H0515 TMA/RECR
0052614

RECRA ENVIRONMENTAL INC.

Chemical and Environmental Measurement Information

JAN 2000 RECEIVED Data Log In

Recra LabNet Philadelphia
Analytical Report
****REVISION****

Client : TNU-HANFORD B99-085
RFW# : 9909L006
SDG# : H0515
SAF# : B99-085

W.O. # : 10985-001-001-9999-00
Date Received: 09-03-99

RECEIVED FEB 28 2000 EDMC

INORGANIC CASE NARRATIVE

This report is revised to included matrix quality control analyses of Ammonia and Nitrate Nitrite.

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

2. The sample was prepared and analyzed in accordance with the methods indicated on the attached glossary.

3. Sample holding times as required by the method and/or contract were met with the exception of Nitrate, Nitrite, Phosphate and pH which were received past hold: Ammonia and Nitrate Nitrite matrix quality control analyses were performed past hold.

4. The cooler temperature was recorded on the chain-of-custody.

5. The method blanks were within method criteria.

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

7. The matrix spike recoveries were within the 75-125% control limits. The matrix spike duplicate for Sulfide was within the 20% RPD control limit.

8. The replicate analyses were within the 20% RPD control limit.

Pat C

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

1-17-00
Date

njp\i09-006

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.

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

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

Other: Ammonia **Method** EPA 350.3

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

L-WI-034/B-06/99

Recra LabNet Philadelphia
METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

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

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

ABBREVIATIONS

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

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

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

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

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

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

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

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

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

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

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/31/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9909L006

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B0W9P1	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
		Nitrate Nitrite	0.02 u	MG-N/L	0.02	1.0
		Ammonia, as N	0.10 u	MG/L	0.10	1.0
		pH	5.8	PH UNITS	0.01	1.0
		Sulfide	1.0 u	MG/L	1.0	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/31/99

CLIENT: TNU-HANFORD B99-085

RECRA LOT #: 9909L006

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LICA77-MB1	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	99LICB77-MB1	Phosphate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	99LN3046-MB1	Nitrate Nitrite	0.02 u	MG-N/L	0.02	1.0
BLANK10	99LN3059-MB1	Nitrate Nitrite	0.02 u	MG-N/L	0.02	1.0
BLANK10	99LAMA35-MB1	Ammonia, as N	0.10 u	MG/L	0.10	1.0
BLANK10	99LAMA50-MB1	Ammonia, as N	0.10 u	MG/L	0.10	1.0
BLANK10	99LSD044-MB1	Sulfide	1.0 u	MG/L	1.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/31/99

CLIENT: TNU-HANFORD B99-085 RECRA LOT #: 9909L006

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	B0W9P1	Chloride by IC	5.2	0.00	5.0	104.5	1.0
		Fluoride by IC	10.9	0.00	10.0	108.8	1.0
		Nitrite by IC	5.2	0.25u	5.0	104.4	1.0
		Nitrate by IC	5.2	0.25u	5.0	103.1	1.0
		Phosphate by IC	5.2	0.25u	5.0	104.1	1.0
		Sulfate by IC	5.1	0.25u	5.0	102.0	1.0
		Nitrate Nitrite	0.49	0.02u	0.50	98.6	1.0
		Ammonia, as N	0.96	0.10u	1.0	95.5	1.0
		Sulfide	10.0	0.80	10.0	92.0	1.0
		Sulfide MSD	10.1	0.80	10.0	92.4	1.0
BLANK10	99LICA77-MB1	Chloride by IC	4.8	0.25u	5.0	96.3	1.0
		Fluoride by IC	10.3	0.50u	10.0	102.8	1.0
		Nitrite by IC	5.0	0.25u	5.0	99.9	1.0
		Nitrate by IC	4.9	0.25u	5.0	97.8	1.0
		Sulfate by IC	4.9	0.25u	5.0	97.2	1.0
BLANK10	99LICB77-MB1	Phosphate by IC	4.9	0.25u	5.0	98.8	1.0
BLANK10	99LN3046-MB1	Nitrate Nitrite	0.51	0.02u	0.50	102.8	1.0
		Nitrate Nitrite MSD	0.51	0.02u	0.50	102.4	1.0
BLANK10	99LN3059-MB1	Nitrate Nitrite	0.47	0.02u	0.50	94.6	1.0
BLANK10	99LAMA35-MB1	Ammonia, as N	1.0	0.10u	1.0	103.0	1.0
		Ammonia, as N MSD	1.0	0.10u	1.0	101.0	1.0
BLANK10	99LAMA50-MB1	Ammonia, as N	4.0	0.10u	4.0	99.0	1.0
		Ammonia, as N MSD	4.0	0.10u	4.0	100.5	1.0
BLANK10	99LSD044-MB1	Sulfide	10.0	1.0 u	10.0	100	1.0
		Sulfide MSD	10.0	1.0 u	10.0	100	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 12/31/99

