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H1078

NOV 2000 RECEIVED

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B00-068 H1078

DATE RECEIVED: 10/05/00 RFW LOT # :0010L874

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B105W4						
% SOLIDS	001	S	00L%S163	09/29/00	10/16/00	10/17/00
% SOLIDS	001 REP	S	00L%S163	09/29/00	10/16/00	10/17/00
NITRATE BY IC	001	S	00LDC063	09/29/00	10/19/00	10/19/00
TOTAL CYANIDE	001	S	00LC100	09/29/00	10/09/00	10/09/00
TOTAL CYANIDE	001 REP	S	00LC101	09/29/00	10/12/00	10/12/00
TOTAL CYANIDE	001 MS	S	00LC101	09/29/00	10/12/00	10/12/00
PH	001	S	00LPH084	09/29/00	10/11/00	10/11/00
PH	001 REP	S	00LPH084	09/29/00	10/11/00	10/11/00
SULFIDE	001	S	00LSD038	09/29/00	10/12/00	10/12/00
B105W5						
% SOLIDS	002	S	00L%S163	09/29/00	10/16/00	10/17/00
NITRATE BY IC	002	S	00LDC063	09/29/00	10/19/00	10/19/00
NITRATE BY IC	002 REP	S	00LDC063	09/29/00	10/19/00	10/19/00
NITRATE BY IC	002 MS	S	00LDC063	09/29/00	10/19/00	10/19/00
TOTAL CYANIDE	002	S	00LC100	09/29/00	10/09/00	10/09/00
PH	002	S	00LPH084	09/29/00	10/11/00	10/11/00
SULFIDE	002	S	00LSD038	09/29/00	10/12/00	10/12/00
SULFIDE	002 REP	S	00LSD038	09/29/00	10/12/00	10/12/00
SULFIDE	002 MS	S	00LSD038	09/29/00	10/12/00	10/12/00

LAB QC:

NITRATE BY IC	MB1	S	00LDC063	N/A	10/19/00	10/19/00
NITRATE BY IC	MB1 BS	S	00LDC063	N/A	10/19/00	10/19/00
TOTAL CYANIDE	LCS L	S	00LC100	N/A	10/09/00	10/09/00
TOTAL CYANIDE	LCS L	S	00LC100	N/A	10/09/00	10/09/00
TOTAL CYANIDE	MB1	S	00LC100	N/A	10/09/00	10/09/00
TOTAL CYANIDE	LCS L	S	00LC101	N/A	10/12/00	10/12/00
TOTAL CYANIDE	LCS L	S	00LC101	N/A	10/12/00	10/12/00
TOTAL CYANIDE	MB1	S	00LC101	N/A	10/12/00	10/12/00
SULFIDE	MB1	S	00LSD038	N/A	10/12/00	10/12/00
SULFIDE	MB1 BS	S	00LSD038	N/A	10/12/00	10/12/00

RECEIVED JAN 2 2 2001 EDMC

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RECRA
ENVIRONMENTAL
INC.
Chemical and Environmental Measurement Information

NOV 2000
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Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B00-068 H1078
RFW# : 0010L874

W.O. # : 10985-001-001-9999-00
Date Logged: 10-05-00

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 2 soil samples.

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

3. Sample holding times as required by the method and/or the contract with the exception of Sulfide.

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.

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 with the exception of Nitrate which was outside the control limit; replicate results for Nitrate were less than 10 times the reporting limit.

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

10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

11-15-00
Date

njp\i10-874

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.

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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	✓ D2216-80		__ ILMO4.0 (e)
% Volatile Solids	__ 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/9014	__ ILMO4.0 (e)
Cyanide, Reactive		__ Section 7.3/9014	
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)
Oxygen Bomb Prep for Anions	__ D240-87(mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071	__ EPA 418.1
pH, Soil		✓ 9045C	
Sulfide, Reactive		__ Section 7.3/9030B	
Sulfide		✓ 9030B(mod)	
Specific Gravity	__ D1429-76C/	__ D5057-90	
Sulfur, Total		__ 9056	
Synthetic Preparation Leach		__ 1312	
Paint Filter		9095A	

Other: Nitrate **Method:** EPA 300.0 (mod)

Other: **Method**

L-WI-034/B-2/00

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 11/14/00

CLIENT: TNUHANFORD B00-068 H1078 RECRA LOT #: 0010L874

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B105W4	% Solids	93.1	%	0.01	1.0
		Nitrate by IC	2.9	MG/KG	1.3	1.0
		Cyanide, Total	0.50 u	MG/KG	0.50	1.0
		pH	7.8	SOIL PH	0.01	1.0
		Sulfide	39.9 u	MG/KG	39.9	1.0
-002	B105W5	% Solids	91.9	%	0.01	1.0
		Nitrate by IC	3.7	MG/KG	1.4	1.0
		Cyanide, Total	0.51 u	MG/KG	0.51	1.0
		pH	9.4	SOIL PH	0.01	1.0
		Sulfide	38.6 u	MG/KG	38.6	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/14/00

CLIENT: TNUHANFORD B00-068 H1078 RECRA LOT #: 0010L874

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LDC063-MB1	Nitrate by IC	1.2 u	MG/KG	1.2	1.0
BLANK1	00LC100-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK1	00LC101-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK10	00LSD038-MB1	Sulfide	40.0 u	MG/KG	40.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/14/00

CLIENT: TNUHANFORD B00-068 H1078 RECRA LOT #: 0010L874

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B105W4	Cyanide, Total	4.6	0.50u	5.0	91.7	1.0
-002	B105W5	Nitrate by IC	32	3.7	27	106.7	1.0
		Sulfide	382	0.0	410	93.2	1.0
BLANK10	00LDC063-MB1	Nitrate by IC	25	1.2 u	25	99.8	1.0
BLANK10	00LSD038-MB1	Sulfide	373	40.0 u	400	93.2	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/14/00

CLIENT: TNUHANFORD B00-068 H1078 RECRA LOT #: 0010L874

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B105W4	% Solids	93.1	93.8	0.74	1.0
		Cyanide, Total	0.50u	0.51u	NC	1.0
		pH	7.8	7.7	1.0	1.0
-002REP	B105W5	Nitrate by IC	3.7	2.3	45.3	1.0
		Sulfide	38.6 u	41.5 u	NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/14/00

CLIENT: TNUHANFORD B00-068 H1078 RECRA LOT #: 0010L874

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	00LC100-LCS1	Cyanide, Total LCS	2.1	2.0	MG/KG	104.0
LCSS2	00LC100-LCS2	Cyanide, Total LCS	10	10	MG/KG	101.5
LCSS1	00LC101-LCS1	Cyanide, Total LCS	1.9	2.0	MG/KG	95.8
LCSS2	00LC101-LCS2	Cyanide, Total LCS	10	10	MG/KG	101.9

RECRA LabNet Use Only

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Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford SAF B00-068

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-999900

Project Contact/Phone #:

RECRA Project Manager: DJ

QC: Spec Del: Std TAT: 21 day

Date Rec'd: 10-5-00 Date Due: 10-26-00

Account #:

