0.21	1.0
		Antimony, Total	0.21 u	MG/KG	0.21	1.0
		Selenium, Total	0.41 u	MG/KG	0.41	1.0
		Thallium, Total	0.43 u	MG/KG	0.43	1.0
		Vanadium, Total	0.06 u	MG/KG	0.06	1.0
		Zinc, Total	0.05 u	MG/KG	0.05	1.0
BLANK1	99C0320-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9910L521

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0WMF1	Silver, Total	4.3	0.08u	4.9	87.8	1.0
		Arsenic, Total	201	6.0	196	99.5	1.0
		Barium, Total	258	85.4	196	88.0	1.0
		Beryllium, Total	4.5	0.31	4.9	85.5	1.0
		Cadmium, Total	4.6	0.04u	4.9	93.9	1.0
		Chromium, Total	34.3	13.6	19.6	105.6	1.0
		Copper, Total	36.6	15.1	24.5	87.8	1.0
		Mercury, Total	0.19	0.02u	0.17	108.6	1.0
		Nickel, Total	61.0	13.2	49.1	97.4	1.0
		Lead, Total	53.0	5.3	49.1	97.1	1.0
		Antimony, Total	16.0	0.21u	49.1	32.6	1.0
		Selenium, Total	191	0.41u	196	97.2	1.0
		Thallium, Total	176	0.60	196	89.7	1.0
		Vanadium, Total	96.3	46.0	49.1	102.4	1.0
		Zinc, Total	92.0	44.3	49.1	97.1	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078

RECRA LOT #: 9910L521

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0WMF1	Silver, Total	0.08u	0.08u	NC	1.0
		Arsenic, Total	6.0	5.8	3.4	1.0
		Barium, Total	85.4	84.0	1.7	1.0
		Beryllium, Total	0.31	0.32	1.9	1.0
		Cadmium, Total	0.04u	0.04u	NC	1.0
		Chromium, Total	13.6	13.7	0.73	1.0
		Copper, Total	15.1	14.7	2.7	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	13.2	12.8	3.1	1.0
		Lead, Total	5.3	5.4	1.9	1.0
		Antimony, Total	0.21u	0.21u	NC	1.0
		Selenium, Total	0.41u	0.40u	NC	1.0
		Thallium, Total	0.60	0.42u	~~NC~~ 200	1.0
		Vanadium, Total	46.0	45.4	1.3 MB	1.0
		Zinc, Total	44.3	43.7	1.4 11/22/99	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/22/99

CLIENT: TNU-HANFORD B99-078 RECRA LOT #: 9910L521

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0763-LC1	Silver, LCS	48.4	50.0	MG/KG	96.8
		Arsenic, LCS	951	1000	MG/KG	95.1
		Barium, LCS	491	500	MG/KG	98.1
		Beryllium, LCS	22.1	25.0	MG/KG	88.4
		Cadmium, LCS	24.1	25.0	MG/KG	96.4
		Chromium, LCS	49.4	50.0	MG/KG	98.8
		Copper, LCS	123	125	MG/KG	98.2
		Nickel, LCS	195	200	MG/KG	97.4
		Lead, LCS	240	250	MG/KG	96.1
		Antimony, LCS	290	300	MG/KG	96.6
		Selenium, LCS	930	1000	MG/KG	93.0
		Thallium, LCS	940	1000	MG/KG	94.0
		Vanadium, LCS	255	250	MG/KG	101.8
		Zinc, LCS	94.6	100	MG/KG	94.6
LCS1	99C0320-LC1	Mercury, LCS	1.1	1.0	MG/KG	106.7

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

DATE RECEIVED: 10/27/99 RFW LOT # :9910L521

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WMF1						
SILVER, TOTAL	001	S	99L0763	10/25/99	11/09/99	11/09/99
SILVER, TOTAL	001 REP	S	99L0763	10/25/99	11/09/99	11/09/99
SILVER, TOTAL	001 MS	S	99L0763	10/25/99	11/09/99	11/09/99
ARSENIC, TOTAL	001	S	99L0763	10/25/99	11/09/99	11/09/99
ARSENIC, TOTAL	001 REP	S	99L0763	10/25/99	11/09/99	11/09/99
ARSENIC, TOTAL	001 MS	S	99L0763	10/25/99	11/09/99	11/09/99
BARIUM, TOTAL	001	S	99L0763	10/25/99	11/09/99	11/09/99
BARIUM, TOTAL	001 REP	S	99L0763	10/25/99	11/09/99	11/09/99
BARIUM, TOTAL	001 MS	S	99L0763	10/25/99	11/09/99	11/09/99
BERYLLIUM, TOTAL	001	S	99L0763	10/25/99	11/09/99	11/09/99
BERYLLIUM, TOTAL	001 REP	S	99L0763	10/25/99	11/09/99	11/09/99
BERYLLIUM, TOTAL	001 MS	S	99L0763	10/25/99	11/09/99	11/09/99
CADMIUM, TOTAL	001	S	99L0763	10/25/99	11/09/99	11/09/99
CADMIUM, TOTAL	001 REP	S	99L0763	10/25/99	11/09/99	11/09/99
CADMIUM, TOTAL	001 MS	S	99L0763	10/25/99	11/09/99	11/09/99
CHROMIUM, TOTAL	001	S	99L0763	10/25/99	11/09/99	11/09/99
CHROMIUM, TOTAL	001 REP	S	99L0763	10/25/99	11/09/99	11/09/99
CHROMIUM, TOTAL	001 MS	S	99L0763	10/25/99	11/09/99	11/09/99
COPPER, TOTAL	001	S	99L0763	10/25/99	11/09/99	11/09/99
COPPER, TOTAL	001 REP	S	99L0763	10/25/99	11/09/99	11/09/99
COPPER, TOTAL	001 MS	S	99L0763	10/25/99	11/09/99	11/09/99
MERCURY, TOTAL	001	S	99C0320	10/25/99	11/01/99	11/03/99
MERCURY, TOTAL	001 REP	S	99C0320	10/25/99	11/01/99	11/03/99
MERCURY, TOTAL	001 MS	S	99C0320	10/25/99	11/01/99	11/03/99
NICKEL, TOTAL	001	S	99L0763	10/25/99	11/09/99	11/09/99
NICKEL, TOTAL	001 REP	S	99L0763	10/25/99	11/09/99	11/09/99
NICKEL, TOTAL	001 MS	S	99L0763	10/25/99	11/09/99	11/09/99
LEAD, TOTAL	001	S	99L0763	10/25/99	11/09/99	11/09/99
LEAD, TOTAL	001 REP	S	99L0763	10/25/99	11/09/99	11/09/99
LEAD, TOTAL	001 MS	S	99L0763	10/25/99	11/09/99	11/09/99
ANTIMONY, TOTAL	001	S	99L0763	10/25/99	11/09/99	11/09/99
ANTIMONY, TOTAL	001 REP	S	99L0763	10/25/99	11/09/99	11/09/99
ANTIMONY, TOTAL	001 MS	S	99L0763	10/25/99	11/09/99	11/09/99
SELENIUM, TOTAL	001	S	99L0763	10/25/99	11/09/99	11/09/99
SELENIUM, TOTAL	001 REP	S	99L0763	10/25/99	11/09/99	11/09/99

