H0101-T/W

0048842

Thermo NUtech
W.O. No. N7-09-029-7453, SDG H0101

Bechtel Hanford Inc.
P.O. TSH-SBV-207925

Case Narrative

1.0 GENERAL

Thermo NUtech Sample Delivery Group H0101 is comprised of the single water sample designated as SAF C97-017 delivered under Project Designation 100-NR-2 RI Groundwater Sampling FY1997.

The sample was received as stated on the Chain-of-Custody document.

2.0 ANALYSIS NOTES

2.1 Gross Alpha Analyses
No problems were encountered with the analyses.

2.2 Gross Beta Analyses
The method blank contained gross beta activity greater than the RDL. The contamination of the blank is due to the relatively high gross beta concentration of the sample.

2.3 Total Strontium Analyses
The aliquot and count time for the sample were reduced due to the relatively high strontium activity of the sample. The MDA's are less than the RDL despite the reduced aliquots/count time.

OCT 1997
RECEIVED
Data
Log In

APR 1998
RECEIVED
EDMC

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0101

SAMPLE SUMMARY

SDG 7453
Contact N. Joseph Verville

Client Westinghouse Hanford
Contract TSH-SVV-207925
Case no SDG H0101

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0LY41	100-N	LIQUID		N709029-01	C97-017	C97-017-26	09/10/97 10:34
Method Blank		LIQUID		N709029-03	C97-017		
Lab Control Sample		LIQUID		N709029-02	C97-017		
Duplicate (N709029-01)	100-N	LIQUID		N709029-04	C97-017		09/10/97 10:34

Lab id TMANC
Protocol WHC-HASM-1
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 10/24/97

N709029-01

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0101

DATA SHEET

B0LY41

SDG 7453
Contact N. Joseph Verville

Client/Case no Westinghouse Hanford SDG H0101
Case no TSH-SVV-207925

Lab sample id N709029-01
Dept sample id 7453-001
Received 09/12/97

Client sample id B0LY41
Location/Matrix 100-N LIQUID
Collected 09/10/97 10:34
Custody/SAF No C97-017-26 C97-017

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-340	11	1.5	3.0	U	80A
Gross Beta	12587-47-2	34000	72	2.1	4.0	B	80B
Total Strontium	10098-97-2	20000	110	1.9	2.0		SR

Lab id TMANC
Protocol WHC-HASM-1
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 10/24/97

ific Northwest National Laborat

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C97-017-26

Collector AG RIZZO (RFS)	**Company Contact** J.H. KESSNER	**Telephone No.** (509)372-9538	**Project Coordinator** Ford, BH
Data Turnaround 45 Days			
Project Designation 100-NR-2 RI Groundwater Sampling FY1997	**Sampling Location** 100-N		**SAF No.** C97-017
Ice Chest No. SML-256	**Field Logbook No.** WM-SML-142		**Method of Shipment** RFS 9-10-97 Gov. Veh.
Shipped To TMA NORCAL	**Offsite Property No.** ~~AA~~ RFS 9-10-97		**Bill of Lading/Air Bill No.** ~~AA~~ RFS 9-10-97

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SAMPLE ANALYSIS SDG H0101

Preservation	None	Cool 4C	HNO3 to pH <2 Cool 4C	HNO3 to pH <2	HNO3 to pH <2	HNO3 to pH <2				
Type of Container	G/P	G/P	G/P	G/P	G/P	G/P				
No. of Container(s)	1	1	1	2	2	2				
Volume	20ml	500ml	500ml	1000ml	1000ml	1000ml				
	Activity Scan	IC Anions - 300.0	ICP Metals - 6010A (TAL) (F)	Gross Alpha	Gross Beta	Strontium-89,90 -- Total Sr				
Sample No.	Matrix *	Sample Date	Sample Time							
B0LY41	Water	9-10-97	1034	✓	✓		✓	✓	✓	
B0LY42 (F)	Water	9-10-97	1034			✓				

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By AG RIZZO (RFS)	Date/Time 9-11-97 1145	Received By R.B. Stoffler	Date/Time 9-11-97 1145
Relinquished By R.B. Stoffler	Date/Time	Received By	Date/Time 9/12/97 10:25
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
TOTAL ACTIVITY EXEMPT

FAX copies of log-in to DL Stewart (372-1704) and JM Duncan (372-9052)

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

OVERNIGHT AIR

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
WASTE MANAGEMENT		[illegible]

PART I - TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Hanford Technical Services	Environmental Operations	Sampling & Mobile Labs

The following items are to be shipped from ☒ Contractor ☐ Vendor

[illegible] Routing [illegible] ☒ Prepaid ☐ Collect

Shipped to	Off-site Custodian
Company: TMA/NORCAL Address: 2030 Wright Ave City: Richmond State: CA Zip Code: 94804 Country:	ATT: Delores Sanchez On-site Custodian: Payroll No.