		C	B				A	D			E				
Refrigerator #		1	4				4	4			4				
#/Type Container	Liquid														
	Solid	VAG	VAG				VAG	VAG			VAG				
Volume	Liquid														
	Solid	250	250				120	250			250				
Preservatives		—	—				—	—			—				
ANALYSES REQUESTED		ORGANIC					IC	INORG			PH				
		VOA	BNA	Pest/PCB	Herb		Anions	Metal	CN						
RECRA LabNet Use Only		OLC2NH	OLC2SX				ICNO3 ISFD	ICMTO	MMGTO		HPH				

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														
001	B105W4			S	9/25/00	1132	1	1				1	1	1			1			
002	L 5			L	L	1308	1	1				1	1	1			1			

Special Instructions: SAF B00 068

Run Matrix QC

DATE/REVISIONS:

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

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # Sue Robert

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. 3.4 C

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	10/5/00	0945

Relinquished by	Received by	Date	Time
COMPOSITE LABEL		ORIGINAL REWRITTEN	

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 79539584

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-068-68	Page 1 of 1

Collector FAHLBERG/	Company Contact Dave Weeks	Telephone No. 372-9524	Project Coordinator TRENT, SJ
Project Designation 200 Area Groundwater Well Drilling Waste Designation for	Sampling Location 200 West		SAF No. B00-068
Price Code 8L	Data Turnaround 21 Days	Air Quality ☐	
Ice Chest No. SMI-437 (1 of 1)	Field Logbook No. EL 1516 7	COA JK 1003200 RT 9-29-00 ~~XL0008LMHG~~	Method of Shipment Fed EX / GOV vehicle
Shipped To TMA/RECRA	Offsite Property No. A000346		Bill of Lading/Air Bill No. 4235 7953-9584

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	A None	B Cool 4C	C Cool 4C	D None	E None						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	120mL	250mL	250mL	250mL	250mL						
SAMPLE ANALYSIS	IC Anions - 300.0 (Nitrate); Sulfides - 9030; Total Cyanide - 9010	Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (m-Cresol)	VOA - 8260A (TCL)	ICP Metals - 6010A (Supertrace); Mercury - 7471 - (CV)	pH (Soil) - 9045						
Sample No.	Matrix *	Sample Date	Sample Time								
001 B105W4	SOIL	9-29-00	1132	X	X	X	X	X				BOY	VP7

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R Fahlberg	1500 9-29-00	Stanard / Ref 2-B.	1500 9-29-00
Relinquished By / Removed from Ref 2B 3728	Date/Time 0800 10/4/00	Received By R Thorer	Date/Time 0800 10/4/00
Relinquished By R Thorer	Date/Time 0800 10/4/00	Received By FEDEX	Date/Time
Relinquished By	Date/Time 10/5/00 0915	Received By	Date/Time 10/5/00 0915
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

RT 10/4/00

SPECIAL INSTRUCTIONS

Samples stored in Ref. #2B at the 3728 Shipping Facility on 9/29/00. Collector not available to relinquish samples on 10/4/00 for shipment.. RT 10/4/00

Matrix *
S - Soil
SE - Sediment
SO - Solid
S - 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

BHI-EE-011 (10/99)

0010L874 3.4°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-068-69	Page 1 of 1

Collector: FAHLBERG/	Company Contact: Dave Weeks	Telephone No.: 372-9524	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 200 Area Groundwater Well Drilling Waste Designation for	Sampling Location: 200 West	SAF No.: B00-068	
Ice Chest No.: SMI-437 (1OF1)	Field Logbook No.: EL 151A 17 RF 9.29.00	COA: JTK RAS 3200 ~~XL0008LMHC~~	Method of Shipment: Fed EX / GOV. vehicle
Shipped To: TMA/RECRA	Offsite Property No.: A000346		Bill of Lading/Air Bill No.: 4235 4453 9584

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	None	None					
Type of Container	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	120mL	250mL	250mL	250mL	250mL					
SAMPLE ANALYSIS	IC Anions - 300.0 (Nitrate); Sulfides - 9030; Total Cyanide - 9010	Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (m-Cresol)	VOA - 8260A (TCL)	ICP Metals - 6010A (Supertrace); Mercury - 7471 - (CV)	pH (Soil) - 9045					

Sample No.	Matrix *	Sample Date	Sample Time										
B105W5	SOIL	9.29.00	~~1309~~ 1308	x	x	x	x	x				B0YV	P8

DD

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R.Fahlberg RFahlberg	9.29.00 1500	RF Stewart 14	1500
Remove from Ref 2B 3728	10/4/00 0800	Ref 2.13	9.29.00
RT 10/4/00		R.T. RThoren	10/4/00 0800
RThoren RT	10/4/00 0800	FEDEX	
FedEx	10/5/00 0415	Vicki Hendy	10-5-00 0415

SPECIAL INSTRUCTIONS

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 9 29 00.
Collector not available to relinquish samples on 10 4 00 for shipment..
RT 10/4/00

Matrix *
S Soil
SE=Sediment
SD=Solid
S 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

BHI-EE-011 (10/99)

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B00-068 H1078

NOV 2000
RECEIVED

DATE RECEIVED: 10/05/00 RFW LOT # :0010L

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B105W4						
SILVER, TOTAL	001	S	99L1658	09/29/00	10/28/00	10/30/00
ARSENIC, TOTAL	001	S	99L1658	09/29/00	10/28/00	10/30/00
BARIUM, TOTAL	001	S	99L1658	09/29/00	10/28/00	10/30/00
CADMIUM, TOTAL	001	S	99L1658	09/29/00	10/28/00	10/30/00
CHROMIUM, TOTAL	001	S	99L1658	09/29/00	10/28/00	10/30/00
MERCURY, TOTAL	001	S	00C0350	09/29/00	10/23/00	10/24/00
MERCURY, TOTAL	001 REP	S	00C0350	09/29/00	10/23/00	10/24/00
MERCURY, TOTAL	001 MS	S	00C0350	09/29/00	10/23/00	10/24/00
LEAD, TOTAL	001	S	99L1658	09/29/00	10/28/00	10/30/00
SELENIUM, TOTAL	001	S	99L1658	09/29/00	10/28/00	10/30/00
B105W5						
SILVER, TOTAL	002	S	99L1658	09/29/00	10/28/00	10/30/00
SILVER, TOTAL	002 REP	S	99L1658	09/29/00	10/28/00	10/30/00
SILVER, TOTAL	002 MS	S	99L1658	09/29/00	10/28/00	10/30/00
ARSENIC, TOTAL	002	S	99L1658	09/29/00	10/28/00	10/30/00
ARSENIC, TOTAL	002 REP	S	99L1658	09/29/00	10/28/00	10/30/00
ARSENIC, TOTAL	002 MS	S	99L1658	09/29/00	10/28/00	10/30/00
BARIUM, TOTAL	002	S	99L1658	09/29/00	10/28/00	10/30/00
BARIUM, TOTAL	002 REP	S	99L1658	09/29/00	10/28/00	10/30/00
BARIUM, TOTAL	002 MS	S	99L1658	09/29/00	10/28/00	10/30/00
CADMIUM, TOTAL	002	S	99L1658	09/29/00	10/28/00	10/30/00
CADMIUM, TOTAL	002 REP	S	99L1658	09/29/00	10/28/00	10/30/00
CADMIUM, TOTAL	002 MS	S	99L1658	09/29/00	10/28/00	10/30/00
CHROMIUM, TOTAL	002	S	99L1658	09/29/00	10/28/00	10/30/00
CHROMIUM, TOTAL	002 REP	S	99L1658	09/29/00	10/28/00	10/30/00
CHROMIUM, TOTAL	002 MS	S	99L1658	09/29/00	10/28/00	10/30/00
MERCURY, TOTAL	002	S	00C0350	09/29/00	10/23/00	10/24/00
LEAD, TOTAL	002	S	99L1658	09/29/00	10/28/00	10/30/00
LEAD, TOTAL	002 REP	S	99L1658	09/29/00	10/28/00	10/30/00
LEAD, TOTAL	002 MS	S	99L1658	09/29/00	10/28/00	10/30/00
SELENIUM, TOTAL	002	S	99L1658	09/29/00	10/28/00	10/30/00
SELENIUM, TOTAL	002 REP	S	99L1658	09/29/00	10/28/00	10/30/00
SELENIUM, TOTAL	002 MS	S	99L1658	09/29/00	10/28/00	10/30/00