CLIENT: TNU-HANFORD B99-085 RECRA LOT #: 9909L006

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-002	B0W9P1	Sulfide	92.0	92.4	0.43
BLANK10	99LN3046-MB1	Nitrate Nitrite	102.8	102.4	0.39
BLANK10	99LAMA35-MB1	Ammonia, as N	103.0	101.0	2.0
BLANK10	99LAMA50-MB1	Ammonia, as N	99.0	100.5	1.5
BLANK10	99LSD044-MB1	Sulfide	100	100	0.00

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/31/99

CLIENT: TNU-HANFORD B99-085 RECRA LOT #: 9909L006

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	B0W9P1	Chloride by IC	0.25u	0.25u	NC	1.0
		Fluoride by IC	0.50u	0.50u	NC	1.0
		Nitrite by IC	0.25u	0.25u	NC	1.0
		Nitrate by IC	0.25u	0.25u	NC	1.0
		Phosphate by IC	0.25u	0.25u	NC	1.0
		Sulfate by IC	0.25u	0.25u	NC	1.0
		Nitrate Nitrite	0.02u	0.02u	NC	1.0
		Ammonia, as N	0.10u	0.10u	NC	1.0
		Sulfide	1.0 u	1.0 u	NC	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 09/03/99 RFW LOT # :9909L006

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0W9P1						
CHLORIDE BY IC	002	W	99LICA77	09/01/99	09/16/99	09/16/99
CHLORIDE BY IC	002 REP	W	99LICA77	09/01/99	09/16/99	09/16/99
CHLORIDE BY IC	002 MS	W	99LICA77	09/01/99	09/16/99	09/16/99
FLUORIDE BY IC	002	W	99LICA77	09/01/99	09/16/99	09/16/99
FLUORIDE BY IC	002 REP	W	99LICA77	09/01/99	09/16/99	09/16/99
FLUORIDE BY IC	002 MS	W	99LICA77	09/01/99	09/16/99	09/16/99
NITRITE BY IC	002	W	99LICA77	09/01/99	09/16/99	09/16/99
NITRITE BY IC	002 REP	W	99LICA77	09/01/99	09/16/99	09/16/99
NITRITE BY IC	002 MS	W	99LICA77	09/01/99	09/16/99	09/16/99
NITRATE BY IC	002	W	99LICA77	09/01/99	09/16/99	09/16/99
NITRATE BY IC	002 REP	W	99LICA77	09/01/99	09/16/99	09/16/99
NITRATE BY IC	002 MS	W	99LICA77	09/01/99	09/16/99	09/16/99
PHOSPHATE BY IC	002	W	99LICB77	09/01/99	09/16/99	09/16/99
PHOSPHATE BY IC	002 REP	W	99LICB77	09/01/99	09/16/99	09/16/99
PHOSPHATE BY IC	002 MS	W	99LICB77	09/01/99	09/16/99	09/16/99
SULFATE BY IC	002	W	99LICA77	09/01/99	09/16/99	09/16/99
SULFATE BY IC	002 REP	W	99LICA77	09/01/99	09/16/99	09/16/99
SULFATE BY IC	002 MS	W	99LICA77	09/01/99	09/16/99	09/16/99
NITRATE NITRITE	002	W	99LN3046	09/01/99	09/22/99	09/22/99
NITRATE NITRITE	002 REP	W	99LN3059	09/01/99	12/08/99	12/08/99
NITRATE NITRITE	002 MS	W	99LN3059	09/01/99	12/08/99	12/08/99
AMMONIA	002	W	99LAMA35	09/01/99	09/15/99	09/15/99
AMMONIA	002 REP	W	99LAMA50	09/01/99	12/28/99	12/29/99
AMMONIA	002 MS	W	99LAMA50	09/01/99	12/28/99	12/29/99
PH	002	W	99LPH102	09/01/99	09/23/99	09/23/99
SULFIDE	002	W	99LSD044	09/01/99	09/07/99	09/07/99
SULFIDE	002 REP	W	99LSD044	09/01/99	09/07/99	09/07/99
SULFIDE	002 MS	W	99LSD044	09/01/99	09/07/99	09/07/99
SULFIDE	002 MSD	W	99LSD044	09/01/99	09/07/99	09/07/99