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1	1 cooler	C of C# [illegible] Sample# [illegible] Samples double baged and packed on wet ice Cooler#: [illegible] Weight: 62	

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

- ☐ Required for Project Work. List Project No. _____
- ☐ Business Trip
- ☐ Off-site Assignment
- ☐ Shipment to Subcontractor. List Subcontract No. _____
- ☒ Other (Please specify) Sample requires analysis that are not available on this site

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
N/A	N/A	

Location of and Contact for Property (Name/Phone No./Bldg./Area)
D. [illegible] Edwards / 372-2429 /345 Hills St

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
	/Org Code	

Originated By	Date	Authorized By	Date

Property Representative Signature	Date	Property Management Approval	Date

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date
030	[illegible]

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

BC-6001-579 (01/95)

US DOE %
FLUOR DANIEL HANFORD CO. INC.
2355 STEVENS DRIVE/1163 BLDG.
RICHLAND WA 99352
(509)376-5098

SHIP DATE: 11SEP97
ACC# 188288189

ACTUAL WGT: 62 LBS MAN-WT
DIM WEIGHT CHECKED

TO: ATTN: DELORES SANCHEZ
TMA NORCAL
2030 WRIGHT AVE.

RICHMOND CA 94804-9949

4235 7950 3951

FedEx.

Form 0201

PART # 147923 FORMAT # 077 RIT 01/97

REF: MDTC2 03E00 W97-0-0246

PRIORITY OVERNIGHT FRI

CAD# 0053292 11SEP97
TRK# 4235 7950 3951 Form 0201 Deliver by:
12SEP97

OAK

94804-CA-US WA JEM

031

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

Recra LabNet Philadelphia
Analytical Report

Client : TNU–HANFORD
RFW# : 9709L345
SDG# : H0101

W.O. # : 10985–001–001–9999–00
Date Received: 09–13–97

INORGANIC CASE NARRATIVE

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

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

3. Sample holding times as required by the method and/or contract were met with the exception of Nitrate and Nitrite.

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 with the exception of Chloride which was above the LCL, but was within the 80–120% acceptance criteria.

OCT 1997
RECEIVED
Data
Log In

Bruce C Taylor unit leader
for J. Michael Taylor
Vice President and Laboratory Manager
Lionville Analytical Laboratory

9-26-97
Date

njp&pef\i09–345

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.

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

WET CHEMISTRY METHODS GLOSSARY FOR ANALYSIS OF WATER SAMPLES

	EPA 600	SW846	OTHER
Acidity	__305.1		
__Alkalinity __Bicarbonate __Carbonate	__310.1		
BOD	__405.1		__5210B (b)
Ion Chromatography:			
__Bromide ✓Chloride ✓Fluoride	✓300.0	__9056	
✓Nitrite ✓Nitrate __Phosphate	✓300.0	__9056	
✓Sulfate __Formate __Acetate __Oxalate	✓300.0	__9056	
Chloride	__325.2	__9251	
Chlorine Residual	__330.5 (mod)		
Cyanide Amenable to Chlorination	__335.2	__9010A	
Cyanide (Total)	__335.2	__9010A __9012	__ILM04.0 (e)
Cyanide, Weak Acid Dissociable			__412 (a) __4500CN-I (b)
COD	__410.4 (mod)		__5220 C (b)
Color	__110.2		
Corrosivity (by Coupon)		__1110 (mod)	
Chromium VI		__7196A	__3500Cr-D (b)
Fluoride	__340.2		
Hardness, Calcium	__215.2		
Hardness, Total	__130.2		
Iodide			__ASTM D19P202 (1)
Surfactant	__425.1		
__Nitrate-Nitrite __Nitrate __Nitrite	__353.2		
Ammonia	__350.3		
Total __Kjeldahl Nitrogen __Organic Nitrogen	__351.4		
Total __Organic __Inorganic Carbon	__415.1	__9060	
Oil and Grease	__413.1	__9070	
__pH __pH, Paper	__150.1	__9040A __9041A	
Petroleum Hydrocarbons, Total Recoverable	__418.1		
Phenol	__420.1 __420.2	__9065 __9066	
__Ortho Phosphate __Total Phosphate	__365.2		__4500-P B __C
Salinity			__210A (a) __2520B (b)
Settleable Solids	__160.5		
Sulfide	__376.2 __376.1	__9030A	
Reactive __Cyanide __Sulfide		__Sec 7.3	
Silica	__370.1		
Sulfite	__377.1		
Sulfate	__375.4	__9038	
Specific Conductance	__120.1	__9050	
Specific Gravity			__213E (a)
__TCLP __TCLV		__1311	
Synthetic Precipitation Leach		__1312	
Total __Dissolved __Suspended __Solids	160__.1__.2__.3		
Total Organic Halides	__450.1	__9020B	
Turbidity	__180.1		
Volatile Solids __Total __Dissolved __Suspended	__160.4		

