H0176

0049906

RECRA LabNet

a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

SEP 1998 RECEIVED Data Log In

Recra LabNet Philadelphia
Analytical Report

OCT 1998 RECEIVED EDMC

Client : TNU-HANFORD B98-01
RFW# : 9807L998
SDG/SAF: H0176/B98-101

W.O.# : 10985-001-001-9999-00
Date Received : 07-24-98

PCB

The set of samples consisted of eight (8) solid (paint chips) samples collected on 07-21-98.

The samples and their associated QC samples were extracted on 08-04,21-98 and analyzed on 08-07,08,24-98 according to Recra OPs based on SW846, 3rd Edition, Method 3540 and Method 8081.One gram (1g) of sample was used instead of required 30 g because of matrix of the sample (paint chips).

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

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

2. All required holding times for extraction and analysis were met with the exception of the extraction holding time for samples BOPCJ9 and BOPCK4. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

3. The samples and their associated QC samples received a sulfuric acid and sulfur cleanup.

4. The method blank was below the reporting limits for all target compounds.

5. All obtainable surrogate recoveries were within acceptance criteria.

6. All blank spike recoveries were within acceptance criteria.

7. Matrix spike recoveries were unobtainable due to the dilution required for the analysis.

8. All samples required instument dilutions due to the chromatographic anomalies and high concentration of non-target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.

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.

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

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

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

SEP 1998
RECEIVED
Data
Log In

Chuck Stefanosky
Laboratory Director
Lionville Analytical Laboratory

09-04-98
Date

som/pcb/word6.0/p998.doc

002

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

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

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

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

I = Interference.

ABBREVIATIONS

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

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

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

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

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

Recra LabNet Philadelphia **Sample Discrepancy Report (SDR)** SDR #: 98EX162

Initiator: Bernard Filey
Date: 8/26/98
Client: TNU

RFW Batch: ~~9805~~ 98071998 JF 8/26/98
Samples: 2,7
Method: SW846/MCAWW/CLP/

Parameter: OPB
Matrix: S
Prep Batch: ~~98EP55~~ 1398 JF 8/26/98

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
X 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)

Samples extracted out of hold

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)

4. Project Manager Instructions...signature/date: [signature] 8/26/98

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
✓ Client Contacted:
Date/Person L. Jamison 8/26/98
__ Add
__ Cancel

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

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

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Doughty
__	X Lab Manager: J. Michael Taylor	__	__ Inorganic: Perrone
T	X Project Mgr: Marie Schnell	2	X GC/LC: Rycklak/Schnell
__	X Section Mgr: Siery/Durke/Daniels	__	__ MS: LeMin/McIntyre/Taylor/Kasdras
__	X QA (file): Racioppi	__	__ Log-in: Toder
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Schnell/Doughty/Kauffman	__	__ Other: _____

L-WI-006/E-07/98

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 08/31/98 16:28

RFW Batch Number: **9807L998** Client: **TNU-HANFORD B98-101** Work Order: 10985001001 Page: 1

	Cust ID:	BOPCJ8	BOPCJ9	BOPCK0	BOPCK1	BOPCK2	BOPCK3
Sample Information	RFW#:	001	002	003	004	005	006
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	5.00	2.00	20.0	10.0	10.0	10.0
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	D %	98 %	D %	D %	D %	D %
	Decachlorobiphenyl	74 %	97 %	D %	D %	D %	D %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		5100 U	2100 U	20000 U	10000 U	10000 U	10000 U
Aroclor-1221		10000 U	4100 U	41000 U	20000 U	20000 U	20000 U
Aroclor-1232		5100 U	2100 U	20000 U	10000 U	10000 U	10000 U
Aroclor-1242		5100 U	2100 U	20000 U	10000 U	10000 U	10000 U
Aroclor-1248		5100 U	2100 U	20000 U	10000 U	10000 U	10000 U
Aroclor-1254		5100 U	2100 U	20000 U	10000 U	10000 U	10000 U
Aroclor-1260		5100 U	2100 U	20000 U	10000 U	10000 U	10000 U

	Cust ID:	BOPCK4	BOPCK5	BOPCK5	BOPCK5	PBLKLH	PBLKLH BS
Sample Information	RFW#:	007	008	008 MS	008 MSD	98LE1303-MB1	98LE1303-MB1
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	2.00	10.0	10.0	10.0	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	82 %	D %	D %	D %	70 %	70 %
	Decachlorobiphenyl	85 %	D %	D %	D %	67 %	65 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		2100 U	10000 U	10000 U	10000 U	33 U	33 U
Aroclor-1221		4100 U	21000 U	21000 U	21000 U	67 U	67 U
Aroclor-1232		2100 U	10000 U	10000 U	10000 U	33 U	33 U
Aroclor-1242		2100 U	10000 U	10000 U	10000 U	33 U	33 U
Aroclor-1248		2100 U	10000 U	10000 U	10000 U	33 U	33 U
Aroclor-1254		2100 U	10000 U	D %	D %	33 U	77 %
Aroclor-1260		2100 U	10000 U	10000 U	10000 U	33 U	33 U

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

TB 9/3/98

Recra LabNet - Lionville Laboratory
PCB ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B98-101

DATE RECEIVED: 07/24/98 RFW LOT # :9807L998

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOPCJ8	001	SO	98LE1303	07/21/98	08/04/98	08/07/98
BOPCJ9	002	SO	98LE1398	07/21/98	08/21/98	08/24/98
BOPCK0	003	SO	98LE1303	07/21/98	08/04/98	08/07/98
BOPCK1	004	SO	98LE1303	07/21/98	08/04/98	08/07/98
BOPCK2	005	SO	98LE1303	07/21/98	08/04/98	08/07/98
BOPCK3	006	SO	98LE1303	07/21/98	08/04/98	08/07/98
BOPCK4	007	SO	98LE1398	07/21/98	08/21/98	08/24/98
BOPCK5	008	SO	98LE1303	07/21/98	08/04/98	08/07/98
BOPCK5	008 MS	SO	98LE1303	07/21/98	08/04/98	08/07/98
BOPCK5	008 MSD	SO	98LE1303	07/21/98	08/04/98	08/07/98