LAB QC:

CHLORIDE BY IC	MB1	W	99LICA77	N/A	09/16/99	09/16/99
CHLORIDE BY IC	MB1 BS	W	99LICA77	N/A	09/16/99	09/16/99
FLUORIDE BY IC	MB1	W	99LICA77	N/A	09/16/99	09/16/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-085

DATE RECEIVED: 09/03/99 RFW LOT # :9909L006

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
FLUORIDE BY IC	MB1 BS	W	99LICA77	N/A	09/16/99	09/16/99
NITRITE BY IC	MB1	W	99LICA77	N/A	09/16/99	09/16/99
NITRITE BY IC	MB1 BS	W	99LICA77	N/A	09/16/99	09/16/99
NITRATE BY IC	MB1	W	99LICA77	N/A	09/16/99	09/16/99
NITRATE BY IC	MB1 BS	W	99LICA77	N/A	09/16/99	09/16/99
PHOSPHATE BY IC	MB1	W	99LICB77	N/A	09/16/99	09/16/99
PHOSPHATE BY IC	MB1 BS	W	99LICB77	N/A	09/16/99	09/16/99
SULFATE BY IC	MB1	W	99LICA77	N/A	09/16/99	09/16/99
SULFATE BY IC	MB1 BS	W	99LICA77	N/A	09/16/99	09/16/99
NITRATE NITRITE	MB1	W	99LN3046	N/A	09/22/99	09/22/99
NITRATE NITRITE	MB1 BS	W	99LN3046	N/A	09/22/99	09/22/99
NITRATE NITRITE	MB1 BSD	W	99LN3046	N/A	09/22/99	09/22/99
NITRATE NITRITE	MB1	W	99LN3059	N/A	12/08/99	12/08/99
NITRATE NITRITE	MB1 BS	W	99LN3059	N/A	12/08/99	12/08/99
AMMONIA	MB1	W	99LAMA35	N/A	09/15/99	09/15/99
AMMONIA	MB1 BS	W	99LAMA35	N/A	09/15/99	09/15/99
AMMONIA	MB1 BSD	W	99LAMA35	N/A	09/15/99	09/15/99
AMMONIA	MB1	W	99LAMA50	N/A	12/28/99	12/29/99
AMMONIA	MB1 BS	W	99LAMA50	N/A	12/28/99	12/29/99
AMMONIA	MB1 BSD	W	99LAMA50	N/A	12/28/99	12/29/99
SULFIDE	MB1	W	99LSD044	N/A	09/07/99	09/07/99
SULFIDE	MB1 BS	W	99LSD044	N/A	09/07/99	09/07/99
SULFIDE	MB1 BSD	W	99LSD044	N/A	09/07/99	09/07/99

RECRA LabNet Use Only

9909L006

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

all FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals dig.