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

DATE RECEIVED: 10/27/99 RFW LOT # :9910L521

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TOTAL	001 MS	S	99L0763	10/25/99	11/09/99	11/09/99
THALLIUM, TOTAL	001	S	99L0763	10/25/99	11/09/99	11/09/99
THALLIUM, TOTAL	001 REP	S	99L0763	10/25/99	11/09/99	11/09/99
THALLIUM, TOTAL	001 MS	S	99L0763	10/25/99	11/09/99	11/09/99
VANADIUM, TOTAL	001	S	99L0763	10/25/99	11/09/99	11/09/99
VANADIUM, TOTAL	001 REP	S	99L0763	10/25/99	11/09/99	11/09/99
VANADIUM, TOTAL	001 MS	S	99L0763	10/25/99	11/09/99	11/09/99
ZINC, TOTAL	001	S	99L0763	10/25/99	11/09/99	11/09/99
ZINC, TOTAL	001 REP	S	99L0763	10/25/99	11/09/99	11/09/99
ZINC, TOTAL	001 MS	S	99L0763	10/25/99	11/09/99	11/09/99
B0WMF2						
SILVER, TOTAL	002	S	99L0763	10/25/99	11/09/99	11/09/99
ARSENIC, TOTAL	002	S	99L0763	10/25/99	11/09/99	11/09/99
BARIUM, TOTAL	002	S	99L0763	10/25/99	11/09/99	11/09/99
BERYLLIUM, TOTAL	002	S	99L0763	10/25/99	11/09/99	11/09/99
CADMIUM, TOTAL	002	S	99L0763	10/25/99	11/09/99	11/09/99
CHROMIUM, TOTAL	002	S	99L0763	10/25/99	11/09/99	11/09/99
COPPER, TOTAL	002	S	99L0763	10/25/99	11/09/99	11/09/99
MERCURY, TOTAL	002	S	99C0320	10/25/99	11/01/99	11/03/99
NICKEL, TOTAL	002	S	99L0763	10/25/99	11/09/99	11/09/99
LEAD, TOTAL	002	S	99L0763	10/25/99	11/09/99	11/09/99
ANTIMONY, TOTAL	002	S	99L0763	10/25/99	11/09/99	11/09/99
SELENIUM, TOTAL	002	S	99L0763	10/25/99	11/09/99	11/09/99
THALLIUM, TOTAL	002	S	99L0763	10/25/99	11/09/99	11/09/99
VANADIUM, TOTAL	002	S	99L0763	10/25/99	11/09/99	11/09/99
ZINC, TOTAL	002	S	99L0763	10/25/99	11/09/99	11/09/99
B0WMF3						
SILVER, TOTAL	003	S	99L0763	10/25/99	11/09/99	11/19/99
ARSENIC, TOTAL	003	S	99L0763	10/25/99	11/09/99	11/19/99
BARIUM, TOTAL	003	S	99L0763	10/25/99	11/09/99	11/19/99
BERYLLIUM, TOTAL	003	S	99L0763	10/25/99	11/09/99	11/09/99
CADMIUM, TOTAL	003	S	99L0763	10/25/99	11/09/99	11/19/99
CHROMIUM, TOTAL	003	S	99L0763	10/25/99	11/09/99	11/19/99
COPPER, TOTAL	003	S	99L0763	10/25/99	11/09/99	11/19/99

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

DATE RECEIVED: 10/27/99 RFW LOT # :9910L521

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MERCURY, TOTAL	003	S	99C0320	10/25/99	11/01/99	11/03/99
NICKEL, TOTAL	003	S	99L0763	10/25/99	11/09/99	11/19/99
LEAD, TOTAL	003	S	99L0763	10/25/99	11/09/99	11/19/99
ANTIMONY, TOTAL	003	S	99L0763	10/25/99	11/09/99	11/19/99
SELENIUM, TOTAL	003	S	99L0763	10/25/99	11/09/99	11/19/99
THALLIUM, TOTAL	003	S	99L0763	10/25/99	11/09/99	11/19/99
VANADIUM, TOTAL	003	S	99L0763	10/25/99	11/09/99	11/19/99
ZINC, TOTAL	003	S	99L0763	10/25/99	11/09/99	11/19/99
B0WMF6						
SILVER, TOTAL	004	S	99L0763	10/25/99	11/09/99	11/19/99
ARSENIC, TOTAL	004	S	99L0763	10/25/99	11/09/99	11/19/99
BARIUM, TOTAL	004	S	99L0763	10/25/99	11/09/99	11/19/99
BERYLLIUM, TOTAL	004	S	99L0763	10/25/99	11/09/99	11/09/99
CADMIUM, TOTAL	004	S	99L0763	10/25/99	11/09/99	11/19/99
CHROMIUM, TOTAL	004	S	99L0763	10/25/99	11/09/99	11/19/99
COPPER, TOTAL	004	S	99L0763	10/25/99	11/09/99	11/19/99
MERCURY, TOTAL	004	S	99C0320	10/25/99	11/01/99	11/03/99
NICKEL, TOTAL	004	S	99L0763	10/25/99	11/09/99	11/19/99
LEAD, TOTAL	004	S	99L0763	10/25/99	11/09/99	11/19/99
ANTIMONY, TOTAL	004	S	99L0763	10/25/99	11/09/99	11/19/99
SELENIUM, TOTAL	004	S	99L0763	10/25/99	11/09/99	11/19/99
THALLIUM, TOTAL	004	S	99L0763	10/25/99	11/09/99	11/19/99
VANADIUM, TOTAL	004	S	99L0763	10/25/99	11/09/99	11/19/99
ZINC, TOTAL	004	S	99L0763	10/25/99	11/09/99	11/19/99

LAB QC:

SILVER LABORATORY	LC1 BS	S	99L0763	N/A	11/09/99	11/09/99
SILVER, TOTAL	MB1	S	99L0763	N/A	11/09/99	11/09/99
ARSENIC LABORATORY	LC1 BS	S	99L0763	N/A	11/09/99	11/09/99
ARSENIC, TOTAL	MB1	S	99L0763	N/A	11/09/99	11/09/99
BARIUM LABORATORY	LC1 BS	S	99L0763	N/A	11/09/99	11/09/99
BARIUM, TOTAL	MB1	S	99L0763	N/A	11/09/99	11/09/99
BERYLLIUM LABORATORY	LC1 BS	S	99L0763	N/A	11/09/99	11/09/99
BERYLLIUM, TOTAL	MB1	S	99L0763	N/A	11/09/99	11/09/99
CADMIUM LABORATORY	LC1 BS	S	99L0763	N/A	11/09/99	11/09/99

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

DATE RECEIVED: 10/27/99 RFW LOT # :9910L521

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CADMIUM, TOTAL	MB1	S	99L0763	N/A	11/09/99	11/09/99
CHROMIUM LABORATORY	LC1 BS	S	99L0763	N/A	11/09/99	11/09/99
CHROMIUM, TOTAL	MB1	S	99L0763	N/A	11/09/99	11/09/99
COPPER LABORATORY	LC1 BS	S	99L0763	N/A	11/09/99	11/09/99
COPPER, TOTAL	MB1	S	99L0763	N/A	11/09/99	11/09/99
MERCURY LABORATORY	LC1 BS	S	99C0320	N/A	11/01/99	11/03/99
MERCURY, TOTAL	MB1	S	99C0320	N/A	11/01/99	11/03/99
NICKEL LABORATORY	LC1 BS	S	99L0763	N/A	11/09/99	11/09/99
NICKEL, TOTAL	MB1	S	99L0763	N/A	11/09/99	11/09/99
LEAD LABORATORY	LC1 BS	S	99L0763	N/A	11/09/99	11/09/99
LEAD, TOTAL	MB1	S	99L0763	N/A	11/09/99	11/09/99
ANTIMONY LABORATORY	LC1 BS	S	99L0763	N/A	11/09/99	11/09/99
ANTIMONY, TOTAL	MB1	S	99L0763	N/A	11/09/99	11/09/99
SELENIUM LABORATORY	LC1 BS	S	99L0763	N/A	11/09/99	11/09/99
SELENIUM, TOTAL	MB1	S	99L0763	N/A	11/09/99	11/09/99
THALLIUM LABORATORY	LC1 BS	S	99L0763	N/A	11/09/99	11/09/99
THALLIUM, TOTAL	MB1	S	99L0763	N/A	11/09/99	11/09/99
VANADIUM LABORATORY	LC1 BS	S	99L0763	N/A	11/09/99	11/09/99
VANADIUM, TOTAL	MB1	S	99L0763	N/A	11/09/99	11/09/99
ZINC LABORATORY	LC1 BS	S	99L0763	N/A	11/09/99	11/09/99
ZINC, TOTAL	MB1	S	99L0763	N/A	11/09/99	11/09/99

RECRA LabNet Use Only

9910L521

Custody Transfer Record/Lab Work Request

Page 1 of 1

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals

RECRA LabNet

Client: Tru Hanford B99-078

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: QT

QC: spec Del: std TAT: 30 days

Date Rec'd: 10.27.99 Date Due: 11/26/99

Account #:

Refrigerator #		1	2						2		2						
#/Type Container	Liquid																
	Solid	1AG	1AG						1AG		1AG						
Volume	Liquid																
	Solid	250	250						250		250						
Preservatives		—	—						—		—						
ANALYSES REQUESTED		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb	TPH	8015 10/27/99		ICP Metal	CN	Hg						