Other:_____ Method:_____

RFW 21-21-034/A-08/95

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., (1989).

b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)

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 09/22/97

CLIENT: TNU-HANFORD

RECRA LOT #: 9709L345

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	BOLY41	Chloride by IC	5.5	MG/L	0.25	1.0
		Fluoride by IC	0.25 u	MG/L	0.25	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	83	MG/L	2.5	10
		Sulfate by IC	43.9	MG/L	2.5	10.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 09/22/97

CLIENT: TNU-HANFORD

RECRA LOT #: 9709L345

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	97LICC78-MB1	Chloride by IC	0.25 u	MG/L	0.25	1.0
BLANK10	97LICF78-MB1	Fluoride by IC	0.25 u	MG/L	0.25	1.0
BLANK10	97L2C078-MB1	Nitrite by IC	0.25 u	MG/L	0.25	1.0
BLANK10	97L3C078-MB1	Nitrate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	97LSC078-MB1	Sulfate by IC	0.25 u	MG/L	0.25	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 09/22/97

CLIENT: TNU-HANFORD

RECRA LOT #: 9709L345

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
BLANK10	97LICC78-MB1	Chloride by IC	5.1	0.25u	5.0	102.8	1.0
BLANK10	97LICF78-MB1	Fluoride by IC	10.1	0.25u	10.0	100.9	1.0
BLANK10	97L2C078-MB1	Nitrite by IC	5.2	0.25u	5.0	104.4	1.0
BLANK10	97L3C078-MB1	Nitrate by IC	4.6	0.25u	5.0	92.5	1.0
BLANK10	97LSC078-MB1	Sulfate by IC	4.8	0.25u	5.0	96.8	1.0

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

DATE RECEIVED: 09/13/97 RFW LOT # :9709L345

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOLY41						
CHLORIDE BY IC	001	W	97LICC78	09/10/97	09/16/97	09/16/97
FLUORIDE BY IC	001	W	97LICF78	09/10/97	09/16/97	09/16/97
NITRITE BY IC	001	W	97L2C078	09/10/97	09/16/97	09/16/97
NITRATE BY IC	001	W	97L3C078	09/10/97	09/16/97	09/16/97
SULFATE BY IC	001	W	97LSC078	09/10/97	09/16/97	09/16/97
LAB QC:						
CHLORIDE BY IC	MB1	W	97LICC78	N/A	09/16/97	09/16/97
CHLORIDE BY IC	MB1 BS	W	97LICC78	N/A	09/16/97	09/16/97
FLUORIDE BY IC	MB1	W	97LICF78	N/A	09/16/97	09/16/97
FLUORIDE BY IC	MB1 BS	W	97LICF78	N/A	09/16/97	09/16/97
NITRITE BY IC	MB1	W	97L2C078	N/A	09/16/97	09/16/97
NITRITE BY IC	MB1 BS	W	97L2C078	N/A	09/16/97	09/16/97
NITRATE BY IC	MB1	W	97L3C078	N/A	09/16/97	09/16/97
NITRATE BY IC	MB1 BS	W	97L3C078	N/A	09/16/97	09/16/97
SULFATE BY IC	MB1	W	97LSC078	N/A	09/16/97	09/16/97
SULFATE BY IC	MB1 BS	W	97LSC078	N/A	09/16/97	09/16/97

RECRA LabNet Use Only
9709L345

Custody Transfer Record/Lab Work Request

RECRA LabNet

Client: TNU-HANFORD
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: K.B. 9/13/97
QC: STD Del: STD TAT: 30 DAYS
Date Rec'd: 9-13-97 Date Due: 10-~~27~~-97
Account #: TNUHANFORD