LAB QC:

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B00-068 H1078

DATE RECEIVED: 10/05/00 RFW LOT # :0010L874

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SILVER LABORATORY	LC1 BS	S	99L1658	N/A	10/28/00	10/30/00
SILVER, TOTAL	MB1	S	99L1658	N/A	10/28/00	10/30/00
ARSENIC LABORATORY	LC1 BS	S	99L1658	N/A	10/28/00	10/30/00
ARSENIC, TOTAL	MB1	S	99L1658	N/A	10/28/00	10/30/00
BARIUM LABORATORY	LC1 BS	S	99L1658	N/A	10/28/00	10/30/00
BARIUM, TOTAL	MB1	S	99L1658	N/A	10/28/00	10/30/00
CADMIUM LABORATORY	LC1 BS	S	99L1658	N/A	10/28/00	10/30/00
CADMIUM, TOTAL	MB1	S	99L1658	N/A	10/28/00	10/30/00
CHROMIUM LABORATORY	LC1 BS	S	99L1658	N/A	10/28/00	10/30/00
CHROMIUM, TOTAL	MB1	S	99L1658	N/A	10/28/00	10/30/00
MERCURY LABORATORY	LC1 BS	S	00C0350	N/A	10/23/00	10/24/00
MERCURY, TOTAL	MB1	S	00C0350	N/A	10/23/00	10/24/00
LEAD LABORATORY	LC1 BS	S	99L1658	N/A	10/28/00	10/30/00
LEAD, TOTAL	MB1	S	99L1658	N/A	10/28/00	10/30/00
SELENIUM LABORATORY	LC1 BS	S	99L1658	N/A	10/28/00	10/30/00
SELENIUM, TOTAL	MB1	S	99L1658	N/A	10/28/00	10/30/00

RECRA
ENVIRONMENTAL
INC.
Chemical and Environmental Measurement Information

NOV 2000
RECEIVED

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B00-068
RFW#: 0010L874
SDG/SAF#: H1078/B00-068

W.O.#: 10985-001-001-9999-00
Date Received: 10-05-00

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 soil samples.

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

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

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

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

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

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, 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 80-120% control limits. Refer to form 7.

10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. 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 14 pages.

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

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.

13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor
VP, Laboratory General Manager
Lionville Laboratory

11-20-00
Date

gmb/m10-874

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 0010L874

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

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

Metals Analysis Methods

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

Other:_____ Method:_____

L-WI-033/M-11/99

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

ANALYTICAL METAL METHODS

1. Not included in the method element list.

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

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

4. Flame AA.

5. Graphite Furnace AA.

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/15/00

CLIENT: TNUHANFORD B00-068 H1078 RECRA LOT #: 0010L874

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B105W4	Silver, Total	0.1 u	MG/KG	0.1	1.0
		Arsenic, Total	0.96	MG/KG	0.30	1.0
		Barium, Total	44.0	MG/KG	0.02	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	3.1	MG/KG	0.08	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	4.0	MG/KG	0.18	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0
-002	B105W5	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Arsenic, Total	8.9	MG/KG	0.34	1.0
		Barium, Total	92.4	MG/KG	0.02	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	9.6	MG/KG	0.09	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	8.7	MG/KG	0.21	1.0
		Selenium, Total	0.43 u	MG/KG	0.43	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/15/00

CLIENT: TNUHANFORD B00-068 H1078 RECRA LOT #: 0010L874

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L1658-MB1	Silver, Total	0.11 u	MG/KG	0.11	1.0
		Arsenic, Total	0.34 u	MG/KG	0.34	1.0
		Barium, Total	0.03	MG/KG	0.02	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.09 u	MG/KG	0.09	1.0
		Lead, Total	0.21 u	MG/KG	0.21	1.0
		Selenium, Total	0.43 u	MG/KG	0.43	1.0
BLANK1	00C0350-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 11/15/00

CLIENT: TNUHANFORD B00-068 H1078

RECRA LOT #: 0010L874

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B105W4	Mercury, Total	0.20	0.02u	0.17	117.3	1.0
-002	B105W5	Silver, Total	4.7	0.11u	5.0	94.0	1.0
		Arsenic, Total	196	8.9	200	93.5	1.0
		Barium, Total	286	92.4	200	96.7	1.0
		Cadmium, Total	4.6	0.03u	5.0	92.0	1.0
		Chromium, Total	27.8	9.6	20.0	91.0	1.0
		Lead, Total	54.5	8.7	49.9	91.8	1.0
		Selenium, Total	188	0.43u	200	94.4	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 11/15/00

CLIENT: TNUHANFORD B00-068 H1078 RECRA LOT #: 0010L874

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B105W4	Mercury, Total	0.02u	0.02u	NC	1.0
-002REP	B105W5	Silver, Total	0.11u	0.11u	NC	1.0
		Arsenic, Total	8.9	8.6	3.4	1.0
		Barium, Total	92.4	89.4	3.3	1.0
		Cadmium, Total	0.03u	0.03u	NC	1.0
		Chromium, Total	9.6	8.5	12.2	1.0
		Lead, Total	8.7	8.1	7.1	1.0
		Selenium, Total	0.43u	0.43u	NC	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/15/00

CLIENT: TNUHANFORD B00-068 H1078 RECRA LOT #: 0010L874

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L1658-LC1	Silver, LCS	50.4	50.0	MG/KG	100.8
		Arsenic, LCS	969	1000	MG/KG	96.9
		Barium, LCS	498	500	MG/KG	99.7
		Cadmium, LCS	25.0	25.0	MG/KG	100
		Chromium, LCS	50.7	50.0	MG/KG	101.4
		Lead, LCS	247	250	MG/KG	98.8
		Selenium, LCS	976	1000	MG/KG	97.6
LCS1	00C0350-LC1	Mercury, LCS	0.76	0.7	MG/KG	106.6

RECRA LabNet Use Only
00101874

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

ALL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TMU-Hanford SAF B00-068

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-999900

Project Contact/Phone #:

RECRA Project Manager: DJ

QC: Spec Del: Std TAT: 21 day

Date Rec'd: 10-5-00 Date Due: 10-26-00

Account #:

Refrigerator #		1	4				4	4	4			4				
#/Type Container	Liquid															
	Solid	1AG	1AG				1AG	1	1AG			1AG				
Volume	Liquid															
	Solid	250	250				120	1	250			250				
Preservatives		—	—				—	1	—			—				
ANALYSES REQUESTED →		ORGANIC: VOA	ORGANIC: BNA	ORGANIC: Pest/PCB	ORGANIC: Herb		IC Anions		INORG: Metal	INORG: CN		PH				
RECRA LabNet Use Only		0028H	0025X Tubes				ICNO3 ISFD	ICNTO	Metals BCBATO			PH				

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected												
S - Soil	001	B105W4			S	9/25/00	1132	1	1			1	1	1			1		
SE - Sediment	002	L5			L	2	1308	1	1			1	1	1			1		
SO - Solid																			
SL - Sludge																			
W - Water																			
O - Oil																			
A - Air																			
DS - Drum Solids																			
DL - Drum Liquids																			
L - EP/TCLP Leachate																			
WI - Wipe																			
X - Other																			
F - Fish																			

Special Instructions: SAF B00-068

Run Matrix QC

DATE/REVISIONS:

10-6-00 1. 0025X change to 0025TI

2. Metals = BCBA list

3.

4.

5.

6.

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	10/5/00	0945

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # See Below

2) Ambient or Chilled

3) Received in Good Condition 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. 3.4 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 79539584

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-068-68	Page 1 of 1

Collector: FAHLBERG/	Company Contact: Dave Weeks	Telephone No.: 372-9524	Project Coordinator: TRENT, SJ
Project Designation: 200 Area Groundwater Well Drilling Waste Designation for	Sampling Location: 200 West		SAF No.: B00-068
Ice Chest No.: 104BMT7 SMH437 (1 of 1)	Field Logbook No.: EL 1516 7	COA: JK 1990 3200 RT 9-28-00 ~~XL0008LMHG~~	Method of Shipment: Fed EX / GOV vehicle
Shipped To: TMA/RECRA	Offsite Property No.: A000346		Bill of Lading/Air Bill No.: 4235 7953-9584

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Price Code: 8L

Data Turnaround: 21 Days

Air Quality ☐

Preservation	A None	B Cool 4C	C Cool 4C	D None	E None							
Type of Container	sG	sG	sG	sG	sG							
No. of Container(s)	1	1	1	1	1							
Volume	120mL	250mL	250mL	250mL	250mL							
SAMPLE ANALYSIS	IC Anions - 300.0 (Nitrate); Sulfides - 9030; Total Cyanide - 9010	Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (m-Cresol)	VOA - 8260A (TCL)	ICP Metals - 6010A (Superfund); Mercury - 7471 - (CV)	pH (Soil) - 9045							
Sample No.	Matrix *	Sample Date	Sample Time									
001 B105W4	SOIL	9.29.00	1132	X	X	X	X	X				150Y VPQ

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R Fahlberg	9-29-00 1500	Ref 2-B.	9-29-00 1500
Remained from Ref 2B 3728	10/4/00 0800	R. Thorem	10/4/00 0800
R. Thorem	10/4/00 0800		
		FEDEX	
Ed E	10/5/00 0915		10/5/00 0915

RT 10/4/00

SPECIAL INSTRUCTIONS

Samples stored in Ref. #2B at the 3728 Shipping Facility on 9/29/00. Collector not available to relinquish samples on 10/4/00 for shipment.. RT 10/4/00

Matrix *: S-Soil; SE-Sediment; SO-Solid; S-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

BHI-EE-011 (10/99)

00101874 3.4°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-068-69	Page 1 of 1

Collector: FAHLBERG/	Company Contact: Dave Weeks	Telephone No.: 372-9524	Project Coordinator: TRENT, SJ
Price Code: 8L	Data Turnaround: 21 Days	Air Quality ☐	
Project Designation: 200 Area Groundwater Well Drilling Waste Designation for	Sampling Location: 200 West	SAF No.: B00-068	
Ice Chest No.: SM1-437 (1 of 1)	Field Logbook No.: EL 1518 17 Ref 9.29.00	COA: ~~XL0008LMHG~~ JTK RAG 3.20	Method of Shipment: Fed EX / GOV. vehicle
Shipped To: TMA/RECRA	Offsite Property No.: A000346		Bill of Lading/Air Bill No.: 4235 7453 9584

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SAMPLE ANALYSIS	IC Anions - 300.0 (Nitrate); Sulfides - 9030; Total Cyanide - 9010	Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) (m-Cresol)	VOA - 8260A (TCL)	ICP Metals - 6010A (Superfund); Mercury - 7471 - (CV)	pH (Soil) - 9045					
Preservation	None	Cool 4C	Cool 4C	None	None					
Type of Container	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	120mL	250mL	250mL	250mL	250mL					

Sample No.	Matrix *	Sample Date	Sample Time									
B105W5	SOIL	9-29-00	~~1309~~ 1308	x	x	x	x	x			BOYV	P8

002

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	
Relinquished By: R. Fahlberg / R. Fahlberg	Received By: Stan J Im / Ref 2.13	9-29-00 1500	
Relinquished By: Remove from Ref 2B 3728	Received By: R. Thoren	10/4/00 0800	RT 10/4/00
Relinquished By: R Thoren	Received By: FEDEX	10/4/00 0800	
Relinquished By: FedEx	Received By: [illegible]	10/5/00 0415	
Relinquished By:	Received By:		
Relinquished By:	Received By:		

SPECIAL INSTRUCTIONS

Samples stored in Ref.# 2B at the 3728
Shipping Facility on 9/29/00.
Collector not available to relinquish samples
on 10/4/00 for shipment.. RT 10/4/00

Matrix *
S - Soil
SE - Sediment
SO - Solid
S - 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

BHI-EE-011 (10/99)

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

NOV 2000
RECEIVED

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B00-068
RFW #: 0010L874
SDG/SAF #: H1078/B00-068

W.O. #: 10985-001-001-31999-00
Date Received: 10-05-2000

SEMIVOLATILE

Two (2) soil samples were collected on 09-29-2000.

The samples and their associated QC samples were extracted on 10-07-2000 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 10-23,24-2000.

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

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

2. The samples were extracted and analyzed within required holding times.

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

4. Eight (8) of thirty-six (36) surrogate recoveries were outside EPA QC limits. The surrogate recovery criteria were not met for samples B105W4 MS and B105W5. The analysis of associated matrix spike duplicate fulfills the reanalysis requirement of sample B105W4 MS. Sample B105W5 was not re-extracted because there was no target compounds detected in sample. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

5. Five (5) of twenty-two (22) matrix spike recoveries were outside EPA QC limits.

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

7. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

J. Michael Taylor
V.P./Laboratory General Manager
Lionville Laboratory

11-15-00
Date

som\group\data\bna\tnu-hanford-10-874.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 1 3 pages.