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	8024 8015C	8225 8015	8260		Ang O			Met O	ICN TO	IPH					
001	BOWMF1			S	10/25/99	1257	X	X	X		X			X	✓	X					
002	BOWMF2					1328	X	X	X		X			X	✓	X					
003	BOWMF3					1340	X	X	X		X			X	✓	X					
004	BOWMF6					1355	X	X	X		X			X	✓	X					

RECRA LabNet Use Only

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

Special Instructions:

saf # B99-078

COMPOSITE WASTE

DATE/REVISIONS:

1. Run matrix QC
Met ① 2. = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
3. Se, Ag, V, Zn, Hg
Ang ① 4. = 1N3N2, 1NH3N, 1CCL, 1CFL, 1CSO4,
5. 1CNO2, 1CNO3, 1CPO4, 1CR6, 1SFD
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. 2.8 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
4235 7953 1090

Relinquished by	Received by	Date	Time
FedEx	D. Yonian	10/27/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL		
	REWRITTEN		

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

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: ERC 99-027	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~RMA/RECRA~~ CT 10/25/99 RECRA	Offsite Property No.: A000011		Bill of Lading/Air Bill No.: 42357953 1090
			COA: B20CW1 67/C

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											
BOWMF1 / Soil / 10/25/99 / 1257		X	X	X	X	X					BOWSC1
BOWMF2 / Soil / 10/25/99 / 1328		X	X	X	X	X					BOWSC1
BOWMF3 / Soil / 10/25/99 / 1340		X	X	X	X	X					BOWSC1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Douglas Bowers / Doug Bowers	Date/Time: 10-25-99/1500	Received By: Rof 3C	Date/Time: 10-25-99/1500
Relinquished By: Rof 3C	Date/Time: 10-26-99/0800	Received By: R Thoren / R Thoren	Date/Time: 10-26-99/0800
Relinquished By: Rikki Thoren / R. Thoren	Date/Time: 10-26-99/1430	Received By: FEDEX	Date/Time:
Relinquished By: FEDEX	Date/Time: 10-27-99/09:30	Received By: D. Jones	Date/Time: 10-27-99/09:30

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

9910L521

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

temp 21

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-145	Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA/RECRA~~ 10-25-99	Offsite Property No.: A000011		Bill of Lading/Air Bill No.: 42357953 1090
			COA: B20CW167C

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

Sample No.	Matrix *	Sample Date	Sample Time										
BOW4F6	Soil	10-25-99	1355					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 10-25-99/1700	Received By: Ref 3C	Date/Time: 10-25-99/1700
Relinquished By: Ref #3C	Date/Time: 10-26-99/0800	Received By: Rikki Thorer	Date/Time: 10-26-99/0800
Relinquished By: Rikki Thorer	Date/Time: 10-26-99/1430	Received By: FED EX	Date/Time:
Relinquished By: FED EX	Date/Time: 10-27-99/09:30	Received By: [signature]	Date/Time: 10-27-99/09:30
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

use BOW801 to ship

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

SDR # B00-044
Revision #: 0
Date Initiated: 01/14/00

SAMPLE DISPOSITION RECORD

SAF: B00-078
OU: 200-CW-1
Project ID: 200-CW-1
Task ID: 1
Sampling Event: 200 Area Source Characterization 200-CW-1 OU

Laboratory: TMA/RECRA

Task Manager: M. E. Todd

Sampling Information:
Number of Samples: 21
ID Numbers: see attachment
Matrix: Soil
Collection Date: 09/07/99 – 10/27/99

Issue Background:

Class: ☐ Project Data Use ☒ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Addition of Analyses

Description: Addition of Thallium and Antimony Analyses

Disposition:

Description: The 200-CW-1 characterization project requested that thallium and antimony results be reported for the listed samples. ERC Sample Management requested the laboratory to report thallium and antimony results from the existing ICP analyses for the listed samples.

Justification: The project determined that thallium and antimony results were needed to meet the project data quality objectives.

Approval Signatures:

S. J. Trent 1/19/00
Project Coordinator (Print/Sign Name) Date

M. E. Todd
Task Manager (Print/Sign Name) Date

B0W9M2
B0W9M5
B0W9V0
B0W9V1
B0W9V3
B0WBT1
B0WBT3
B0W9M3
B0W9M4
B0W9M0
B0W9V2
B0W9R7
B0WBT2
B0WMF3
B0WMH2
B0WMH3
B0WMF1
B0WMF6
B0WMH1
B0WMH4
B0WMF2

H0596-TWA/RECRA

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H0596 was composed of four solid (soil) samples designated under SAF No. B99-078 with a Project Designation of: 200 Area Source Characterization – 200-CW-1 OU.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Thermo Retec Sample Receipt Checklist. The results were transmitted to BHI via facsimile on January 20, 2000.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

No problems were encountered during the course of the analyses.

2.2 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

JAN 2000
RECEIVED
Data
Log In

2.3 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.4 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.5 Isotopic Thorium Analyses

The duplicate analysis RPD was 3%, greater than the allowable 49% three-sigma total protocol error. No other problems were encountered during the course of the analyses.

2.6 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.7 Isotopic Uranium Analyses

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

2.8 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.9 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.10 Gamma Spec Analyses

No problems were encountered during the course of the analyses.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

SAMPLE SUMMARY

SDG 7262
Contact Melissa C. Mannion

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0596

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0WMF1	200 B Pond	SOLID		N910221-01	B99-078	B99-078-144	10/25/99 12:57
B0WMF2	200 B Pond	SOLID		N910221-02	B99-078	B99-078-144	10/25/99 13:28
B0WMF3	200 B Pond	SOLID		N910221-03	B99-078	B99-078-144	10/25/99 13:40
B0WMF6	200 B Pond	SOLID		N910221-04	B99-078	B99-078-145	10/25/99 13:55
Method Blank		SOLID		N910221-06	B99-078		
Method Blank		SOLID		N910221-10	B99-078		
Lab Control Sample		SOLID		N910221-05	B99-078		
Lab Control Sample		SOLID		N910221-09	B99-078		
Duplicate (N910221-01)	200 B Pond	SOLID		N910221-11	B99-078		10/25/99 12:57
Duplicate (N910221-04)	200 B Pond	SOLID		N910221-07	B99-078		10/25/99 13:55
Spike (N910221-04)	200 B Pond	SOLID		N910221-08	B99-078		10/25/99 13:55
Spike (N910221-04)	200 B Pond	SOLID		N910221-12	B99-078		10/25/99 13:55

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

SDG 7262
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0596

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
7262	B99-078-144	B0WMF1	SOLID	85.1			10/27/99	2	N910221-01	7262-001
		B0WMF2	SOLID	96.5			10/27/99	2	N910221-02	7262-002
		B0WMF3	SOLID	97.8			10/27/99	2	N910221-03	7262-003
	B99-078-145	B0WMF6	SOLID	98.8			10/27/99	2	N910221-04	7262-004
		Method Blank	SOLID						N910221-06	7262-006
		Method Blank	SOLID						N910221-10	7262-010
		Lab Control Sample	SOLID						N910221-05	7262-005
		Lab Control Sample	SOLID						N910221-09	7262-009
		Duplicate (N910221-01)	SOLID				10/27/99	2	N910221-11	7262-011
		Duplicate (N910221-04)	SOLID				10/27/99	2	N910221-07	7262-007
		Spike (N910221-04)	SOLID				10/27/99	2	N910221-08	7262-008
		Spike (N910221-04)	SOLID				10/27/99	2	N910221-12	7262-012

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

SDG 7262
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0596

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	SOLID	Americium 241 in Soil	6904-192	5.0	4			1	1	1/1		
PU	SOLID	Plutonium, Isotopic in Solids	6904-192	5.0	4			1	1	1/1		
TH	SOLID	Thorium, Isotopic in Soil	6904-192	5.0	4			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6904-192	10.0	4			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6904-192	10.0	1			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6904-192	15.0	4			1	1	1/1		
Kinetic Phosphorimetry												
U_T	SOLID	Uranium, Total in Soil	6904-192	9.0	4			1	1	1/1		
Liquid Scintillation Counting												
H	SOLID	Tritium in Soil	6904-192	10.0	1			1	1	1/1	1/1	
NI_L	SOLID	Nickel 63 in Soil	6904-192	10.0	1			1	1	1/1	1/1	