LAB QC:

PBLKLH	MB1	S	98LE1303	N/A	08/04/98	08/08/98
PBLKLH	MB1 BS	S	98LE1303	N/A	08/04/98	08/08/98
PBLKNQ	MB1	S	98LE1398	N/A	08/21/98	08/24/98
PBLKNQ	MB1 BS	S	98LE1398	N/A	08/21/98	08/24/98
PBLKNQ	MB1 BSD	S	98LE1398	N/A	08/21/98	08/24/98

JE 8/31/98

9807L998

Custody Transfer Record/Lab Work Request

(1) GC Pest/PCB

RECRA LabNet

Client: TNU - HANFORD B98-101

Est. Final Proj. Sampling Date

Project #: 10985-021-021-9999-00

Project Contact/Phone #

RECRA Project Manager: MS

QC: STD Del: STD TAT: 7 DAYS

Date Rec'd: 7/24/98 Date Due: 7/31/98

Account #

Refrigerator #				3			3	3			3								
#/Type Container	Liquid																		
	Solid			1AG			1P	1AG			1AG								
Volume	Liquid																		
	Solid			60ml			20ml	120ml			60ml								
Preservatives				—			—				—								
ANALYSES REQUESTED		ORGANIC								INORG									
		VOA	BNA	Pest/PCB	Herb		PCB's 8080			Metal	CN								

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

RECRA LabNet Use Only

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	QPCB	ZSOB	DECON	TCLP	RECEIVED AUTHENTIC 7/24/98
	~~SL~~ 7/24/98										
001	~~BOB~~ BOP CJ8			SO	7/24/98	0817	X	X		X	
002	BOP CJ9					0848	X	X	X	X	
3	BOP CK0					0900	X	X		X	
4	BOP CK1					0914	X	X		X	
5	BOP CK2					0940	X	X		X	
6	BOP CK3					0948	X	X		X	
7	↓ 4					1010	X	X	X	X	
8	↓ 5			↓	↓	1030	X	X		X	
009	BOP CJ8 telpaf 001			L	*	—					X
010	BOP CJ9 ↓ 002			L	*	—	X 7/24/98		7/24/98		X

Special Instructions:

RSA Client info

RINSE Comp

DATE/REVISIONS:

1 * see deviation for date

2 collect

3

4 Run matrix QC

9/10/98 5 QPCB test code added to COC BS 7/24/98

7/29/98 6 metal corrected and Recon list added per SDR 98PMS275

RECRA LabNet Use Only

Samples were: 1) Shipped X or Hand Delivered

Airbill # See *

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Labels Indicate Properly Preserved Y or (N)

5) Received Within Holding Times (Y) or N

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

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec'd (Y) or N

Cooler Temp 3.0

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES

* 401967107 3

Relinquished by	Received by	Date	Time
Fedex Air Freight 7/24/98	L Landy	7/24/98	10:00

Relinquished by	Received by	Date	Time

ORIGINAL

980716998

Custody Transfer Record/Lab Work Request

RECRA LabNet

Client TMC-Hanford BF98-101

Est. Final Proj. Sampling Date

Project #

Project Contact/Phone #

RECRA Project Manager

QC Del TAT

Date Rec'd Date Due

Account #

Refrigerator #

#/Type Container	Liquid																		
	Solid																		
Volume	Liquid																		
	Solid																		
Preservatives																			

ANALYSES REQUESTED

ORGANIC							INORG								
VOA	BNA	Pesv/PCB	Herb				Metal	CN							

RECRA LabNet Use Only

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected													
	tel pak																		
011	BOPCKC 003			L	*	-													
012	1 004																		
013	2 005																		
014	3 006																		
015	4 007																		
016	5 008																		

Special Instructions:

DATE/REVISIONS:
1
2
3
4
5
6

RECRA LabNet Use Only

Samples were 1) Shipped or Hand Delivered

Airbill #

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Labels Indicate Properly Preserved Y or N

5) Received Within Holding Times Y or N

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

2) Unbroken on Outer Package Y or N

3) Present on Sample Y or N

4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec'd Y or N

Cooler Temp

Relinquished by	Received by	Date	Time
DP 7/24/98			
Fed Ex Air Freight	L Stanley	7/24/98	10 oc

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES

Collector Fahlberg/Nielson	Company Contact Dave Smith	Telephone No. 376-3055	Project Coordinator TRENT, SJ
Project Designation White Bluffs 1 & 2 Paint Sampling	Sampling Location White Bluffs		SAF No. B98-101
Ice Chest No.	Field Logbook No. EL 1309-2		Method of Shipment
Shipped To IMARECRA	Offsite Property No.		Bill of Lading/Air Bill No.
Waste Designation	Client determined no waste codes associated with this project		COA X12639PNNL

Data Turnaround: 7 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation		Cool 4C	None	Cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1								
Volume	20ml	60ml	60ml	120ml							
SAMPLE ANALYSIS	Activity Scan	PCBs - 8080	Metals by ICP (TCLP) - 1311/6010A Mercury (TCLP) - 1311/7470	PCB's 8080							

Sample No	Matrix *	Sample Date	Sample Time										
B0PCJ8	Other Solid	7/21/98	0817	X	X	X					-	B0PCK9	
B0PCJ9	Other Solid	7/21/98	0848	X		X	X					B0PCL0	
B0PCK0	Other Solid	7/21/98	0900	X	X	X						B0PCL1	
B0PCK1	Other Solid	7/21/98	0914	X	X	X						B0PCL2	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time 1300	Received By	Date/Time 1300
R. Fahlberg / R. Fahlberg	7-23-98	Air Freight	7-23-98
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By Fedex	Date/Time	Received By Lorraine Sanchez	Date/Time 7/24/98 10[illegible]