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

RECRA **Sample Discrepancy Report (SDR)** SDR #: WMS269

Initiator: John W. Smith Batch: 00102874 Parameter: BNA
Date: 10/25/00 Samples: 001MS + 002 Matrix: Soil
Client: TWU-Hanford 300-0168 Method: SW846/MCAWW/CLP/ Prep Batch: 00C21279

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) Multiple surrogates and spikes fail low in MS. MSD + BS meet criteria.
2) Sample -002 has 4 surrogates that fail low. No targets detected.

2. Known or Probable Causes(s) (To be used for trend analysis)

__ Lack of Organization
__ Lack of Training
__ Lack of Discipline
__ Lack of Resources
__ Lack of Time
__ Lack of Management Support
__ Other (Please explain):

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)

Report + Narrate

4. Project Manager Instructions...signature/date: Juliette Johnson 10/25/00

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: CDT 11/14/00 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 for distribution and filing.

Route/Distribution of SDR	Route	Distribution of Completed SDR
__ Initiator	__	Metals: Doughty
__ Lab Manager: M. Taylor	__	Inorganic: Perrone
I Project Mgr: Stone/Carey/Johnson	__	GC/LC: Pastor
__ Section Mgr: Wesson/Daniels	__	MS: Layman/Rycklak
X QA (file): Schrenkel	__	Log-In: Keppel
__ Data Management: Feldman	__	Admin: Soos
__ Sample Prep: Bickel/Kauffman	__	Other: _____

L-WI-006/E-08/00

GLOSSARY OF BNA DATA

DATA QUALIFIERS

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

mmz\10-94\gloss.bna

GLOSSARY OF BNA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.bna

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

Report Date: 10/27/00 19:54

RFW Batch Number: 0010L874 Client: TNU-HANFORD B00-068 Work Order: 10985001001 Page: 1a

	Cust ID:	B105W4	B105W4	B105W4	B105W5	SBLKCT	SBLKCT BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	00LE1279-MB1	00LE1279-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	48 %	12 * %	61 %	20 * %	65 %	41 %
	2-Fluorobiphenyl	44 %	24 * %	57 %	22 * %	59 %	38 %
	Terphenyl-d14	57 %	46 %	68 %	27 %	86 %	52 %
	Phenol-d5	61 %	19 * %	75 %	25 %	73 %	55 %
	2-Fluorophenol	61 %	6 * %	83 %	23 * %	81 %	51 %
	2,4,6-Tribromophenol	54 %	50 %	87 %	17 * %	72 %	61 %
Phenol		340 U	16 * %	71 %	360 U	330 U	52 %
bis(2-Chloroethyl)ether		340 U	350 U	350 U	360 U	330 U	330 U
2-Chlorophenol		340 U	9 * %	76 %	360 U	330 U	55 %
1,3-Dichlorobenzene		340 U	350 U	350 U	360 U	330 U	330 U
1,4-Dichlorobenzene		340 U	3 * %	57 %	360 U	330 U	43 %
1,2-Dichlorobenzene		340 U	350 U	350 U	360 U	330 U	330 U
2-Methylphenol		340 U	350 U	350 U	360 U	330 U	330 U
2,2'-oxybis(1-Chloropropane)		340 U	350 U	350 U	360 U	330 U	330 U
3- and/or 4-Methylphenol		340 U	350 U	350 U	360 U	330 U	330 U
N-Nitroso-di-n-propylamine		340 U	25 * %	69 %	360 U	330 U	58 %
Hexachloroethane		340 U	350 U	350 U	360 U	330 U	330 U
Nitrobenzene		340 U	350 U	350 U	360 U	330 U	330 U
Isophorone		340 U	350 U	350 U	360 U	330 U	330 U
2-Nitrophenol		340 U	350 U	350 U	360 U	330 U	330 U
2,4-Dimethylphenol		340 U	350 U	350 U	360 U	330 U	330 U
bis(2-Chloroethoxy)methane		340 U	350 U	350 U	360 U	330 U	330 U
2,4-Dichlorophenol		340 U	350 U	350 U	360 U	330 U	330 U
1,2,4-Trichlorobenzene		340 U	11 * %	61 %	360 U	330 U	44 %
Naphthalene		340 U	350 U	350 U	360 U	330 U	330 U
4-Chloroaniline		340 U	350 U	350 U	360 U	330 U	330 U
Hexachlorobutadiene		340 U	350 U	350 U	360 U	330 U	330 U
4-Chloro-3-methylphenol		340 U	41 %	81 %	360 U	330 U	58 %
2-Methylnaphthalene		340 U	350 U	350 U	360 U	330 U	330 U
Hexachlorocyclopentadiene		340 U	350 U	350 U	360 U	330 U	330 U
2,4,6-Trichlorophenol		340 U	350 U	350 U	360 U	330 U	330 U
2,4,5-Trichlorophenol		860 U	870 U	870 U	900 U	830 U	830 U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0010L874 Client: TNU-HANFORD B00-068 Work Order: 10985001001 Page: 1b

Cust ID:	B105W4		B105W4		B105W4		B105W5		SBLKCT		SBLKCT BS	
RFW#:	001		001 MS		001 MSD		002		00LE1279-MB1		00LE1279-MB1	
2-Chloronaphthalene	340	U	350	U	350	U	360	U	330	U	330	U
2-Nitroaniline	860	U	870	U	870	U	900	U	830	U	830	U
Dimethylphthalate	340	U	350	U	350	U	360	U	330	U	330	U
Acenaphthylene	340	U	350	U	350	U	360	U	330	U	330	U
2,6-Dinitrotoluene	340	U	350	U	350	U	360	U	330	U	330	U
3-Nitroaniline	860	U	870	U	870	U	900	U	830	U	830	U
Acenaphthene	340	U	31	%	65	%	360	U	330	U	46	%
2,4-Dinitrophenol	860	U	870	U	870	U	900	U	830	U	830	U
4-Nitrophenol	860	U	50	%	73	%	900	U	830	U	48	%
Dibenzofuran	340	U	350	U	350	U	360	U	330	U	330	U
2,4-Dinitrotoluene	340	U	41	%	73	%	360	U	330	U	55	%
Diethylphthalate	340	U	350	U	350	U	360	U	330	U	330	U
4-Chlorophenyl-phenylether	340	U	350	U	350	U	360	U	330	U	330	U
Fluorene	340	U	350	U	350	U	360	U	330	U	330	U
4-Nitroaniline	860	U	870	U	870	U	900	U	830	U	830	U
4,6-Dinitro-2-methylphenol	860	U	870	U	870	U	900	U	830	U	830	U
N-Nitrosodiphenylamine (1)	340	U	350	U	350	U	360	U	330	U	330	U
4-Bromophenyl-phenylether	340	U	350	U	350	U	360	U	330	U	330	U
Hexachlorobenzene	340	U	350	U	350	U	360	U	330	U	330	U
Pentachlorophenol	860	U	43	%	31	%	900	U	830	U	36	%
Phenanthrene	340	U	350	U	350	U	360	U	330	U	330	U
Anthracene	340	U	350	U	350	U	360	U	330	U	330	U
Carbazole	340	U	350	U	350	U	360	U	330	U	330	U
Di-n-butylphthalate	340	U	350	U	350	U	360	U	330	U	330	U
Fluoranthene	340	U	350	U	350	U	360	U	330	U	330	U
Pyrene	340	U	46	%	70	%	360	U	330	U	50	%
Butylbenzylphthalate	340	U	350	U	350	U	360	U	330	U	330	U
3,3'-Dichlorobenzidine	340	U	350	U	350	U	360	U	330	U	330	U
Benzo(a)anthracene	340	U	350	U	350	U	360	U	330	U	330	U
Chrysene	340	U	350	U	350	U	360	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	340	U	350	U	350	U	360	U	330	U	330	U
Di-n-octyl phthalate	340	U	350	U	350	U	360	U	330	U	330	U
Benzo(b)fluoranthene	340	U	350	U	350	U	360	U	330	U	330	U
Benzo(k)fluoranthene	340	U	350	U	350	U	360	U	330	U	330	U
Benzo(a)pyrene	340	U	350	U	350	U	360	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	340	U	350	U	350	U	360	U	330	U	330	U
Dibenz(a,h)anthracene	340	U	350	U	350	U	360	U	330	U	330	U
Benzo(g,h,i)perylene	340	U	350	U	350	U	360	U	330	U	330	U