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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

SDG 7262
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0596

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0WMF1			N910221-01	7262-001	AM		12/27/99	01/18/00	MCM	Americium 241 in Soil
200 B Pond		SOLID	10/25/99	7262-001	GAM		12/15/99	01/18/00	MCM	Gamma Scan
B99-078-144	B99-078		10/27/99	7262-001	PU		12/23/99	01/18/00	MCM	Plutonium, Isotopic in Solids
				7262-001	SR		12/18/99	01/18/00	MCM	Total Strontium in Soil
				7262-001	TH		01/07/00	01/18/00	MCM	Thorium, Isotopic in Soil
				7262-001	U_T		11/16/99	01/18/00	MCM	Uranium, Total in Soil
B0WMF2			N910221-02	7262-002	AM		12/27/99	01/18/00	MCM	Americium 241 in Soil
200 B Pond		SOLID	10/25/99	7262-002	GAM		12/15/99	01/18/00	MCM	Gamma Scan
B99-078-144	B99-078		10/27/99	7262-002	PU		12/23/99	01/18/00	MCM	Plutonium, Isotopic in Solids
				7262-002	SR		12/18/99	01/18/00	MCM	Total Strontium in Soil
				7262-002	TH		01/07/00	01/18/00	MCM	Thorium, Isotopic in Soil
				7262-002	U_T		11/16/99	01/18/00	MCM	Uranium, Total in Soil
B0WMF3			N910221-03	7262-003	AM		12/27/99	01/18/00	MCM	Americium 241 in Soil
200 B Pond		SOLID	10/25/99	7262-003	GAM		12/15/99	01/18/00	MCM	Gamma Scan
B99-078-144	B99-078		10/27/99	7262-003	PU		12/27/99	01/18/00	MCM	Plutonium, Isotopic in Solids
				7262-003	SR		12/18/99	01/18/00	MCM	Total Strontium in Soil
				7262-003	TH		01/07/00	01/18/00	MCM	Thorium, Isotopic in Soil
				7262-003	U_T		11/16/99	01/18/00	MCM	Uranium, Total in Soil
B0WMF6			N910221-04	7262-004	AM		12/27/99	01/18/00	MCM	Americium 241 in Soil
200 B Pond		SOLID	10/25/99	7262-004	GAM		12/15/99	01/18/00	MCM	Gamma Scan
B99-078-145	B99-078		10/27/99	7262-004	H		01/08/00	01/18/00	MCM	Tritium in Soil
				7262-004	NI_L		01/17/00	01/20/00	MCM	Nickel 63 in Soil
				7262-004	PU		12/27/99	01/18/00	MCM	Plutonium, Isotopic in Solids
				7262-004	SR		12/18/99	01/18/00	MCM	Total Strontium in Soil
				7262-004	TC		12/18/99	01/18/00	MCM	Technetium 99 in Soil
				7262-004	TH		01/07/00	01/18/00	MCM	Thorium, Isotopic in Soil
				7262-004	U_T		11/16/99	01/18/00	MCM	Uranium, Total in Soil
Method Blank			N910221-06	7262-006	AM		12/27/99	01/18/00	MCM	Americium 241 in Soil
		SOLID		7262-006	GAM		12/15/99	01/18/00	MCM	Gamma Scan
	B99-078			7262-006	H		01/08/00	01/18/00	MCM	Tritium in Soil
				7262-006	NI_L		01/17/00	01/20/00	MCM	Nickel 63 in Soil
				7262-006	PU		12/27/99	01/18/00	MCM	Plutonium, Isotopic in Solids
				7262-006	SR		12/18/99	01/18/00	MCM	Total Strontium in Soil
				7262-006	TC		12/18/99	01/18/00	MCM	Technetium 99 in Soil
				7262-006	TH		01/07/00	01/18/00	MCM	Thorium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

SDG 7262
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0596

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Method Blank	B99-078	SOLID	N910221-10	7262-010	U_T		11/16/99	01/18/00	MCM	Uranium, Total in Soil
Lab Control Sample	B99-078	SOLID	N910221-05	7262-005	AM		12/27/99	01/18/00	MCM	Americium 241 in Soil
				7262-005	GAM		12/15/99	01/18/00	MCM	Gamma Scan
				7262-005	H		01/08/00	01/18/00	MCM	Tritium in Soil
				7262-005	NI_L		01/17/00	01/20/00	MCM	Nickel 63 in Soil
				7262-005	PU		12/27/99	01/18/00	MCM	Plutonium, Isotopic in Solids
				7262-005	SR		12/18/99	01/18/00	MCM	Total Strontium in Soil
				7262-005	TC		12/18/99	01/18/00	MCM	Technetium 99 in Soil
				7262-005	TH		01/07/00	01/18/00	MCM	Thorium, Isotopic in Soil
Lab Control Sample	B99-078	SOLID	N910221-09	7262-009	U_T		11/16/99	01/18/00	MCM	Uranium, Total in Soil
Duplicate (N910221-01) 200 B Pond	B99-078	SOLID	N910221-11 10/25/99 10/27/99	7262-011	U_T		11/16/99	01/18/00	MCM	Uranium, Total in Soil
Duplicate (N910221-04) 200 B Pond	B99-078	SOLID	N910221-07 10/25/99 10/27/99	7262-007	AM		12/27/99	01/18/00	MCM	Americium 241 in Soil
				7262-007	GAM		12/15/99	01/18/00	MCM	Gamma Scan
				7262-007	H		01/09/00	01/18/00	MCM	Tritium in Soil
				7262-007	NI_L		01/17/00	01/20/00	MCM	Nickel 63 in Soil
				7262-007	PU		12/27/99	01/18/00	MCM	Plutonium, Isotopic in Solids
				7262-007	SR		12/18/99	01/18/00	MCM	Total Strontium in Soil
				7262-007	TC		12/18/99	01/18/00	MCM	Technetium 99 in Soil
				7262-007	TH		01/11/00	01/18/00	MCM	Thorium, Isotopic in Soil
Spike (N910221-04) 200 B Pond	B99-078	SOLID	N910221-08 10/25/99 10/27/99	7262-008	H		01/09/00	01/18/00	MCM	Tritium in Soil
Spike (N910221-04) 200 B Pond	B99-078	SOLID	N910221-12 10/25/99 10/27/99	7262-012	NI_L		01/17/00	01/20/00	MCM	Nickel 63 in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

SDG 7262
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0596

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	4			1	1	1		7
GAM	B99-078	Gamma Scan	GAMMAHI	4			1	1	1		7
H	B99-078	Tritium in Soil	EPA906.0	1			1	1	1	1	5
NI_L	B99-078	Nickel 63 in Soil	NI63LSC	1			1	1	1	1	5
PU	B99-078	Plutonium, Isotopic in Solids	PUPLATE	4			1	1	1		7
SR	B99-078	Total Strontium in Soil	SRTOTAL	4			1	1	1		7
TC	B99-078	Technetium 99 in Soil	TC99TRLSC	1			1	1	1		4
TH	B99-078	Thorium, Isotopic in Soil	THPLATE	4			1	1	1		7
U_T	B99-078	Uranium, Total in Soil	UKPA	4			1	1	1		7
TOTALS				27			9	9	9	2	56

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

N910221-06 Method Blank

METHOD BLANK

SDG	7262	Client/Case no	Hanford	SDG H0596	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	N910221-06	Client sample id	Method Blank		
Dept sample id	7262-006	Material/Matrix		SOLID	
		SAF No	B99-078		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.054	0.12	0.20	400	U	H
Technetium 99	14133-76-7	-0.045	0.22	0.61	15	U	TC
Plutonium 238	13981-16-3	0	0.027	0.051	1.0	U	PU
Plutonium 239/240	PU-239/240	0.023	0.027	0.044	1.0	U	PU
Nickel 63	13981-37-8	-0.471	1.4	2.5	30	U	NI_L
Americium 241	14596-10-2	0.014	0.039	0.063	1.0	U	AM
Total Strontium	SR-RAD	0.003	0.10	0.14	1.0	U	SR
Thorium 228	14274-82-9	0.119	0.11	0.16	1.0	U	TH
Thorium 230	14269-63-7	0.071	0.095	0.16	1.0	U	TH
Thorium 232	TH-232	-0.006	0.024	0.057	1.0	U	TH
Potassium 40	13966-00-2	U		1.1		U	GAM
Cobalt 60	10198-40-0	U		0.040	0.050	U	GAM
Cesium 137	10045-97-3	U		0.041	0.10	U	GAM
Europium 152	14683-23-9	U		0.093	0.10	U	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Europium 155	14391-16-3	U		0.079	0.10	U	GAM
Radium 226	13982-63-3	U		0.081	0.10	U	GAM
Radium 228	15262-20-1	U		0.19	0.20	U	GAM
Thorium 228	14274-82-9	U		0.053		U	GAM
Thorium 232	TH-232	U		0.19		U	GAM
Americium 241	14596-10-2	U		0.041		U	GAM
Uranium 238	U-238	U		4.3		U	GAM
Uranium 235	15117-96-1	U		0.14		U	GAM