SPECIAL INSTRUCTIONS

Cooler = 3.0

4019671073

998

Matrix *

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL		Drum Liquids
T		Tissue
WI		Wipe
L		Liquid
V	=	Vegetation
X		Other

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

Collector Lahlberg/Nielson	**Company Contact** Dave Smith	**Telephone No.** 376-3055	**Project Coordinator** TRENT, SJ
Project Designation White Bluffs 1 & 2 Paint Sampling	**Sampling Location** White Bluffs		**SAF No.** B98-101
Ice Chest No.	**Field Logbook No.** EL 1309-2		**Method of Shipment**
Shipped To IMARECRA	**Offsite Property No.**		**Bill of Lading/Air Bill No.**

Data Turnaround 7 Days

Waste Designation Client determined no waste codes associated with this project

COA X12639PNNL

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation		Cool 4C	None	cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1								
Volume	20ml	60ml	60ml	120ml							
SAMPLE ANALYSIS	Activity Scan	PCBs - 8080	Metals by ICP (TCLP) - 1311/6010A Mercury (TCLP) - 1311/7470	PCBs 8080							
Sample No	**Matrix ***	**Sample Date**	**Sample Time**								
B0PCK2	Other Solid	7/21/98	0940	X	X	X				B0PCL3	
B0PCK3	Other Solid	7/21/98	0948	X	X	X				~~B0PCL4~~	B0PCL3
B0PCK4	Other Solid	7/21/98	1010	X	~~X~~ RIN	X	X			B0PCL5	
B0PCK5	Other Solid	7/21/98	1030	X	X	X				B0PCL6	

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

Relinquished By	Date/Time	Received By	Date/Time
~~R. Fahlberg / R. Fahlberg~~	~~7-23-98~~ 1300	~~Consolidated Freight~~	
R. Fahlberg / R. Fahlberg	7-23-98 1300	Air Freight	7-23-98 1300
Fedex		Alan Sandy	7/24/98 10:00

SPECIAL INSTRUCTIONS

Matrix *

S	Soil
SE	Sediment
SO	Solid
SL	Sludge
W	Water
O	Oil
A	Air
DS	Drum Solids
DL	Drum Liquids
T	Tissue
WI	Wipe
L	Liquid
V	Vegetation
X	Other

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

SEP 1998
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B98-101
RFW# : 9807L998
SDG/SAF# : H0176/B98-101

W.O.# : 10985-001-001-9999-00
Date Received: 07-24-98

METALS CASE NARRATIVE

1. This narrative covers the analyses of 8 TCLP leachate samples.

2. Samples were prepared and analyzed in accordance with methods checked on the attached glossary. Samples BOPCK2 and BOPCK4 were prepped with a 2 fold dilution for Mercury due to limited sample volume.

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

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

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within control limits.

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

7. All preparation/method blanks were within method criteria. 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 TCLP extract from sample BOPCK2 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria. The Mercury MS appears to be double spiked. The sample result is non-detect, therefore , there is no impact to the data.

11. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. The duplicate analysis for Mercury was performed on sample BOPCJ8 due to limited sample volume on BOPCK2. Refer to the Inorganics Precision 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 19 pages.

12. 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

Chuck Stefanosky
Laboratory Director
Lionville Analytical Laboratory

8-25-99
Date

mld/m07-998

SEP
RECEIVED
Data
Log In

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within thi:
Recra Lot#: 9807L998

Leaching Procedure: __1310 ✓1311 __1312 __Other:_____

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

Metals Digestion Methods: __3005A ✓3010A __3015 __3020A __3050A __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	__6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	__6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	__6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	✓7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	__6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2__200.9			__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	__6010B		__200.7				__99
Zinc	__6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ **Method:**_____

L-WI-033/M-03/98

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

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

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INORGANICS DATA SUMMARY REPORT 08/21/98

CLIENT: TNU-HANFORD B98-101 RECRA LOT #: 9807L998

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	BOPCJ8	Silver, TCLP Leachate	4.6	u	UG/L	4.6	1.0
		Arsenic, TCLP Leachate	46.6		UG/L	38.1	1.0
		Barium, TCLP Leachate	701		UG/L	3.3	1.0
		Cadmium, TCLP Leachate	104		UG/L	4.0	1.0
		Chromium, TCLP Leachate	106		UG/L	5.6	1.0
		Mercury, TCLP Leachate	0.11		UG/L	0.10	1.0
		Lead, TCLP Leachate	3300		UG/L	37.2	1.0
		Selenium, TCLP Leachate	54.6		UG/L	44.0	1.0
-010	BOPCJ9	Silver, TCLP Leachate	4.6	u	UG/L	4.6	1.0
		Arsenic, TCLP Leachate	58.4		UG/L	38.1	1.0
		Barium, TCLP Leachate	413		UG/L	3.3	1.0
		Cadmium, TCLP Leachate	122		UG/L	4.0	1.0
		Chromium, TCLP Leachate	52.8		UG/L	5.6	1.0
		Mercury, TCLP Leachate	2.9		UG/L	0.10	1.0
		Lead, TCLP Leachate	7920		UG/L	37.2	1.0
		Selenium, TCLP Leachate	44.0	u	UG/L	44.0	1.0
-011	BOPCK0	Silver, TCLP Leachate	4.6	u	UG/L	4.6	1.0
		Arsenic, TCLP Leachate	46.6		UG/L	38.1	1.0
		Barium, TCLP Leachate	2530		UG/L	3.3	1.0
		Cadmium, TCLP Leachate	27.9		UG/L	4.0	1.0
		Chromium, TCLP Leachate	578		UG/L	5.6	1.0
		Mercury, TCLP Leachate	0.23		UG/L	0.10	1.0
		Lead, TCLP Leachate	3130		UG/L	37.2	1.0
		Selenium, TCLP Leachate	44.0	u	UG/L	44.0	1.0
-012	BOPCK1	Silver, TCLP Leachate	4.6	u	UG/L	4.6	1.0
		Arsenic, TCLP Leachate	120		UG/L	38.1	1.0
		Barium, TCLP Leachate	790		UG/L	3.3	1.0
		Cadmium, TCLP Leachate	24.6		UG/L	4.0	1.0
		Chromium, TCLP Leachate	266		UG/L	5.6	1.0
		Mercury, TCLP Leachate	0.24		UG/L	0.10	1.0
		Lead, TCLP Leachate	29300		UG/L	37.2	1.0
		Selenium, TCLP Leachate	44.0	u	UG/L	44.0	1.0