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

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B105W4

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNUHANFORD B00-068 H1078

Matrix: (soil/water) SOIL Lab Sample ID: 0010L874-001

Sample wt/vol: 31.2 (g/mL) G Lab File ID: A102403

Level: (low/med) LOW Date Received: 10/05/00

% Moisture: 7 decanted: (Y/N) __ Date Extracted: 10/07/00

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/24/00

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	18.73	90	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B105W5

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNUHANFORD B00-068 H1078

Matrix: (soil/water) SOIL Lab Sample ID: 0010L874-002

Sample wt/vol: 30.2 (g/mL) G Lab File ID: A102314

Level: (low/med) LOW Date Received: 10/05/00

% Moisture: 8 decanted: (Y/N) __ Date Extracted: 10/07/00

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/23/00

Injection Volume: 2.0 (uL) Dilution Factor: 1.00

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

Number TICs found: 4

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	9.70	90	J
2.	UNKNOWN	23.19	400	J
3.	UNKNOWN	23.45	800	J
4.	UNKNOWN	23.54	500	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKCT

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNUHANFORD B00-068 H1078

Matrix: (soil/water) SOIL Lab Sample ID: 00LE1279-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A102312

Level: (low/med) LOW Date Received: 10/07/00

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 10/07/00

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/23/00

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 0

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

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

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B00-068

DATE RECEIVED: 10/05/00 RFW LOT # :0010L874

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B105W4	001	S	00LE1279	09/29/00	10/07/00	10/24/00
B105W4	001 MS	S	00LE1279	09/29/00	10/07/00	10/24/00
B105W4	001 MSD	S	00LE1279	09/29/00	10/07/00	10/24/00
B105W5	002	S	00LE1279	09/29/00	10/07/00	10/23/00
LAB QC:						
SBLKCT	MB1	S	00LE1279	N/A	10/07/00	10/23/00
SBLKCT	MB1 BS	S	00LE1279	N/A	10/07/00	10/23/00

RECRA LabNet Use Only

00101874

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford SAF B00-068

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-999900

Project Contact/Phone #:

RECRA Project Manager: DJ

QC: Spec Del: Std TAT: 21 day

Date Rec'd: 10-5-00 Date Due: 10-26-00

Account #:

		C	B	(9) Mod Dig BNA			A	D			E				
Refrigerator #		1	1				1	1	1		1				
#/Type Container	Liquid														
	Solid	1AG	1AG				1AG	1	1AG		1AG				
Volume	Liquid														
	Solid	250	250				120	1	250		250				
Preservatives		—	—				—	1	—		—				
ANALYSES REQUESTED		ORGANIC							INORG						
		VOA	BNA	Pest/PCB	Herb		IC Anions		Metal	CN	PH				

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	RECRA LabNet Use Only: 8260NH	8260X TX IDs				IC NO3 ISFD	ICMTO	TX 10 Metals RCRA TO			PH				
001	B105W4			S	9/25/00	1132	1	1				1	1	1			1				
002	1 5			1	1	1308	1	1				1	1	1			1				

Special Instructions: SAF B00-068

Run Matrix QC

DATE/REVISIONS:

10-6-00 1. 8260X change to 8260TI

1 2. Metals = RCRA list

3.

4.

5.

6.

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # See Below

2) Ambient or Chilled

3) Received in Good Condition Y or N

4) Labels Indicate Properly Preserved Y or N

5) Received Within Holding Times Y or N

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

2) Unbroken on Outer Package Y or N

3) Present on Sample Y or N

4) Unbroken on Sample Y or N

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 3.4 °C

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 4235 7953 9584

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	10/5/00	0915

Relinquished by	Received by	Date	Time
COMPOSITE WASTE		ORIGINAL REWRITTEN	

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-068-68	Page 1 of 1

Collector: FAHLBERG/	Company Contact: Dave Weeks	Telephone No.: 372-9524	Project Coordinator: TRENT, SJ
Project Designation: 200 Area Groundwater Well Drilling Waste Designation for	Sampling Location: 200 West		SAF No.: B00-068
Ice Chest No.: SML437 (1 of 1)	Field Logbook No.: EL 1516 7	COA: JK 0903200 RT 9-29-00 ~~XL0008LMHG~~	Method of Shipment: Fed EX / GOV vehicle
Shipped To: TMA/RECRA	Offsite Property No.: A000346		Bill of Lading/Air Bill No.: 4235 7953-9584

Price Code: 8L

Air Quality ☐

Data Turnaround: 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

	A	B	C	D	E					
Preservation	None	Cool 4C	Cool 4C	None	None					
Type of Container	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	120mL	250mL	250mL	250mL	250mL					
SAMPLE ANALYSIS	IC Anions - 300.0 (Nitrate); Sulfides - 9030; Total Cyanide - 9010	Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) (m-Cresol)	VOA - 8260A (TCL)	ICP Metals - 6010A (Supertrace); Mercury - 7471 - (CV)	pH (Soil) - 9045					

Sample No.	Matrix *	Sample Date	Sample Time										
B105W4	SOIL	9-29-00	1132	X	X	X	X	X				BOY	VPZ

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R Fahlberg	9-29-00 1500	Rcf Z-B. / Stanwood	9-29-00 1500
Relinquished By: Remaxfrom / Ref 2B 3728	10/4/00 0800	Received By: R Thorenz / R Thorenz	10/4/00 0800
Relinquished By: R Thorenz	10/4/00 0800	Received By: FEDEX	
Relinquished By: Ed Ea	10/5/00 0915	Received By: [illegible]	10/5/00 0915
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

RT 10/4/00

SPECIAL INSTRUCTIONS

Samples stored in Ref. #2B at the 3728 Shipping Facility on 9/29/00.
Collector not available to relinquish samples on 10/4/00 for shipment.. RT 10/4/00

Matrix *
S=Soil
SE=Sediment
SO=Solid
S=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

BHI-EE-011 (10/99)

00101874 3.4°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-068-69	Page 1 of 1