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

QC-BLANK 32751

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

N910221-10

Method Blank

METHOD BLANK

SDG	7262	Client/Case no	Hanford	SDG H0596	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	N910221-10	Client sample id	Method Blank		
Dept sample id	7262-010	Material/Matrix		SOLID	
		SAF No	B99-078		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	-0.005	0.002	0.005	1.0	U	U_T

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

QC-BLANK 32335

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

N910221-05

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7262

Contact Melissa C. Mannion

Client/Case no Hanford SDG H0596

Case no TRB-SBB-207925

Lab sample id N910221-05

Dept sample id 7262-005

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	10.5	0.32	0.20	400	J	H	11.2	0.45	94	84-116	80-120
Technetium 99	59.1	2.1	0.76	15		TC	68.4	2.7	86	85-115	80-120
Plutonium 238	12.3	0.86	0.054	1.0		PU	12.5	0.50	98	86-114	80-120
Plutonium 239/240	13.0	0.91	0.051	1.0		PU	13.2	0.53	98	86-114	80-120
Nickel 63	159	3.8	2.5	30		NI_L	147	5.9	108	82-118	
Americium 241	11.1	0.60	0.032	1.0		AM	11.5	0.46	97	88-112	80-120
Total Strontium	13.9	0.37	0.13	1.0		SR	12.4	0.50	112	82-118	
Thorium 228	-0.032	0.078	0.16	1.0	U	TH					
Thorium 230	24.5	1.2	0.14	1.0		TH	22.4	0.90	109	87-113	
Thorium 232	0.065	0.052	0.049	1.0	J	TH					
Cobalt 60	1.43	0.075	0.049	0.050		GAM	1.32	0.053	108	73-127	80-120
Cesium 137	1.41	0.066	0.051	0.10		GAM	1.28	0.051	110	73-127	80-120

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

QC-LCS 32750

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

N910221-09

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7262

Contact Melissa C. Mannion

Client/Case no Hanford SDG H0596

Case no TRB-SBB-207925

Lab sample id N910221-09

Dept sample id 7262-009

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No B99-078

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Uranium (ug/g)	33.0	4.4	0.050	1.0		U_T	37.2	1.5	89	78-122	80-120

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

QC-LCS 32334

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

N910221-11

B0WMF1

DUPLICATE

SDG	7262			Client/Case no	Hanford SDG H0596
Contact	Melissa C. Mannion			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N910221-11	Lab sample id	N910221-01	Client sample id	B0WMF1
Dept sample id	7262-011	Dept sample id	7262-001	Location/Matrix	200 B Pond SOLID
		Received	10/27/99	Collected	10/25/99 12:57
		% solids	85.1	Custody/SAF No	B99-078-144 B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Total Uranium (ug/g)	1.02	0.13	0.005	1.0		U_T	1.04	0.13	0.005		2	33	

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

QC-DUP#1 32336

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

N910221-07 B0WMF6

DUPLICATE

SDG	7262	Client/Case no	Hanford SDG H0596
Contact	Melissa C. Mannion	Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL	
Lab sample id	N910221-07	Lab sample id	N910221-04
Dept sample id	7262-007	Dept sample id	7262-004
		Received	10/27/99
		% solids	98.8
		Client sample id	B0WMF6
		Location/Matrix	200 B Pond SOLID
		Collected	10/25/99 13:55
		Custody/SAF No	B99-078-145 B99-078

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Tritium	-0.053	0.057	0.10	400	U	H	-0.031	0.060	0.10	U	-	
Technetium 99	-0.162	0.42	1.0	15	U	TC	-0.029	0.22	0.64	U	-	
Plutonium 238	-0.008	0.023	0.052	1.0	U	PU	-0.004	0.015	0.041	U	-	
Plutonium 239/240	0.023	0.023	0.029	1.0	U	PU	-0.007	0.015	0.041	U	-	
Nickel 63	2.36	1.5	2.4	30	U	NI_L	1.12	1.5	2.5	U	-	
Americium 241	0.022	0.029	0.047	1.0	U	AM	0.022	0.038	0.066	U	-	
Total Strontium	-0.023	0.077	0.11	1.0	U	SR	-0.012	0.083	0.11	U	-	
Thorium 228	0.461	0.17	0.20	1.0	J	TH	0.571	0.14	0.14	J	21	65
Thorium 230	0.608	0.19	0.18	1.0	J	TH	1.03	0.18	0.14		52	49
Thorium 232	0.580	0.15	0.072	1.0	J	TH	0.577	0.13	0.070	J	1	53
Potassium 40	14.7	0.42	0.17			GAM	14.6	0.38	0.16		1	32
Cobalt 60	U		0.019	0.050	U	GAM	U		0.017	U	-	
Cesium 137	U		0.017	0.10	U	GAM	U		0.015	U	-	
Europium 152	U		0.044	0.10	U	GAM	U		0.039	U	-	
Europium 154	U		0.065	0.10	U	GAM	U		0.054	U	-	
Europium 155	U		0.063	0.10	U	GAM	U		0.084	U	-	
Radium 226	0.460	0.033	0.031	0.10		GAM	0.458	0.034	0.032		0	35
Radium 228	0.629	0.079	0.077	0.20		GAM	0.611	0.070	0.068		3	41
Thorium 228	0.582	0.024	0.025			GAM	0.567	0.022	0.022		3	33
Thorium 232	0.629	0.079	0.077			GAM	0.611	0.070	0.068		3	41
Americium 241	U		0.15		U	GAM	U		0.14	U	-	
Uranium 238	U		2.2		U	GAM	U		2.0	U	-	
Uranium 235	U		0.076		U	GAM	U		0.068	U	-	

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

QC-DUP#4 32752

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/20/00

MATRIX SPIKE

SDG 7262		Client/Case no Hanford	SDG H0596
Contact Melissa C. Mannion		Case no TRB-SBB-207925	
MATRIX SPIKE	ORIGINAL		
Lab sample id N910221-08	Lab sample id N910221-04	Client sample id B0WMF6	
Dept sample id 7262-008	Dept sample id 7262-004	Location/Matrix 200 B Pond	SOLID
	Received 10/27/99	Collected 10/25/99 13:55	
	% solids 98.8	Custody/SAF No B99-078-145	B99-078

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	10.5	0.22	0.10	400	J	H	11.4	0.46	-0.031	0.060	92	85-115	

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

QC-MS#4 32753

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

N910221-12 B0WMF6

MATRIX SPIKE

SDG 7262		Client/Case no Hanford	SDG H0596
Contact Melissa C. Mannion		Case no TRB-SBB-207925	
MATRIX SPIKE	ORIGINAL		
Lab sample id N910221-12	Lab sample id N910221-04	Client sample id B0WMF6	
Dept sample id 7262-012	Dept sample id 7262-004	Location/Matrix 200 B Pond	SOLID
	Received 10/27/99	Collected 10/25/99 13:55	
	% solids 98.8	Custody/SAF No B99-078-145	B99-078

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Nickel 63	132	3.6	2.5	30		NI_L	147	5.9	1.12	1.5	89	85-115	