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INORGANICS DATA SUMMARY REPORT 08/21/98

CLIENT: TNU-HANFORD B98-101 RECRA LOT #: 9807L998

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-013	BOPCK2	Silver, TCLP Leachate	4.6	u	UG/L	4.6	1.0
		Arsenic, TCLP Leachate	83.5		UG/L	38.1	1.0
		Barium, TCLP Leachate	584		UG/L	3.3	1.0
		Cadmium, TCLP Leachate	27.8		UG/L	4.0	1.0
		Chromium, TCLP Leachate	94.8		UG/L	5.6	1.0
		Mercury, TCLP Leachate	0.20	u	UG/L	0.20	2.0
		Lead, TCLP Leachate	7960		UG/L	37.2	1.0
		Selenium, TCLP Leachate	44.0	u	UG/L	44.0	1.0
-014	BOPCK3	Silver, TCLP Leachate	4.6	u	UG/L	4.6	1.0
		Arsenic, TCLP Leachate	53.5		UG/L	38.1	1.0
		Barium, TCLP Leachate	628		UG/L	3.3	1.0
		Cadmium, TCLP Leachate	33.5		UG/L	4.0	1.0
		Chromium, TCLP Leachate	80.9		UG/L	5.6	1.0
		Mercury, TCLP Leachate	0.24		UG/L	0.10	1.0
		Lead, TCLP Leachate	11000		UG/L	37.2	1.0
		Selenium, TCLP Leachate	44.0	u	UG/L	44.0	1.0
-015	BOPCK4	Silver, TCLP Leachate	4.6	u	UG/L	4.6	1.0
		Arsenic, TCLP Leachate	61.7		UG/L	38.1	1.0
		Barium, TCLP Leachate	569		UG/L	3.3	1.0
		Cadmium, TCLP Leachate	33.8		UG/L	4.0	1.0
		Chromium, TCLP Leachate	22.1		UG/L	5.6	1.0
		Mercury, TCLP Leachate	0.20	u	UG/L	0.20	2.0
		Lead, TCLP Leachate	12200		UG/L	37.2	1.0
		Selenium, TCLP Leachate	44.0	u	UG/L	44.0	1.0
-016	BOPCK5	Silver, TCLP Leachate	4.6	u	UG/L	4.6	1.0
		Arsenic, TCLP Leachate	365		UG/L	38.1	1.0
		Barium, TCLP Leachate	690		UG/L	3.3	1.0
		Cadmium, TCLP Leachate	333		UG/L	4.0	1.0
		Chromium, TCLP Leachate	93.2		UG/L	5.6	1.0
		Mercury, TCLP Leachate	0.28		UG/L	0.10	1.0
		Lead, TCLP Leachate	87300		UG/L	37.2	1.0
		Selenium, TCLP Leachate	76.3		UG/L	44.0	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 08/21/98

CLIENT: TNU-HANFORD B98-101 RECRA LOT #: 9807L998

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	98L1098-MB1	Silver, TCLP Leachate	4.6	u	UG/L	4.6	1.0
		Arsenic, TCLP Leachate	38.1	u	UG/L	38.1	1.0
		Barium, TCLP Leachate	3.3	u	UG/L	3.3	1.0
		Cadmium, TCLP Leachate	4.0	u	UG/L	4.0	1.0
		Chromium, TCLP Leachate	6.9		UG/L	5.6	1.0
		Lead, TCLP Leachate	37.2	u	UG/L	37.2	1.0
		Selenium, TCLP Leachate	44.0	u	UG/L	44.0	1.0
BLANK2	98L1098-MB2	Silver, TCLP Leachate	4.6	u	UG/L	4.6	1.0
		Arsenic, TCLP Leachate	38.1	u	UG/L	38.1	1.0
		Barium, TCLP Leachate	64.9		UG/L	3.3	1.0
		Cadmium, TCLP Leachate	4.0	u	UG/L	4.0	1.0
		Chromium, TCLP Leachate	6.2		UG/L	5.6	1.0
		Lead, TCLP Leachate	37.2	u	UG/L	37.2	1.0
		Selenium, TCLP Leachate	44.0	u	UG/L	44.0	1.0
BLANK3	98L1098-MB3	Silver, TCLP Leachate	4.6	u	UG/L	4.6	1.0
		Arsenic, TCLP Leachate	38.1	u	UG/L	38.1	1.0
		Barium, TCLP Leachate	162		UG/L	3.3	1.0
		Cadmium, TCLP Leachate	4.0	u	UG/L	4.0	1.0
		Chromium, TCLP Leachate	5.6	u	UG/L	5.6	1.0
		Lead, TCLP Leachate	39.9		UG/L	37.2	1.0
		Selenium, TCLP Leachate	44.0	u	UG/L	44.0	1.0
BLANK1	98C0391-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	98C0391-MB2	Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
BLANK3	98C0391-MB3	Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
BLANK4	98C0391-MB4	Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0

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INORGANICS ACCURACY REPORT 08/21/98