Collector: FAHLBERG/	Company Contact: Dave Weeks	Telephone No.: 372-9524	Project Coordinator: TRENT, SJ
Project Designation: 200 Area Groundwater Well Drilling Waste Designation for	Sampling Location: 200 West		SAF No.: B00-068
Ice Chest No.: SM1-437 (1 OF 1)	Field Logbook No.: EL 1519 7 Ref 9.29.00	COA: JTR RAG 3200 ~~XL0008LMHC~~	Method of Shipment: Fed EX / GOV. vehicle
Shipped To: TMA/RECRA	Offsite Property No.: A000346		Bill of Lading/Air Bill No.: 4235 7453 9584

Price Code: 8L

Data Turnaround: 21 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	None	None						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	120mL	250mL	250mL	250mL	250mL						
SAMPLE ANALYSIS	IC Anions - 300.0 (Nitrate); Sulfides - 9030; Total Cyanide - 9010	Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) (m-Cresol)	VOA - 8260A (TCL)	ICP Metals - 6010A (Supertrace); Mercury - 7471 - (CV)	pH (Soil) - 9045						

Sample No.	Matrix *	Sample Date	Sample Time										
B105W5	SOIL	9.29.00	~~1309~~ 1308	x	x	x	x	x				BOYVP8	

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R. Fahlberg	9-29-00 1500	Ref 2.13	9.29.00 1500
Remove from Ref 2B 3728	10/4/00 0800	R. Thoren	10/4/00 0800
R. Thoren	10/4/00 0800	FEDEX	
FedEx	10/5/00 0415		10-5-00 0415

Sign/Print Names

SPECIAL INSTRUCTIONS

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 9/29/00.
Collector not available to relinquish samples on 10/4/00 for shipment..
RT 10/4/00

Matrix *
S - Soil
SE - Sediment
SO - Solid
S - 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

BHI-EE-011 (10/99)

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report

NOV 2000
RECEIVED

Client: TNU-HANFORD B00-068
RFW #: 0010L874
SDG/SAF #: H1078/B00-068

W.O. #: 10985-001-001-9999-00
Date Received: 10-03-2000

GC/MS VOLATILE

Two (2) soil samples were collected on 09-29-2000.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260B for TCL Volatile target compounds on 10-10,11-2000.

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 sample was analyzed within required holding time.

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 method blank contained the common laboratory contaminants Methylene Chloride and/or Acetone at levels less than 3x the CRQL.

8. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

By: J. Michael Taylor
V.P./Laboratory General Manager
Lionville Laboratory

11-03-00
Date

som\group\data\voa\tnu-hanford-10-874.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 1 1 pages.

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

GLOSSARY OF VOA DATA

DATA QUALIFIERS

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

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

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

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

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

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

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

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

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

mmz\10-94\gloss.voa

GLOSSARY OF VOA DATA

ABBREVIATIONS

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

mmz\10-94\gloss.voa

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 10/30/00 13:33

RFW Batch Number: **0010L874** Client: **TNU-HANFORD B00-068** Work Order: 10985001001 Page: 1a

	Cust ID:	B105W4		B105W4		B105W4		B105W5		VBLKVF		VBLKVF BS	
Sample Information	RFW#:	001		001 MS		001 MSD		002		00LVH439-MB1		00LVH439-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.11		1.06		0.962		1.04		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	99	%	98	%	96	%	104	%	100	%	102	%
	Bromofluorobenzene	85	%	83	%	84	%	87	%	86	%	87	%
	1,2-Dichloroethane-d4	97	%	95	%	94	%	101	%	95	%	97	%
			fl		fl		fl		fl		fl		fl
Chloromethane		12	U	11	U	10	U	11	U	10	U	10	U
Bromomethane		12	U	11	U	10	U	11	U	10	U	10	U
Vinyl Chloride		12	U	11	U	10	U	11	U	10	U	10	U
Chloroethane		12	U	11	U	10	U	11	U	10	U	10	U
Methylene Chloride		21	B	31	B	28	B	27	B	14		5	B
Acetone		12	U	11	U	10	U	11	U	2	J	11	B
Carbon Disulfide		6	U	6	U	5	U	6	U	5	U	5	U
1,1-Dichloroethene		6	U	81	%	75	%	6	U	5	U	79	%
1,1-Dichloroethane		6	U	6	U	5	U	6	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	5	U	6	U	5	U	5	U
Chloroform		6	U	6	U	5	U	6	U	5	U	5	U
1,2-Dichloroethane		6	U	6	U	5	U	6	U	5	U	5	U
2-Butanone		12	U	11	U	10	U	11	U	10	U	10	U
1,1,1-Trichloroethane		6	U	6	U	5	U	6	U	5	U	5	U
Carbon Tetrachloride		6	U	6	U	5	U	6	U	5	U	5	U
Bromodichloromethane		6	U	6	U	5	U	6	U	5	U	5	U
1,2-Dichloropropane		6	U	6	U	5	U	6	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	5	U	6	U	5	U	5	U
Trichloroethene		6	U	91	%	91	%	6	U	5	U	92	%
Dibromochloromethane		6	U	6	U	5	U	6	U	5	U	5	U
1,1,2-Trichloroethane		6	U	6	U	5	U	6	U	5	U	5	U
Benzene		6	U	105	%	106	%	6	U	5	U	102	%
Trans-1,3-Dichloropropene		6	U	6	U	5	U	6	U	5	U	5	U
Bromoform		6	U	6	U	5	U	6	U	5	U	5	U
4-Methyl-2-pentanone		12	U	11	U	10	U	11	U	10	U	10	U
2-Hexanone		12	U	11	U	10	U	11	U	10	U	10	U
Tetrachloroethene		6	U	6	U	5	U	6	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	5	U	6	U	5	U	5	U
Toluene		6	U	110	%	110	%	6	U	5	U	110	%

*= Outside of EPA CLP QC limits.

RFW Batch Number: **0010L874** Client: **TNU-HANFORD B00-068** Work Order: 10985001001 Page: 1b

Cust ID:	B105W4		B105W4		B105W4		B105W5		VBLKVF		VBLKVF BS	
RFW#:	001		001 MS		001 MSD		002		00LVH439-MB1		00LVH439-MB1	
Chlorobenzene	6	U	105	%	107	%	6	U	5	U	105	%
Ethylbenzene	6	U	6	U	5	U	6	U	5	U	5	U
Styrene	6	U	6	U	5	U	6	U	5	U	5	U
Xylene (total)	6	U	6	U	5	U	6	U	5	U	5	U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 10/30/00 13:33

RFW Batch Number: **0010L874** Client: **TNU-HANFORD B00-068** Work Order: 10985001001 Page: 2a

	Cust ID:	**VBLKTR**		**VBLKTR BS**	
Sample Information	RFW#:	**00LVH440-MB1**		**00LVH440-MB1**	
	Matrix:	SOIL		SOIL	
	D.F.:	1.00		1.00	
	Units:	UG/KG		UG/KG	
Surrogate Recovery	Toluene-d8	104	%	99	%
	Bromofluorobenzene	87	%	85	%
	1,2-Dichloroethane-d4	98	%	95	%
Chloromethane		10	U	10	U
Bromomethane		10	U	10	U
Vinyl Chloride		10	U	10	U
Chloroethane		10	U	10	U
Methylene Chloride		7		7	B
Acetone		10	U	10	U
Carbon Disulfide		5	U	5	U
1,1-Dichloroethene		5	U	92	%
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	94	%
Dibromochloromethane		5	U	5	U
1,1,2-Trichloroethane		5	U	5	U
Benzene		5	U	107	%
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	109	%

*= Outside of EPA CLP QC limits.