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

QC-MS#4 32754

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

N910221-01 B0WMF1

DATA SHEET

SDG	7262	Client/Case no	Hanford SDG_H0596
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910221-01	Client sample id	B0WMF1
Dept sample id	7262-001	Location/Matrix	200 B Pond SOLID
Received	10/27/99	Collected	10/25/99 12:57
% solids	85.1	Custody/SAF No	B99-078-144 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	1.04	0.13	0.005	1.0		U_T
Plutonium 238	13981-16-3	-0.010	0.020	0.037	1.0	U	PU
Plutonium 239/240	PU-239/240	0.003	0.011	0.020	1.0	U	PU
Americium 241	14596-10-2	-0.002	0.020	0.035	1.0	U	AM
Total Strontium	SR-RAD	0.278	0.090	0.12	1.0	J	SR
Thorium 228	14274-82-9	0.588	0.15	0.15	1.0	J	TH
Thorium 230	14269-63-7	0.810	0.16	0.14	1.0	J	TH
Thorium 232	TH-232	0.625	0.13	0.047	1.0	J	TH
Potassium 40	13966-00-2	15.1	0.61	0.32			GAM
Cobalt 60	10198-40-0	U		0.032	0.050	U	GAM
Cesium 137	10045-97-3	U		0.027	0.10	U	GAM
Europium 152	14683-23-9	U		0.066	0.10	U	GAM
Europium 154	15585-10-1	U		0.10	0.10	U	GAM
Europium 155	14391-16-3	U		0.057	0.10	U	GAM
Radium 226	13982-63-3	0.899	0.063	0.055	0.10		GAM
Radium 228	15262-20-1	1.06	0.12	0.11	0.20		GAM
Thorium 228	14274-82-9	1.12	0.037	0.034			GAM
Thorium 232	TH-232	1.06	0.12	0.11			GAM
Americium 241	14596-10-2	U		0.046		U	GAM
Uranium 238	U-238	U		3.8		U	GAM
Uranium 235	15117-96-1	U		0.097		U	GAM

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

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

N910221-02 B0WMF2

DATA SHEET

SDG	7262	Client/Case no	Hanford SDG H0596
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910221-02	Client sample id	B0WMF2
Dept sample id	7262-002	Location/Matrix	200 B Pond SOLID
Received	10/27/99	Collected	10/25/99 13:28
% solids	96.5	Custody/SAF No	B99-078-144 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.906	0.12	0.005	1.0	J	U_T
Plutonium 238	13981-16-3	-0.006	0.017	0.030	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.009	0.017	1.0	U	PU
Americium 241	14596-10-2	0.028	0.032	0.049	1.0	U	AM
Total Strontium	SR-RAD	0.037	0.067	0.11	1.0	U	SR
Thorium 228	14274-82-9	0.384	0.13	0.15	1.0	J	TH
Thorium 230	14269-63-7	0.604	0.17	0.18	1.0	J	TH
Thorium 232	TH-232	0.270	0.10	0.087	1.0	J	TH
Potassium 40	13966-00-2	9.64	0.40	0.21			GAM
Cobalt 60	10198-40-0	U		0.019	0.050	U	GAM
Cesium 137	10045-97-3	0.029	0.019	0.022	0.10	J	GAM
Europium 152	14683-23-9	U		0.045	0.10	U	GAM
Europium 154	15585-10-1	U		0.064	0.10	U	GAM
Europium 155	14391-16-3	U		0.048	0.10	U	GAM
Radium 226	13982-63-3	0.409	0.037	0.035	0.10		GAM
Radium 228	15262-20-1	0.569	0.083	0.085	0.20		GAM
Thorium 228	14274-82-9	0.517	0.023	0.022			GAM
Thorium 232	TH-232	0.569	0.083	0.085			GAM
Americium 241	14596-10-2	U		0.069		U	GAM
Uranium 238	U-238	U		2.1		U	GAM
Uranium 235	15117-96-1	U		0.076		U	GAM

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

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

N910221-03 B0WMF3

DATA SHEET

SDG	7262	Client/Case no	Hanford SDG H0596
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925
Lab sample id	N910221-03	Client sample id	B0WMF3
Dept sample id	7262-003	Location/Matrix	200 B Pond SOLID
Received	10/27/99	Collected	10/25/99 13:40
% solids	97.8	Custody/SAF No	B99-078-144 B99-078

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.548	0.070	0.005	1.0	J	U_T
Plutonium 238	13981-16-3	0.007	0.028	0.051	1.0	U	PU
Plutonium 239/240	PU-239/240	0.004	0.014	0.034	1.0	U	PU
Americium 241	14596-10-2	0.023	0.040	0.063	1.0	U	AM
Total Strontium	SR-RAD	-0.015	0.078	0.11	1.0	U	SR
Thorium 228	14274-82-9	0.590	0.15	0.15	1.0	J	TH
Thorium 230	14269-63-7	0.702	0.18	0.17	1.0	J	TH
Thorium 232	TH-232	0.551	0.14	0.058	1.0	J	TH
Potassium 40	13966-00-2	15.0	0.31	0.12			GAM
Cobalt 60	10198-40-0	U		0.013	0.050	U	GAM
Cesium 137	10045-97-3	U		0.011	0.10	U	GAM
Europium 152	14683-23-9	U		0.029	0.10	U	GAM
Europium 154	15585-10-1	U		0.043	0.10	U	GAM
Europium 155	14391-16-3	U		0.044	0.10	U	GAM
Radium 226	13982-63-3	0.445	0.025	0.023	0.10		GAM
Radium 228	15262-20-1	0.674	0.063	0.058	0.20		GAM
Thorium 228	14274-82-9	0.614	0.017	0.015			GAM
Thorium 232	TH-232	0.674	0.063	0.058			GAM
Americium 241	14596-10-2	U		0.039		U	GAM
Uranium 238	U-238	U		1.5		U	GAM
Uranium 235	15117-96-1	U		0.045		U	GAM

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

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

N910221-04 B0WMF6

DATA SHEET

SDG	7262	Client/Case no	Hanford	SDG H0596	
Contact	Melissa C. Mannion	Contract	TRB-SBB-207925		
Lab sample id	N910221-04	Client sample id	B0WMF6		
Dept sample id	7262-004	Location/Matrix	200 B Pond	SOLID	
Received	10/27/99	Collected	10/25/99 13:55		
% solids	98.8	Custody/SAF No	B99-078-145	B99-078	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.031	0.060	0.10	400	U	H
Technetium 99	14133-76-7	-0.029	0.22	0.64	15	U	TC
Total Uranium (ug/g)	7440-61-1	0.355	0.045	0.005	1.0	J	U_T
Plutonium 238	13981-16-3	-0.004	0.015	0.041	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.007	0.015	0.041	1.0	U	PU
Nickel 63	13981-37-8	1.12	1.5	2.5	30	U	NI_L
Americium 241	14596-10-2	0.022	0.038	0.066	1.0	U	AM
Total Strontium	SR-RAD	-0.012	0.083	0.11	1.0	U	SR
Thorium 228	14274-82-9	0.571	0.14	0.14	1.0	J	TH
Thorium 230	14269-63-7	1.03	0.18	0.14	1.0		TH
Thorium 232	TH-232	0.577	0.13	0.070	1.0	J	TH
Potassium 40	13966-00-2	14.6	0.38	0.16			GAM
Cobalt 60	10198-40-0	U		0.017	0.050	U	GAM
Cesium 137	10045-97-3	U		0.015	0.10	U	GAM
Europium 152	14683-23-9	U		0.039	0.10	U	GAM
Europium 154	15585-10-1	U		0.054	0.10	U	GAM
Europium 155	14391-16-3	U		0.084	0.10	U	GAM
Radium 226	13982-63-3	0.458	0.034	0.032	0.10		GAM
Radium 228	15262-20-1	0.611	0.070	0.068	0.20		GAM
Thorium 228	14274-82-9	0.567	0.022	0.022			GAM
Thorium 232	TH-232	0.611	0.070	0.068			GAM
Americium 241	14596-10-2	U		0.14		U	GAM
Uranium 238	U-238	U		2.0		U	GAM
Uranium 235	15117-96-1	U		0.068		U	GAM

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

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

Test AM Matrix SOLID
SDG 7262
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0596

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 6904-192						
B0WMF1	N910221-01			7262-001	U	
B0WMF2	N910221-02			7262-002	U	
B0WMF3	N910221-03			7262-003	U	
B0WMF6	N910221-04			7262-004	U	
BLK (QC ID=32751)	N910221-06			7262-006	U	
LCS (QC ID=32750)	N910221-05			7262-005	ok	
Duplicate (N910221-04)	N910221-07			7262-007	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0	
200 Area Source Chara. - 200-CW-1 OU						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-192	2σ prep error 5.0 %				Reference Lab Notebook 6904 pg. 192											
B0WMF1	N910221-01			0.035	0.500			85		1090			63	12/22/99	12/27	SS-060
B0WMF2	N910221-02			0.049	0.500			55		1089			63	12/22/99	12/27	SS-066
B0WMF3	N910221-03			0.063	0.500			75		1080			63	12/22/99	12/27	SS-029
B0WMF6	N910221-04			0.066	0.500			70		1043			63	12/22/99	12/27	SS-032
BLK (QC ID=32751)	N910221-06			0.063	0.500			82		1043				12/18/99	12/27	SS-033
LCS (QC ID=32750)	N910221-05			0.032	0.500			93		1090				12/17/99	12/27	SS-059
Duplicate (N910221-04) (QC ID=32752)	N910221-07			0.047	0.500			92		1043			63	12/22/99	12/27	SS-034
Nominal values and limits from method				1.0	0.500			20-105		700	100		180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

Test AM	Matrix SOLID
SDG 7262	
Contact Melissa C. Mannion	

METHOD SUMMARY, cont.