CLIENT: TNU-HANFORD B98-101 RECRA LOT #: 9807L998

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-013	BOPCK2	Silver, TCLP Leachate	3070	4.6 u	5000	61.4	2.0
		Arsenic, TCLP Leachate	3820	83.5	5000	74.7	1.0
		Barium, TCLP Leachate	81600	584	100000	81.0	2.0
		Cadmium, TCLP Leachate	974	27.8	1000	94.7	2.0
		Chromium, TCLP Leachat	4780	94.8	5000	93.7	2.0
		Mercury, TCLP Leachate	350	0.20u	200	175.0	100
		Lead, TCLP Leachate	12000	7960	5000	80.0	2.0
		Selenium, TCLP Leachat	1040	44.0 u	1000	103.8	2.0

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INORGANICS PRECISION REPORT 08/21/98

CLIENT: TNU-HANFORD B98-101 RECRA LOT #: 9807L998

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-009REP	BOPCJ8	Mercury, TCLP Leachate	0.11	0.13	16.4	1.0
-013REP	BOPCK2	Silver, TCLP Leachate	4.6 u	4.6 u	NC	1.0
		Arsenic, TCLP Leachate	83.5	60.8	31.5	1.0
		Barium, TCLP Leachate	584	556	4.9	1.0
		Cadmium, TCLP Leachate	27.8	24.3	13.4	1.0
		Chromium, TCLP Leachate	94.8	87.0	8.6	1.0
		Lead, TCLP Leachate	7960	7440	6.8	1.0
		Selenium, TCLP Leachate	44.0 u	44.0 u	NC	1.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 08/21/98

CLIENT: TNU-HANFORD B98-101 RECRA LOT #: 9807L998

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	98L1098-LC1	Silver, LCS	518	500	UG/L	103.6
		Arsenic, LCS	10100	10000	UG/L	100.7
		Barium, LCS	5390	5000	UG/L	107.8
		Cadmium, LCS	264	250	UG/L	105.5
		Chromium, LCS	519	500	UG/L	103.8
		Lead, LCS	2630	2500	UG/L	105.2
		Selenium, LCS	10600	10000	UG/L	105.7
LCS1	98C0391-LC1	Mercury, LCS	5.2	5.0	UG/L	104.8

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B98-101

DATE RECEIVED: 07/24/98 RFW LOT # :9807L998

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOPCJ8						
TCLP	001	SO	98LTO147	07/21/98	08/06/98	08/07/98
BOPCJ9						
TCLP	002	SO	98LTO147	07/21/98	08/06/98	08/07/98
BOPCK0						
TCLP	003	SO	98LTO147	07/21/98	08/06/98	08/07/98
BOPCK1						
TCLP	004	SO	98LTO147	07/21/98	08/06/98	08/07/98
BOPCK2						
TCLP	005	SO	98LTO147	07/21/98	08/06/98	08/07/98
BOPCK3						
TCLP	006	SO	98LTO147	07/21/98	08/06/98	08/07/98
BOPCK5						
TCLP	008	SO	98LTO147	07/21/98	08/06/98	08/07/98
BOPCJ8						
SILVER, TCLP LEACHAT	009	W	98L1098	08/07/98	08/11/98	08/13/98
ARSENIC, TCLP LEACHA	009	W	98L1098	08/07/98	08/11/98	08/12/98
BARIUM, TCLP LEACHAT	009	W	98L1098	08/07/98	08/11/98	08/13/98
CADMIUM, TCLP LEACHA	009	W	98L1098	08/07/98	08/11/98	08/13/98
CHROMIUM, TCLP LEACH	009	W	98L1098	08/07/98	08/11/98	08/13/98
MERCURY, TCLP LEACHA	009	W	98C0391	08/07/98	08/13/98	08/14/98
MERCURY, TCLP LEACHA	009 REP	W	98C0391	08/07/98	08/13/98	08/14/98

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B98-101

DATE RECEIVED: 07/24/98 RFW LOT # :9807L998

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TCLP LEACHATE	009	W	98L1098	08/07/98	08/11/98	08/13/98
SELENIUM, TCLP LEACH	009	W	98L1098	08/07/98	08/11/98	08/13/98
BOPCJ9						
SILVER, TCLP LEACHAT	010	W	98L1098	08/07/98	08/11/98	08/13/98
ARSENIC, TCLP LEACHA	010	W	98L1098	08/07/98	08/11/98	08/12/98
BARIUM, TCLP LEACHAT	010	W	98L1098	08/07/98	08/11/98	08/13/98
CADMIUM, TCLP LEACHA	010	W	98L1098	08/07/98	08/11/98	08/13/98
CHROMIUM, TCLP LEACH	010	W	98L1098	08/07/98	08/11/98	08/13/98
MERCURY, TCLP LEACHA	010	W	98C0391	08/07/98	08/13/98	08/14/98
LEAD, TCLP LEACHATE	010	W	98L1098	08/07/98	08/11/98	08/13/98
SELENIUM, TCLP LEACH	010	W	98L1098	08/07/98	08/11/98	08/13/98
BOPCK0						
SILVER, TCLP LEACHAT	011	W	98L1098	08/07/98	08/11/98	08/13/98
ARSENIC, TCLP LEACHA	011	W	98L1098	08/07/98	08/11/98	08/12/98
BARIUM, TCLP LEACHAT	011	W	98L1098	08/07/98	08/11/98	08/13/98
CADMIUM, TCLP LEACHA	011	W	98L1098	08/07/98	08/11/98	08/13/98
CHROMIUM, TCLP LEACH	011	W	98L1098	08/07/98	08/11/98	08/13/98
MERCURY, TCLP LEACHA	011	W	98C0391	08/07/98	08/13/98	08/14/98
LEAD, TCLP LEACHATE	011	W	98L1098	08/07/98	08/11/98	08/13/98
SELENIUM, TCLP LEACH	011	W	98L1098	08/07/98	08/11/98	08/13/98
BOPCK1						
SILVER, TCLP LEACHAT	012	W	98L1098	08/07/98	08/11/98	08/13/98
ARSENIC, TCLP LEACHA	012	W	98L1098	08/07/98	08/11/98	08/12/98
BARIUM, TCLP LEACHAT	012	W	98L1098	08/07/98	08/11/98	08/13/98
CADMIUM, TCLP LEACHA	012	W	98L1098	08/07/98	08/11/98	08/13/98
CHROMIUM, TCLP LEACH	012	W	98L1098	08/07/98	08/11/98	08/13/98
MERCURY, TCLP LEACHA	012	W	98C0391	08/07/98	08/13/98	08/14/98
LEAD, TCLP LEACHATE	012	W	98L1098	08/07/98	08/11/98	08/13/98
SELENIUM, TCLP LEACH	012	W	98L1098	08/07/98	08/11/98	08/13/98
BOPCK2						
SILVER, TCLP LEACHAT	013	W	98L1098	08/07/98	08/11/98	08/13/98