Refrigerator #															2		2					
#/Type Container	Liquid														1P		1P					
	Solid																					
Volume	Liquid														500		500					
	Solid																					
Preservatives															HNO3		HNO3					
ANALYSES REQUESTED →		ORGANIC													INORG							
		VOA	BNA	Pest/PCB	Herb										Metal	CN	ICP					

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																
															MHSL-TOL		1COL 1CPL	1CNO3 1CNO2	1CSO4			
001	BOLY41			W	9-10-97	1034									X		✓	✓	✓			
12	BOLY42			↓	↓	↓									✓		X					

9/13/97

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
RSA-CLIENT INFO
RMSC-Comp

AIRBILL# 4171 415393

Cooler temp 3.3°C

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
FED-X	[signature]	9-13-97	1000				

ORIGINAL REWRITTEN

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

RECRA LabNet Use Only

Samples were:
1) Shipped X or Hand Delivered ___
Airbill # SEE ACROSS
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

4/13/97

Thermo NUtech

A Subsidiary of Thermo Remediation, a Thermo Electron Company

TMA/Richmond 2030 Wright Avenue P. O. Box 4040 Richmond, CA 94804-0040 (510) 235-2633 Fax No. (510) 235-0438

Chain of Custody

CLIENT: THERMO NUtech

ADDRESS:

PROJECT: WES_HANFORD / SDG H0101

SAMPLERS SIGNATURE:

DATE: 9/12/97 PAGE ___ OF ___

N7-09-027

SAMPLE NO	DATE	TIME	LOCATION	IC ANIONS - 300.0	ICP METALS 6010A (TAL) (F)	SAMPLE TYPE OR MATRIX	# CONTAINERS	OBSERVATIONS, COMMENTS, VOLUMES, SPECIAL OR ADDITIONAL TEST
BOLY41	9-10-97	10:34		✓		WATER	1	500ML
BOLY42	9-10-97	10:34			✓	WATER	1	500ML

1) RELINQUISHED BY / DATE:	2) RECEIVED BY / DATE:	3) RELINQUISHED BY / DATE:	4) RECEIVED BY / DATE:
9/12/97	9-13-97		
COMPANY: Thermo Nutech	COMPANY: RECRA	COMPANY:	COMPANY:
5) RELINQUISHED BY / DATE:	6) RECEIVED BY / DATE:	7) RELINQUISHED BY / DATE:	8) RECEIVED BY / DATE:
COMPANY:	COMPANY:	COMPANY:	COMPANY:

TOTAL NO. OF CONTAINERS: 2

METHOD OF SHIPMENT: FED-EXPRESS

SPECIAL SHIPMENT-HANDLING OR STORAGE REQUIREMENTS

ific Northwest National Laborat

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C97-017-26

Collector: AG RIZZO (RFS)	Company Contact: J.H. KESSNER	Telephone No.: (509)372-9538	Project Coordinator: Ford, BH
Project Designation: 100-NR-2 RI Groundwater Sampling FY1997	Sampling Location: 100-N		SAF No.: C97-017
Ice Chest No.: SML-256	Field Logbook No.: WM-SML-142		Method of Shipment: RFS 9-10-97 ~~Gov. Vehicle~~
Shipped To: TMA NORCAL	Offsite Property No.: ~~N/A~~ RFS 9-10-97		Bill of Lading/Air Bill No.: ~~N/A~~ RFS 9-10-97

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	HNO3 to pH <2 Cool 4C	HNO3 to pH <2	HNO3 to pH <2	HNO3 to pH <2				
Type of Container	G P	G/P	G/P	G/P	G/P	G/P				
No. of Container(s)	1	1	1	2	2	2				
Volume	20ml	500ml	500ml	1000ml	1000ml	1000ml				
SAMPLE ANALYSIS SDG H0101	Activity Scan	IC Anions - 300.0	ICP Metals - 6010A (TAL) (F)	Gross Alpha	Gross Beta	Strontium-89,90 -- Total Sr				

Sample No.	Matrix *	Sample Date	Sample Time										
B0LY41	Water	9-10-97	1034	✓	✓		✓	✓	✓				
B0LY42 (F)	Water	9-10-97	1034			✓							

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
AG RIZZO (RFS)	9-11-97 1145	R.J. Steffler	9-11-97 1145
R.J. Steffler		[signature]	9/12/97 10:25

SPECIAL INSTRUCTIONS
TOTAL ACTIVITY EXEMPT

FAX copies of log-in to DL Stewart (372-1704) and JM Duncan (372-9052)

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

OCT 1997
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD
RFW# : 9709L345
SDG# : H0101

W.O.# : 10985-001-001-9999-00
Date Received: 09-13-97

METALS CASE NARRATIVE

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

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

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

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

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within 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. Matrix spike (MS) recoveries and duplicate analyses are associated with TNU-HANFORD Recra batch# 9709L421.