AMERICIUM 241 IN SOIL

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0596	

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	0.051	±	0.028
FOR 7 SAMPLES	YIELD	79	±	27

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

Test PU Matrix SOLID
SDG 7262
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0596

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6904-192								
B0WMF1	N910221-01			7262-001	U		U	
B0WMF2	N910221-02			7262-002	U		U	
B0WMF3	N910221-03			7262-003	U		U	
B0WMF6	N910221-04			7262-004	U		U	
BLK (QC ID=32751)	N910221-06			7262-006	U		U	
LCS (QC ID=32750)	N910221-05			7262-005	ok		ok	
Duplicate (N910221-04)	N910221-07			7262-007	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	1.0		1.0	
200 Area Source Chara. - 200-CW-1 OU								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-192	2σ prep error 5.0 %				Reference Lab Notebook 6904 pg. 192											
B0WMF1	N910221-01			0.037	0.500			61		4981			59	12/22/99	12/23	SS-039
B0WMF2	N910221-02			0.030	0.500			60		4976			59	12/22/99	12/23	SS-045
B0WMF3	N910221-03			0.051	0.500			60		1090			63	12/22/99	12/27	SS-061
B0WMF6	N910221-04			0.041	0.500			57		1090			63	12/22/99	12/27	SS-062
BLK (QC ID=32751)	N910221-06			0.051	0.500			64		1089				12/17/99	12/27	SS-064
LCS (QC ID=32750)	N910221-05			0.054	0.500			60		1089				12/17/99	12/27	SS-063
Duplicate (N910221-04) (QC ID=32752)	N910221-07			0.052	0.500			56		1089			63	12/22/99	12/27	SS-065
Nominal values and limits from method				1.0	0.500			20-105		10	100		180			

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 FOR 7 SAMPLES
MDA 0.045 ± 0.018
YIELD 60 ± 5

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/20/00

Test TH Matrix SOLID
SDG 7262
Contact Melissa C. Mannion

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client Hanford
Contract TRB-SRB-207925
Case no SDG H0596

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Thorium 228	Thorium 230	Thorium 232
Preparation batch 6904-192							
B0WMF1	N910221-01			7262-001	0.588 J	0.810 J	0.625 J
B0WMF2	N910221-02			7262-002	0.384 J	0.604 J	0.270 J
B0WMF3	N910221-03			7262-003	0.590 J	0.702 J	0.551 J
B0WMF6	N910221-04			7262-004	0.571 J	1.03	0.577 J
BLK (QC ID=32751)	N910221-06			7262-006	U	U	U
LCS (QC ID=32750)	N910221-05			7262-005	No data U	ok	No data J
Duplicate (N910221-04)	N910221-07			7262-007	ok J	OUT J	ok J
Nominal values and limits from method 200 Area Source Chara. - 200-CW-1 OU				RDLs (pCi/g)	1.0	1.0	1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-192 2σ prep error 5.0 % Reference Lab Notebook 6904 pg. 192																
B0WMF1	N910221-01			0.15	0.250			86		877			74	01/03/00	01/07	SS-034
B0WMF2	N910221-02			0.18	0.250			79		877			74	01/03/00	01/07	SS-035
B0WMF3	N910221-03			0.17	0.250			74		877			74	01/03/00	01/07	SS-036
B0WMF6	N910221-04			0.14	0.250			89		877			74	01/03/00	01/07	SS-038
BLK (QC ID=32751)	N910221-06			0.16	0.250			89		877				01/07/00	01/07	SS-040
LCS (QC ID=32750)	N910221-05			0.16	0.250			82		877				01/07/00	01/07	SS-039
Duplicate (N910221-04) (QC ID=32752)	N910221-07			0.20	0.250			80		618			78	01/03/00	01/11	SS-029
Nominal values and limits from method				1.0	0.250			20-105		200			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

Test	TH
Matrix	SOLID
SDG	7262
Contact	Melissa C. Marnion

METHOD SUMMARY, cont.

THORIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0596

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	0.17	±	0.040
FOR 7 SAMPLES	YIELD	83	±	11

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Test SR Matrix SOLID
SDG 7262
Contact Melissa C. Mannion

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0596

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 6904-192					
B0WMF1	N910221-01			7262-001	0.278 J
B0WMF2	N910221-02			7262-002	U
B0WMF3	N910221-03			7262-003	U
B0WMF6	N910221-04			7262-004	U
BLK (QC ID=32751)	N910221-06			7262-006	U
LCS (QC ID=32750)	N910221-05			7262-005	ok
Duplicate (N910221-04)	N910221-07			7262-007	- U

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

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-192	2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 192															
B0WMF1	N910221-01			0.12	1.00			92		200			54	12/18/99	12/18	GRB-223
B0WMF2	N910221-02			0.11	1.00			96		200			54	12/18/99	12/18	GRB-224
B0WMF3	N910221-03			0.11	1.00			93		400			54	12/18/99	12/18	GRB-218
B0WMF6	N910221-04			0.11	1.00			92		400			54	12/18/99	12/18	GRB-219
BLK (QC ID=32751)	N910221-06			0.14	1.00			77		400				12/18/99	12/18	GRB-221
LCS (QC ID=32750)	N910221-05			0.13	1.00			75		400				12/18/99	12/18	GRB-220
Duplicate (N910221-04) (QC ID=32752)	N910221-07			0.11	1.00			90		400			54	12/18/99	12/18	GRB-222
Nominal values and limits from method				1.0	1.00					100			180			

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

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.12 ± 0.024
YIELD 88 ± 17

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

Test	TC Matrix SOLID
SDG	7262
Contact	Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0596

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6904-192						
B0WMF6	N910221-04			7262-004	U	
BLK (QC ID=32751)	N910221-06			7262-006	U	
LCS (QC ID=32750)	N910221-05			7262-005	ok	
Duplicate (N910221-04)	N910221-07			7262-007	-	U

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

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

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-192 2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 192																
B0WMF6	N910221-04			0.64	1.01			54		101			54	12/14/99	12/18	GRB-217
BLK (QC ID=32751)	N910221-06			0.61	1.02			56		101				12/13/99	12/18	GRB-219
LCS (QC ID=32750)	N910221-05			0.76	1.02			44		101				12/13/99	12/18	GRB-218
Duplicate (N910221-04) (QC ID=32752)	N910221-07			1.0	1.01			33		101			54	12/14/99	12/18	GRB-220
Nominal values and limits from method				15	1.02			20-105		50			180			

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

AVERAGES ± 2 SD FOR 4 SAMPLES				
MDA	0.75	±	0.35
YIELD	47	±	21

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

Test GAM Matrix SOLID
SDG 7262
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0596