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B98-101

DATE RECEIVED: 07/24/98 RFW LOT # :9807L998

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SILVER, TCLP LEACHAT	013 REP	W	98L1098	08/07/98	08/11/98	08/13/98
SILVER, TCLP LEACHAT	013 MS	W	98L1098	08/07/98	08/11/98	08/13/98
ARSENIC, TCLP LEACHA	013	W	98L1098	08/07/98	08/11/98	08/12/98
ARSENIC, TCLP LEACHA	013 REP	W	98L1098	08/07/98	08/11/98	08/12/98
ARSENIC, TCLP LEACHA	013 MS	W	98L1098	08/07/98	08/11/98	08/12/98
BARIUM, TCLP LEACHAT	013	W	98L1098	08/07/98	08/11/98	08/13/98
BARIUM, TCLP LEACHAT	013 REP	W	98L1098	08/07/98	08/11/98	08/13/98
BARIUM, TCLP LEACHAT	013 MS	W	98L1098	08/07/98	08/11/98	08/13/98
CADMIUM, TCLP LEACHA	013	W	98L1098	08/07/98	08/11/98	08/13/98
CADMIUM, TCLP LEACHA	013 REP	W	98L1098	08/07/98	08/11/98	08/13/98
CADMIUM, TCLP LEACHA	013 MS	W	98L1098	08/07/98	08/11/98	08/13/98
CHROMIUM, TCLP LEACH	013	W	98L1098	08/07/98	08/11/98	08/13/98
CHROMIUM, TCLP LEACH	013 REP	W	98L1098	08/07/98	08/11/98	08/13/98
CHROMIUM, TCLP LEACH	013 MS	W	98L1098	08/07/98	08/11/98	08/13/98
MERCURY, TCLP LEACHA	013	W	98C0391	08/07/98	08/13/98	08/14/98
MERCURY, TCLP LEACHA	013 MS	W	98C0391	08/07/98	08/13/98	08/14/98
LEAD, TCLP LEACHATE	013	W	98L1098	08/07/98	08/11/98	08/13/98
LEAD, TCLP LEACHATE	013 REP	W	98L1098	08/07/98	08/11/98	08/13/98
LEAD, TCLP LEACHATE	013 MS	W	98L1098	08/07/98	08/11/98	08/13/98
SELENIUM, TCLP LEACH	013	W	98L1098	08/07/98	08/11/98	08/13/98
SELENIUM, TCLP LEACH	013 REP	W	98L1098	08/07/98	08/11/98	08/13/98
SELENIUM, TCLP LEACH	013 MS	W	98L1098	08/07/98	08/11/98	08/13/98
BOPCK3						
SILVER, TCLP LEACHAT	014	W	98L1098	08/07/98	08/11/98	08/13/98
ARSENIC, TCLP LEACHA	014	W	98L1098	08/07/98	08/11/98	08/12/98
BARIUM, TCLP LEACHAT	014	W	98L1098	08/07/98	08/11/98	08/13/98
CADMIUM, TCLP LEACHA	014	W	98L1098	08/07/98	08/11/98	08/13/98
CHROMIUM, TCLP LEACH	014	W	98L1098	08/07/98	08/11/98	08/13/98
MERCURY, TCLP LEACHA	014	W	98C0391	08/07/98	08/13/98	08/14/98
LEAD, TCLP LEACHATE	014	W	98L1098	08/07/98	08/11/98	08/13/98
SELENIUM, TCLP LEACH	014	W	98L1098	08/07/98	08/11/98	08/13/98
BOPCK4						
SILVER, TCLP LEACHAT	015	W	98L1098	08/07/98	08/11/98	08/13/98
ARSENIC, TCLP LEACHA	015	W	98L1098	08/07/98	08/11/98	08/12/98

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B98-101

DATE RECEIVED: 07/24/98 RFW LOT # :9807L998

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BARIUM, TCLP LEACHAT	015	W	98L1098	08/07/98	08/11/98	08/13/98
CADMIUM, TCLP LEACHA	015	W	98L1098	08/07/98	08/11/98	08/13/98
CHROMIUM, TCLP LEACH	015	W	98L1098	08/07/98	08/11/98	08/13/98
MERCURY, TCLP LEACHA	015	W	98C0391	08/07/98	08/13/98	08/14/98
LEAD, TCLP LEACHATE	015	W	98L1098	08/07/98	08/11/98	08/13/98
SELENIUM, TCLP LEACH	015	W	98L1098	08/07/98	08/11/98	08/13/98
BOPCK5						
SILVER, TCLP LEACHAT	016	W	98L1098	08/07/98	08/11/98	08/13/98
ARSENIC, TCLP LEACHA	016	W	98L1098	08/07/98	08/11/98	08/12/98
BARIUM, TCLP LEACHAT	016	W	98L1098	08/07/98	08/11/98	08/13/98
CADMIUM, TCLP LEACHA	016	W	98L1098	08/07/98	08/11/98	08/13/98
CHROMIUM, TCLP LEACH	016	W	98L1098	08/07/98	08/11/98	08/13/98
MERCURY, TCLP LEACHA	016	W	98C0391	08/07/98	08/13/98	08/14/98
LEAD, TCLP LEACHATE	016	W	98L1098	08/07/98	08/11/98	08/13/98
SELENIUM, TCLP LEACH	016	W	98L1098	08/07/98	08/11/98	08/13/98