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

for Bruce C Mettler unit leader
J. Michael Taylor
Vice President and Laboratory Manager
Lionville Analytical Laboratory

10.27.97
Date

skl\m09-345

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.

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

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

SDG#: H0101
Laboratory Batch: 9709L345

W.O.#: 10985-001-001-9999-00
Collection Date: 09-10-97

SAMPLE ID	LABORATORY ID
BOLY42	9709L345-002

skl/m09-345.cp

METALS METHODS GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this RFW Lot#: 9709L345

Leaching Procedure: __1310 __1311 __1312 __Other:_____

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

Metals Digestion Methods: X3005A __3010A __3015 __3020A __3050A __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	X 6010A		__200.7				__99
Antimony	X 6010A	__7041 [5]	__200.7	__204.2			__99
Arsenic	X 6010A	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	X 6010A		__200.7				__99
Beryllium	X 6010A		__200.7				__99
Bismuth	__6010A [1]		__200.7 [1]			__1620	__99
Boron	__6010A [1]		__200.7				__99
Cadmium	X 6010A	__7131A [5]	__200.7	__213.2			__99
Calcium	X 6010A		__200.7				__99
Chromium	X 6010A	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	X 6010A		__200.7				__99
Copper	X 6010A	__7211 [5]	__200.7	__220.2			__99
Iron	X 6010A		__200.7				__99
Lead	X 6010A	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010A	__7430 [4]	__200.7			__1620	__99
Magnesium	X 6010A		__200.7				__99
Manganese	X 6010A		__200.7				__99
Mercury	X 7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010A		__200.7				__99
Nickel	X 6010A		__200.7				__99
Potassium	X 6010A	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010A [1]		__200.7 [1]			__1620	__99
Selenium	X 6010A	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010A [1]		__200.7			__1620	__99
Silica	__6010A [1]		__200.7			__1620	__99
Silver	X 6010A	__7761 [5]	__200.7	__272.2			__99
Sodium	X 6010A	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010A		__200.7				__99
Thallium	X 6010A	__7841 [5]	__200.7	__279.2__200.9			__99
Tin	__6010A [1]		__200.7				__99
Titanium	__6010A [1]		__200.7				__99
Uranium	__6010A [1]		__200.7 [1]			__1620	__99
Vanadium	X 6010A		__200.7				__99
Zinc	X 6010A		__200.7				__99
Zirconium	__6010A [1]		__200.7 [1]			__1620	__99

Other:_____ **Method:**_____

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 10/13/97

CLIENT: TNU-HANFORD

RECRA LOT #: 9709L345

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	BOLY42	Silver, Soluble	8.8	u	UG/L	8.8	1.0
		Aluminum, Soluble	24.9	u	UG/L	24.9	1.0
		Arsenic, Soluble	49.5	u	UG/L	49.5	1.0
		Barium, Soluble	31.0		UG/L	3.5	1.0
		Beryllium, Soluble	1.1	u	UG/L	1.1	1.0
		Calcium, Soluble	70800		UG/L	25.2	1.0
		Cadmium, Soluble	2.5	u	UG/L	2.5	1.0
		Cobalt, Soluble	4.8	u	UG/L	4.8	1.0
		Chromium, Soluble	4.3		UG/L	3.7	1.0
		Copper, Soluble	2.0	u	UG/L	2.0	1.0
		Iron, Soluble	24.7		UG/L	5.5	1.0
		Mercury, Soluble	0.10	u	UG/L	0.10	1.0
		Potassium, Soluble	6640		UG/L	567	1.0
		Magnesium, Soluble	14600		UG/L	22.3	1.0
		Manganese, Soluble	1.1		UG/L	0.90	1.0
		Sodium, Soluble	125000		UG/L	36.7	1.0
		Nickel, Soluble	11.3	u	UG/L	11.3	1.0
		Lead, Soluble	17.2	u	UG/L	17.2	1.0
		Antimony, Soluble	35.8	u	UG/L	35.8	1.0
		Selenium, Soluble	42.4	u	UG/L	42.4	1.0
		Thallium, Soluble	24.6	u	UG/L	24.6	1.0
		Vanadium, Soluble	14.2		UG/L	3.6	1.0
		Zinc, Soluble	9.6		UG/L	3.4	1.0