Cust ID:	VBLKTR	VBLKTR BS
RFW#:	00LVH440-MB1	00LVH440-MB1

Chlorobenzene	5	U	105	%
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 B00-068

DATE RECEIVED: 10/05/00 RFW LOT # :0010L874

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B105W4	001	S	00LVH439	09/29/00	N/A	10/10/00
B105W4	001 MS	S	00LVH440	09/29/00	N/A	10/11/00
B105W4	001 MSD	S	00LVH440	09/29/00	N/A	10/11/00
B105W5	002	S	00LVH439	09/29/00	N/A	10/10/00

LAB QC:

VBLKVF	MB1	S	00LVH439	N/A	N/A	10/10/00
VBLKVF	MB1 BS	S	00LVH439	N/A	N/A	10/10/00
VBLKTR	MB1	S	00LVH440	N/A	N/A	10/11/00
VBLKTR	MB1 BS	S	00LVH440	N/A	N/A	10/11/00

8

RECRA LabNet Use Only

00101874

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

PNL FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford SAF B00-068

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-999900

Project Contact/Phone #:

RECRA Project Manager: DJ

QC: Spec Del: Std TAT: 21 day

Date Rec'd: 10-5-00 Date Due: 10-26-00

Account #:

		C	B	(9) Mod Dig BNA			A		D			E				
Refrigerator #		1	1				1	1	1			1				
#/Type Container	Liquid															
	Solid	1AG	1AG				1AG	1	1AG			1AG				
Volume	Liquid															
	Solid	250	250				120	1	250			250				
Preservatives		—	—				—	1	—			—				
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb		IC Anions		Metal	CN		PH				
		RECRA LabNet Use Only														
		8260HH	8270SX TUNE				IC NO3 ISFD	IC NO2	TKN 10.6.00 MHG 10 RCRA TO			TPH				

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	8260HH	8270SX TUNE				IC NO3 ISFD	IC NO2	TKN 10.6.00 MHG 10 RCRA TO			TPH				
001	B105W4			S	9/5/00	1132	1	1				1	1	1			1				
002	1 5			1	1	1308	1	1				1	1	1			1				

Special Instructions: Saf B00-068

Run Matrix QC

DATE/REVISIONS:

10-6-00 1. 8270SX changed to 8270STL

1 2. Metals = RCRA list

3.

4.

5.

6.

RECRA LabNet Use Only

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

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

COC Record Present Upon Sample Rec't Y or N

Cooler Temp. 3.4 °C

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	9/5/00	1945

Relinquished by	Received by	Date	Time

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES: 41235 79539 5941

COMPOSITE

ORIGINAL

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-068-68	Page 1 of 1

Collector: FAHLBERG/	Company Contact: Dave Weeks	Telephone No.: 372-9524	Project Coordinator: TRENT, SJ
Project Designation: 200 Area Groundwater Well Drilling Waste Designation for	Sampling Location: 200 West		SAF No.: B00-068
Ice Chest No.: RJ4 SML437 (1 of 1)	Field Logbook No.: EL 1514 7	COA: JK 9 3 200 ~~VL0008LMHC~~ 9.29.00	Method of Shipment: Fed EX / GOV vehicle
Shipped To: TM/RECRA	Offsite Property No.: A0000346		Bill of Lading/Air Bill No.: 4235 1953-9584

Price Code: 8L

Air Quality: ☐

Data Turnaround: 21 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

	A	B	C	D	E					
Preservation	None	Cool 4C	Cool 4C	None	None					
Type of Container	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	120mL	250mL	250mL	250mL	250mL					
SAMPLE ANALYSIS	IC Anions - 300.0 (Nitrate); Sulfides - 9030; Total Cyanide - 9010	Semi-VOA - 8270A (TCL); Semi-VOA – 8270A (Add-On) (m-Cresol)	VOA - 8260A (TCL)	ICP Metals - 6010A (Supertrace); Mercury - 7471 - (CV)	pH (Soil) - 9045					

Sample No.	Matrix *	Sample Date	Sample Time										
01 B105W4	SOIL	9.29.00	1132	X	X	X	X	X				150Y	VPG

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Fahlberg / R Fahlberg	1500 9.29.00	Ref 2-B.	1500 9.29.00
Ref 2B 3728	0800 10/4/00	R. M. R Thorer	0800 10/4/00
R. M. R Thorer	0800 10/4/00	FEDEX	
Ed Ea	10/5/00 0915	Kathy Hardy	10/5/00 0915

RT 10/4/00

SPECIAL INSTRUCTIONS

Samples stored in Ref. # 2B at the 3728 Shipping Facility on 9/29/00.
Collector not available to relinquish samples on 10/4/00 for shipment.. RT 10/4/00

Matrix *
S - Soil
SE - Sediment
SO - Solid
S - 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

BHI-EE-011 (10/99)

00101874 3.4°

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-068-69	Page 1 of 1
Collector: FAHLBERG/	Company Contact: Dave Weeks; Telephone No.: 372-9524	Project Coordinator: TRENT, SJ	Price Code: 8L; Data Turnaround: 21 Days
Project Designation: 200 Area Groundwater Well Drilling Waste Designation for	Sampling Location: 200 West	SAF No.: B00-068	Air Quality ☐
Ice Chest No.: SM1-437 (1 OF 1)	Field Logbook No.: EL 1518 17 RF 9.29.00; COA: JTR RJG 3200 ~~XL0006LMHG~~	Method of Shipment: Fed EX / GOV. vehicle	
Shipped To: TMA/RECRA	Offsite Property No.: A000346	Bill of Lading/Air Bill No.: 4235 4453 9584	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	Cool 4C	None	None						
Type of Container	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	120mL	250mL	250mL	250mL	250mL						
SAMPLE ANALYSIS	IC Anions - 300.0 (Nitrate); Sulfides - 9030; Total Cyanide - 9010	Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) (m-Cresol)	VOA - 8260A (TCL)	ICP Metals - 6010A (Supertrace); Mercury - 7471 - (CV)	pH (Soil) - 9045						
Sample No.	Matrix *	Sample Date	Sample Time								
002 B105W5	SOIL	9.29.00	~~1309~~ 1309	X	X	X	X	X			B0YVP8

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
RFahlberg RFahlberg	9.29.00 1300	Stanford 1	9.29.00 1500
Remove Drum RJG 3728	10/4/00 0800	RJG 2B	9.29.00
RJG RThoren	10/4/00 0800	RJG RThoren	10/4/00 0800
RJG RThoren	10/4/00 0800	FEDEX	
FedEx	10/5/00 0415	Vicki Hunt	10-5-00 0415

RT 10/4/00

SPECIAL INSTRUCTIONS

Samples stored in Ref.# 2B at the 3728 Shipping Facility on 9/29/00.
Collector not available to relinquish samples on 10/4/00 for shipment.
RT 10/4/00

Matrix *: S - Soil; SE - Sediment; SO - Solid; S - 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

BHI-EE-011 (10/99)