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6904-192								
B0WMF1	N910221-01			7262-001	U		U	
B0WMF2	N910221-02			7262-002	U		0.029	J
B0WMF3	N910221-03			7262-003	U		U	
B0WMF6	N910221-04			7262-004	U		U	
BLK (QC ID=32751)	N910221-06			7262-006	U		U	
LCS (QC ID=32750)	N910221-05			7262-005	ok		ok	
Duplicate (N910221-04)	N910221-07			7262-007	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.10	
200 Area Source Chara. - 200-CW-1 OU								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-192	2σ prep error 15.0 % Reference Lab Notebook 6904 pg. 192															
B0WMF1	N910221-01			0.098	599					497			51	12/01/99	12/15	02,01,00
B0WMF2	N910221-02			0.050	831					496			51	12/01/99	12/15	02,03,00
B0WMF3	N910221-03			0.038	768					496			51	12/01/99	12/15	02,04,00
B0WMF6	N910221-04			0.046	822					495			51	12/01/99	12/15	MB,05,00
BLK (QC ID=32751)	N910221-06			0.087	171					398				12/01/99	12/15	MB,07,00
LCS (QC ID=32750)	N910221-05			0.049	171					495				12/01/99	12/15	MB,07,00
Duplicate (N910221-04) (QC ID=32752)	N910221-07			0.054	822					397			51	12/01/99	12/15	MB,05,00
Nominal values and limits from method				0.050	171					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 7 SAMPLES
MDA 0.060 ± 0.046
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

Test U_T Matrix SOLID
SDG 7262
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0596

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 6904-192					
B0WMF1	N910221-01			7262-001	1.04
B0WMF2	N910221-02			7262-002	0.906 J
B0WMF3	N910221-03			7262-003	0.548 J
B0WMF6	N910221-04			7262-004	0.355 J
BLK (QC ID=32335)	N910221-10			7262-010	U
LCS (QC ID=32334)	N910221-09			7262-009	ok
Duplicate (N910221-01)	N910221-11			7262-011	ok
Nominal values and limits from method				RDLs (ug/g)	1.0
200 Area Source Chara. - 200-CW-1 OU					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-192	2σ prep error 9.0 %			Reference Lab Notebook 6904 pg. 192												
B0WMF1	N910221-01			0.005	0.0500								22	11/15/99	11/16	KPA-001
B0WMF2	N910221-02			0.005	0.0500								22	11/15/99	11/16	KPA-001
B0WMF3	N910221-03			0.005	0.0500								22	11/15/99	11/16	KPA-001
B0WMF6	N910221-04			0.005	0.0500								22	11/15/99	11/16	KPA-001
BLK (QC ID=32335)	N910221-10			0.005	0.0500									11/15/99	11/16	KPA-001
LCS (QC ID=32334)	N910221-09			0.050	0.0500									11/15/99	11/16	KPA-001
Duplicate (N910221-01) (QC ID=32336)	N910221-11			0.005	0.0500								22	11/15/99	11/16	KPA-001
Nominal values and limits from method				1.0	0.0500								180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

Test U T Matrix SOLID
SDG 7262
Contact Melissa C. Mannion

METHOD SUMMARY, cont.

URANIUM, TOTAL IN SOIL
KINETIC PHOSPHORIMETRY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0596

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	0.011 ± 0.034
FOR 7 SAMPLES	YIELD	±

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/20/00

Test H Matrix SOLID
SDG 7262
Contact Melissa C. Mannion

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

METHOD SUMMARY

TRITIUM IN SOIL

LIQUID SCINTILLATION COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0596

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 6904-192						
B0WMF6	N910221-04			7262-004	U	
BLK (QC ID=32751)	N910221-06			7262-006	U	
LCS (QC ID=32750)	N910221-05			7262-005	ok	J
Duplicate (N910221-04)	N910221-07			7262-007	-	U
Spike (N910221-04)	N910221-08			7262-008	ok	J

Nominal values and limits from method RDLs (pCi/g) 400
200 Area Source Chara. - 200-CW-1 OU

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-192 2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 192																
B0WMF6	N910221-04			0.10	20.2			100		120			75	01/06/00	01/08	LSC-005
BLK (QC ID=32751)	N910221-06			0.20	20.5			50		120				01/07/00	01/08	LSC-005
LCS (QC ID=32750)	N910221-05			0.20	20.5			50		120				01/07/00	01/08	LSC-005
Duplicate (N910221-04) (QC ID=32752)	N910221-07			0.10	20.6			100		120			76	01/06/00	01/09	LSC-005
Spike (N910221-04) (QC ID=32753)	N910221-08			0.10	20.4			100		120			76	01/07/00	01/09	LSC-005
Nominal values and limits from method				400	20.5					25			180			

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

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.14 ± 0.11
YIELD 80 ± 55

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 01/20/00

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0596

Test	NI L Matrix SOLID
SDG	7262
Contact	Melissa C. Mannion

METHOD SUMMARY

NICKEL 63 IN SOIL

LIQUID SCINTILLATION COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0596

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 6904-192						
B0WMF6	N910221-04			7262-004	U	
BLK (QC ID=32751)	N910221-06			7262-006	U	
LCS (QC ID=32750)	N910221-05			7262-005	ok	
Duplicate (N910221-04)	N910221-07			7262-007	-	U
Spike (N910221-04)	N910221-12			7262-012	ok	

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

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

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-192 2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 192																
B0WMF6	N910221-04			2.5	0.500			100		100			84	01/11/00	01/17	LSC-004
BLK (QC ID=32751)	N910221-06			2.5	0.500			100		100				01/11/00	01/17	LSC-004
LCS (QC ID=32750)	N910221-05			2.5	0.500			100		100				01/11/00	01/17	LSC-004
Duplicate (N910221-04) (QC ID=32752)	N910221-07			2.4	0.500			100		100			84	01/11/00	01/17	LSC-004
Spike (N910221-04) (QC ID=32754)	N910221-12			2.5	0.500			100		100			84	01/11/00	01/17	LSC-004
Nominal values and limits from method				30	0.500					10			180			

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

AVERAGES ± 2 SD	MDA	2.5	± 0.089
FOR 5 SAMPLES	YIELD	100	± 0

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	01/20/00

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

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond	SAF No.: B99-078	
Ice Chest No.: ERC99 029	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: ~~TMA/RECRA~~ CT 10/25/99 TMA	Offsite Property No.: A00010	Bill of Lading/Air Bill No.: 42357953 1068	
		COA: B20CW1 671C	

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										
BOWMF1	Soil	10/25/99	1257	X						X			BOW 8C1
BOWMF2	Soil	10/25/99	1328	X						X			BOW 8C1
BOWMF3	Soil	10/25/99	1340	X						X			BOW 8C1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 10-25-99/1500	Received By: Ref 3C	Date/Time: 10-25-99/1500
Relinquished By: REF 3C	Date/Time: 10-26-99/0800	Received By: RIKKI THOREN R. Thoren	Date/Time: 10-26-99/0800
Relinquished By: RIKKI THOREN R. Thoren	Date/Time: 10-26-99/1430	Received By: FEDEX	Date/Time: 10/26/99
Relinquished By: FedEx	Date/Time: 10-27-99 10:00	Received By: TNU M. Goldberg	Date/Time: 10:00 10/27/99

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

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

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

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

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

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

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-078-145

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: ERC99 029	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: TMA/RECRA	Offsite Property No.: A00001Ø		Bill of Lading/Air Bill No.: 42357953 1Ø68
			COA: B20CW167C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SAMPLE ANALYSIS												
Preservation				None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None
Type of Container				aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)				1	1	1	1	1	1	1	1	1	1
Volume				60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
				Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.
Sample No.	Matrix *	Sample Date	Sample Time										
BOWMF6	Soil	10-25-99	1355	X	X	X	X						X
												BOWBC1	

CHAIN OF POSSESSION — *Sign/Print Names*

Relinquished By	Date/Time	Received By	Date/Time
Doug Bowers / Doug Bowers	10-25-99/1500	Ref 3C	10-25-99/1500
Ref 3C	10.26.99/0800	RIKKI THOREN / R. Thoren	10.26.99/0800
RIKKI THOREN / R. Thoren	10.26.99/1430	FED EX	10/26/99 10:00
FedEx	10/27/99 10:00	TNV H. Goldenberg	10/27/99

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 – Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

use BOWBC1 to ship

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 10-27-99 10:00

CoC No. B99-078-144,145

Container I.D. No. ERC99-078 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: 9
7. Number of containers per sample: _____ (Or see CoC ✓)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [✓] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: On COC B99-078-145 sample ID BOWMF6 1000 mL container was broken.

13. Was P.M. notified of any anomalies? Yes [✓] No [ ] Date 10-27-99
14. Received by M. Goldenberg Date: 10-27-99 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 _____