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

DATE RECEIVED: 09/13/97 RFW LOT # :9709L345

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOLY42						
SILVER, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/10/97
ALUMINUM, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/09/97
ARSENIC, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/09/97
BARIUM, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/09/97
BERYLLIUM, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/09/97
CALCIUM, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/09/97
CADMIUM, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/10/97
COBALT, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/09/97
CHROMIUM, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/10/97
COPPER, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/09/97
IRON, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/09/97
MERCURY, SOLUBLE	002	W	97C0719	09/10/97	09/22/97	09/23/97
POTASSIUM, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/09/97
MAGNESIUM, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/09/97
MANGANESE, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/10/97
SODIUM, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/09/97
NICKEL, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/09/97
LEAD, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/09/97
ANTIMONY, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/09/97
SELENIUM, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/10/97
THALLIUM, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/10/97
VANADIUM, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/09/97
ZINC, SOLUBLE	002	W	97L1929	09/10/97	09/24/97	10/10/97

LAB QC:

SILVER LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/10/97
SILVER, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/10/97
ALUMINUM LABORTORY	LC1 BS	W	97L1929	N/A	09/24/97	10/09/97
ALUMINUM, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/09/97
ARSENIC LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/09/97
ARSENIC, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/09/97
BARIUM LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/09/97
BARIUM, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/09/97
BERYLLIUM LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/09/97

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

DATE RECEIVED: 09/13/97 RFW LOT # :9709L345

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BERYLLIUM, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/09/97
CALCIUM LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/09/97
CALCIUM, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/09/97
CADMIUM LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/10/97
CADMIUM, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/10/97
COBALT LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/09/97
COBALT, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/09/97
CHROMIUM LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/10/97
CHROMIUM, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/10/97
COPPER LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/09/97
COPPER, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/09/97
IRON LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/09/97
IRON, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/09/97
MERCURY LABORATORY	LC1 BS	W	97C0719	N/A	09/22/97	09/23/97
MERCURY, TOTAL	MB1	W	97C0719	N/A	09/22/97	09/23/97
POTASSIUM LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/09/97
POTASSIUM, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/09/97
MAGNESIUM LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/09/97
MAGNESIUM, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/09/97
MANGANESE LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/10/97
MANGANESE, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/10/97
SODIUM LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/09/97
SODIUM, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/09/97
NICKEL LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/09/97
NICKEL, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/09/97
LEAD LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/09/97
LEAD, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/09/97
ANTIMONY LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/09/97
ANTIMONY, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/09/97
SELENIUM LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/10/97
SELENIUM, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/10/97
THALLIUM LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/10/97
THALLIUM, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/10/97
VANADIUM LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/09/97
VANADIUM, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/09/97
ZINC LABORATORY	LC1 BS	W	97L1929	N/A	09/24/97	10/10/97
ZINC, TOTAL	MB1	W	97L1929	N/A	09/24/97	10/10/97

RECRA LabNet Use Only: 9709L345

Custody Transfer Record/Lab Work Request

RECRA LabNet

Client: TNU-HANFORD
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: K.B. [illegible] 9/18/97
QC: STD Del: STD TAT: 30 DAYS
Date Rec'd: 9-12-97 Date Due: 10-27-97
Account #: TNUHANFORD

Refrigerator #											2		2					
#/Type Container	Liquid										1P		1P					
	Solid																	
Volume	Liquid										500		500					
	Solid																	
Preservatives											HNO3		HNO3					
ANALYSES REQUESTED →		ORGANIC									INORG							
		VOA	BNA	Pest/PCB	Herb						Metal	CN	ICP					
		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															
001	BOLY41			W	9-10-97	1034										✗		✓	✓	✓	
12	BOLY42			↓	↓	↓										✓		✗			

[illegible] 9/15/97

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
RSA-CLIENT INFO
RNSC-Comp

AIRBILL#
4171 415393 3.3°C

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
FED-X	[signature]	9-13-97	1000				

ORIGINAL REWRITTEN

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

RECRA LabNet Use Only

Samples were:
1) Shipped X or Hand Delivered ___
Airbill # SEE ACROSS
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

[illegible] 9/13/97

010