LAB QC:

SILVER LABORATORY	LC1 BS	W	98L1098	N/A	08/11/98	08/13/98
SILVER, TCLP LEACHAT	MB1	W	98L1098	N/A	08/11/98	08/13/98
SILVER, TCLP LEACHAT	MB2	W	98L1098	N/A	08/11/98	08/13/98
SILVER, TCLP LEACHAT	MB3	W	98L1098	N/A	08/11/98	08/13/98
ARSENIC LABORATORY	LC1 BS	W	98L1098	N/A	08/11/98	08/12/98
ARSENIC, TCLP LEACHA	MB1	W	98L1098	N/A	08/11/98	08/12/98
ARSENIC, TCLP LEACHA	MB2	W	98L1098	N/A	08/11/98	08/12/98
ARSENIC, TCLP LEACHA	MB3	W	98L1098	N/A	08/11/98	08/12/98
BARIUM LABORATORY	LC1 BS	W	98L1098	N/A	08/11/98	08/13/98
BARIUM, TCLP LEACHAT	MB1	W	98L1098	N/A	08/11/98	08/13/98
BARIUM, TCLP LEACHAT	MB2	W	98L1098	N/A	08/11/98	08/13/98
BARIUM, TCLP LEACHAT	MB3	W	98L1098	N/A	08/11/98	08/13/98
CADMIUM LABORATORY	LC1 BS	W	98L1098	N/A	08/11/98	08/13/98
CADMIUM, TCLP LEACHA	MB1	W	98L1098	N/A	08/11/98	08/13/98
CADMIUM, TCLP LEACHA	MB2	W	98L1098	N/A	08/11/98	08/13/98
CADMIUM, TCLP LEACHA	MB3	W	98L1098	N/A	08/11/98	08/13/98
CHROMIUM LABORATORY	LC1 BS	W	98L1098	N/A	08/11/98	08/13/98
CHROMIUM, TCLP LEACH	MB1	W	98L1098	N/A	08/11/98	08/13/98

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B98-101

DATE RECEIVED: 07/24/98 RFW LOT # :9807L998

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM, TCLP LEACH	MB2	W	98L1098	N/A	08/11/98	08/13/98
CHROMIUM, TCLP LEACH	MB3	W	98L1098	N/A	08/11/98	08/13/98
MERCURY LABORATORY	LC1 BS	W	98C0391	N/A	08/13/98	08/14/98
MERCURY, TOTAL	MB1	W	98C0391	N/A	08/13/98	08/14/98
MERCURY, TCLP LEACHA	MB2	W	98C0391	N/A	08/13/98	08/14/98
MERCURY, TCLP LEACHA	MB3	W	98C0391	N/A	08/13/98	08/14/98
MERCURY, TCLP LEACHA	MB4	W	98C0391	N/A	08/13/98	08/14/98
LEAD LABORATORY	LC1 BS	W	98L1098	N/A	08/11/98	08/13/98
LEAD, TCLP LEACHATE	MB1	W	98L1098	N/A	08/11/98	08/13/98
LEAD, TCLP LEACHATE	MB2	W	98L1098	N/A	08/11/98	08/13/98
LEAD, TCLP LEACHATE	MB3	W	98L1098	N/A	08/11/98	08/13/98
SELENIUM LABORATORY	LC1 BS	W	98L1098	N/A	08/11/98	08/13/98
SELENIUM, TCLP LEACH	MB1	W	98L1098	N/A	08/11/98	08/13/98
SELENIUM, TCLP LEACH	MB2	W	98L1098	N/A	08/11/98	08/13/98
SELENIUM, TCLP LEACH	MB3	W	98L1098	N/A	08/11/98	08/13/98

(4) Schedule TN Nu extract. Metals N. Rei I. Dan

RECRA LabNet Use Only

98074998

Custody Transfer Record/Lab Work Request

RECRA LabNet

Client: TNU - HANFORD B98-101

Est. Final Proj. Sampling Date:

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

Project Contact/Phone #:

RECRA Project Manager: MS

QC: STD Del: STD TAT: 7 DAYS

Date Rec'd: 7/24/98 Date Due: 7/31/98

Account #:

Refrigerator #				3		3	3		3					
#/Type Container	Liquid													
	Solid			1AG		1P	1AG		1AG					
Volume	Liquid													
	Solid			60ml		20ml	120ml		60ml					
Preservatives				—		—			—					
ANALYSES REQUESTED →		ORGANIC: VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	ORGANIC: Herb		ORGANIC: PCB's 8080		INORG: Metal	INORG: CN				

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

Lab ID	Client ID/Description (SL 7/24/98)	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	RECRA LabNet Use Only: OPCB			ZSOB	DBBH		ITCU		RCRA Metals
001	~~BOB~~ BOP CJ8			SO	7/24/98	0817			X	X			X		
002	BOP CJ9					0848				X	X		X		
3	BOP CK0					0900			X	X			X		
4	BOP CK1					0914			X	X			X		
5	BOP CK2					0940			X	X			X		
6	BOP CK3					0948			X	X			X		
7	4					1010				X	X		X		
8	5					1030			X	X			X		
009	BOP CJ8 telpof 001			L	*	—									X
010	BOP CJ9 " 002			L	*	—	7/24/98								X

Special Instructions:

RSA - Client info

RNSC - Comp

DATE/REVISIONS:

1 * see Lab notes for date

2 collect

3

4 Run matrix QC

5 OPCB test code added to COC 7/28/98 7/29/98 metal canceled and Recra list added per SDR 98PMS75

RECRA LabNet Use Only

Samples were: 1) Shipped X or Hand Delivered

Airbill # See *

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Labels Indicate Properly Preserved Y or (N)