Client TNU- HANFORD B99-085

Est. Final Proj. Sampling Date

Project # 10985-001-001-9999-00

Project Contact/Phone #

RECRA Project Manager OJ

QC Spec Del STD TAT 30DAY

Date Rec'd 9-3-99 Date Due 10-3-99

Account #

Refrigerator #		1	6						6		6	6	6					
#/Type Container	Liquid	3A6	2A6						1PL		1PL	1P	1P					
	Solid																	
Volume	Liquid	40	950						500		500	1L	1L					
	Solid																	
Preservatives		HCL	—						HNO3		NaOH	—	H2SO4					
ANALYSES REQUESTED		ORGANIC							INORG									
		VOA	BNA	Pest/PCB	Herb				Metal	CN								
RECRA LabNet Use Only		0624H 0625C	0625H						MET①		1SFD	Inorg①	1N3N2 1NH3N					

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

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624H 0625C	0625H													
001	BOW9P0			W	9-1-99	0500	3														
002	1 1			1	1	0630	3	2								1		1	1	1	

Special Instructions:

Saf # B99-085

COMPOSITE WASTE

DATE/REVISIONS:

1. PH, ICNO2, ICNO3, ICPO4 taken to lab
2. OGSC = 1-Propanol, Ethanol
3. Met① = AS, BA, CD, CR, CU, PB, NI, SE, ~~Tl~~, V, ZN Agree 1.3.99
4. INOR① = IPH, ICCL, ICFL, ICNO2, ICNO3, ICPO4,
5. ICSO4
6. 9/9/99 added Be to 002 per PM

Relinquished by	Received by	Date	Time
FedEx	TMurray	9-3-99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or
H
4235 7952 9057
A.
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

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

Cooler Temp 2.8 C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-085-03	Page 1 of 1

Collector: Doug Bowers/Brent Porter	Company Contact: Chris Cearlock — Telephone No.: 372-9574	Project Coordinator: TRENT, SJ	Price Code: 7N — Data Turnaround: 45 Days
Project Designation: 200 Area Source characterization - 200-CW-1 OU - QC Sa	Sampling Location: 200 East 200 CW1 GP-12 9-1-99	SAF No.: B99-085	
Ice Chest No.: ERC96-035	Field Logbook No.: EL-1511	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA 9-1-99	Offsite Property No.: A990243	Bill of Lading/Air Bill No.: 4235705290 57	
		COA: B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	ZnAc+NaOH to pH >9 Cool	Cool 4C	H2SO4 to pH <2 Cool 4C	Cool 4C	HNO3 to pH <2	HCl to pH <2 Cool 4C	HNO3 to pH <2			
	Type of Container	P	P	P	aG	G/P	aGs*	P			
Special Handling and/or Storage	No. of Container(s)	1	1	1	2	2	3	3			
	Volume	500mL	1000mL	1000mL	1000mL	1000mL	40mL	500mL			
SAMPLE ANALYSIS		Sulfides - 9030	See item (1) in Special Instructions	NO2/NO3 - 353.1; Ammonia - 350.3	Semi-VOA - 8270A (TCL)	Gross Alpha; Gross Beta	VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol)	See item (2) in Special Instructions			

Sample No.	Matrix *	Sample Date	Sample Time										
B0W9P0	Water	9-1-99	0500						X				
B0W9P1	Water	9-1-99	0630	X	X	X	X		X	X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 9-1-99/1200	Received By: Bob IA	Date/Time: 9-1-99/1200
Relinquished By: Bob IA	Date/Time: 9/2/99 1230	Received By: Kenet Nelson/K. Nelson	Date/Time: 9/2/99 1230
Relinquished By: Kenet Nelson/K. Nelson	Date/Time: 9/2/99 1330	Received By: FedEx	Date/Time:
Relinquished By: FedEx	Date/Time: 9-3-99 0930	Received By: TMurray	Date/Time: 9-3-99 0930

SPECIAL INSTRUCTIONS

See Chain of Custody comments on SAF for special instructions.

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040

(2) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Copper, Nickel, Vanadium, Zinc)

Collector unavailable to relinquish samples.

From non Rad area

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

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