5) Received Within Holding Times (Y) or N

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

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec'd (Y) or N

Cooler Temp 3.0

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: * 4019671073

Relinquished by	Received by	Date	Time
Fedex Air Freight	L Landy	7/24/98	10:00

Relinquished by	Received by	Date	Time

ORIGINAL

16

RECRA LabNet Use Only

9807L998

Custody Transfer Record/Lab Work Request

RECRA LabNet

Client TNU-Hanford B98-101

Est. Final Proj. Sampling Date

Project #

Project Contact/Phone #

RECRA Project Manager

QC Del TAT

Date Rec'd Date Due

Account #

See page 1

Refrigerator #			
#/Type Container	Liquid		
	Solid		
Volume	Liquid		
	Solid		
Preservatives			
ANALYSES REQUESTED		ORGANIC: VOA, BNA, Pest/PCB, Herb	INORG: Metal, CN

3

Leachate

RECRA LabNet Use Only

RCRA LabNet 8/5/24/98

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	Leachate
011	BOPCKO 003 (top pk)			L	*	-	X
012	1 004						X
013	2 005						X
014	3 006						X
015	4 007						X
016	5 008						X

Special Instructions:

DATE/REVISIONS:
1
2
3
4
5
6

RECRA LabNet Use Only

Samples were 1) Shipped or Hand Delivered

Airbill #

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Labels Indicate Properly Preserved Y or N

5) Received Within Holding Times Y or N

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

2) Unbroken on Outer Package Y or N

3) Present on Sample Y or N

4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp C

Relinquished by	Received by	Date	Time
LP 7/24/98 Federal Express	L. Fanday	7/24/98	10 00

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B98-101-04	Page 1 of 1

Collector Fahlberg/Nielson	Company Contact Dave Smith	Telephone No. 376-3055	Project Coordinator TRENT, SJ	Data Turnaround 7 Days
Project Designation White Bluffs 1 & 2 Paint Sampling	Sampling Location White Bluffs		SAF No. B98-101	
Ice Chest No.	Field Logbook No. EL 1309-2		Method of Shipment	
Shipped To TMARECRA	Offsite Property No.		Bill of Lading/Air Bill No.	
Waste Designation	Client determined no waste codes associated with this project.		COA	X12639PNNL

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation		Cool 4C	None	Cool 4C						
	Type of Container	P	aG	aG	aG						
	No. of Container(s)	1	1	1							
Special Handling and/or Storage	Volume	20ml	60ml	60mL	120ml						
SAMPLE ANALYSIS		Activity Scan	PCBs - 8080	Metals by ICP (TCLP) - 1311/6010A, Mercury (TCLP) - 1311/7470	PCB's 8080						
Sample No.	Matrix *	Sample Date	Sample Time								
B0PCJ8	Other Solid	7/21/98	0817	X	X	X				-	B0PCK9
B0PCJ9	Other Solid	7/21/98	0848	X		X	X				B0PCL0
B0PCK0	Other Solid	7/21/98	0900	X	X	X					B0PCL1
B0PCK1	Other Solid	7/21/98	0914	X	X	X					B0PCL2

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time 1300	Received By	Date/Time 1300
R. Fahlberg / R. Fahlberg	7-23-98	Air Freight	7-23-98
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Fedex		[illegible] Sunday	7/24/98 10[illegible]

SPECIAL INSTRUCTIONS

cooler = 3.0

4019671073

968

Matrix *

S	=	Soil
SE	=	Sediment
SO	=	Solid
SL	=	Sludge
W	=	Water
O	=	Oil
A	=	Air
DS	=	Drum Solids
DL	=	Drum Liquids
T	=	Tissue
WI	=	Wipe
L	=	Liquid
V	=	Vegetation
X	=	Other

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	B98-101-05	Page 1 of 1

Collector Fahlberg/Nielson	Company Contact Dave Smith	Telephone No. 376-3055	Project Coordinator TRENT, SJ	Data Turnaround 7 Days
Project Designation White Bluffs 1 & 2 Paint Sampling	Sampling Location White Bluffs		SAF No. B98-101	
Ice Chest No.	Field Logbook No. EL 1309-2		Method of Shipment	
Shipped To TMARECRA	Offsite Property No.		Bill of Lading/Air Bill No.	
Waste Designation: Client determined no waste codes associated with this project.			COA X121639PNNL	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation		Cool 4C	None	cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1								
Volume	20ml	60mL	60mL	120ml							
SAMPLE ANALYSIS	Activity Scan	PCBs - 8080	Metals by ICP (TCLP) - 1311/6010A, Mercury (TCLP) - 1311/7470	PCBs 8080							
Sample No. / Matrix * / Sample Date / Sample Time											
B0PCK2 / Other Solid / 7/21/98 / 0940	X	X	X						BoPCL3		
B0PCK3 / Other Solid / 7/21/98 / 0948	X	X	X						~~BoPCL4~~	BoPCL3	
B0PCK4 / Other Solid / 7/21/98 / 1010	X	~~X~~ RJN	X	X					BoPCL5		
B0PCK5 / Other Solid / 7/21/98 / 1030	X	X	X						BoPCL6		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: R. Fahlberg / R. Fahlberg 7-21-98	Date/Time 1300	Received By: Consolidated Freight	Date/Time
Relinquished By: R. Fahlberg / R. Fahlberg 7-23-98	Date/Time 1300	Received By: Air Freight 7-23-98	Date/Time 1300
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By: Fedex	Date/Time	Received By: Shaw Landry 7/24/98 10:00	Date/Time

SPECIAL INSTRUCTIONS

Matrix *

S	Soil
SL	Sediment
SO	Solid
SI	Sludge
W	Water
O	Oil
A	Air
DS	Drum Solids
DL	Drum Liquids
T	Tissue
WI	Wipe
L	Liquid
V	Vegetation
X	Other

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

0194