



**RECRA  
LabNet**

a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

0048955

140091-T/W



**Recra LabNet Philadelphia  
Analytical Report**

**Client : TNU-HANFORD  
RFW# : 9708L694**

**W.O. #: 10985-001-001-9999-00  
Date Received: 08-01-97**

**PESTICIDE/PCB**

1. One (1) soil sample was collected on 07-29-97.
2. The sample and its associated QC samples were extracted on 08-04-97 and analyzed based on SW846, 3rd Edition, procedures on 08-26-97. The extraction procedure used was based on Method 3540 and the extracts were analyzed based on Method 8081.
3. The cooler temperature upon receipt has been recorded on the chain-of-custody.
4. All required holding times for extraction and analysis were met.
5. The sample and its associated QC samples received a GPC cleanup.
6. The method blank was below the reporting limits for all target compounds.
7. Two (2) out of four (4) surrogate recoveries were outside the QC limits; however, the surrogate acceptance criteria was met (i.e., no more than one outlier).
8. All blank spike recoveries were within acceptance criteria.
9. Matrix spike recoveries were unobtainable due to the dilution required for the analysis of target compounds.
10. Sample BOKOF9.MS,MSD required a 5-fold dilution due to high concentrations of target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.
11. All initial calibrations associated with this data set were within acceptance criteria.
12. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

Retention time criteria were exceeded for AR 1016 and AR 1260 after sample analyses. Larger retention time windows were used to evaluate the associated data. Aroclor identification is based on pattern recognition; therefore, the data was not impacted.

*J. Michael Taylor*  
J. Michael Taylor  
Vice President and Laboratory Manager  
Lionville Analytical Laboratory

8-29-97  
Date

jab08-694 pp

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

## GLOSSARY OF PESTICIDE/PCB DATA

### DATA QUALIFIERS

- U** = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J** = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I** = Interference.

### ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP** = Indicates Spiked Compound.

## GLOSSARY OF PESTICIDE/PCB DATA

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



Recra LabNet - Lionville Laboratory  
PEST/PCB ANALYTICAL DATA PACKAGE FOR  
TNU-HANFORD

DATE RECEIVED: 08/01/97

RFW LOT # :9708L694

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOKOF9	001	S	97LE1423	07/29/97	08/04/97	08/26/97
BOKOF9	001 MS	S	97LE1423	07/29/97	08/04/97	08/26/97
BOKOF9	001 MSD	S	97LE1423	07/29/97	08/04/97	08/26/97

LAB QC:

PBLKTI	MB1	S	97LE1423	N/A	08/04/97	08/26/97
PBLKTI	MB1 BS	S	97LE1423	N/A	08/04/97	08/26/97

*2*  
08-28-97



(E94)

<b>Bechtel Hanford Inc.</b>	<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>	B97-091-18	Page 1 of 1
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Collector <i>Doug Bryant</i>	Company Contact Duane Jacques	Telephone No. 372-9400	Project Coordinator Koerner, CC	Data Turnaround 15 Days
Project Designation 107-D-1 Trench - Confirmation	Sampling Location 100-DR-1	SAF No. B97-091		

Ice Chest No. 124	Field Logbook No. EL7301	Method of Shipment Hand deliver
Shipped To TMA NORCAL	Offsite Property No. W97-0-0001-17	Bill of Lading/Air Bill No. 4235-7950-2050

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	Cool 4C	Cool 4C	None	None
	Type of Container	P	G	G	G	aG	GP	SP20
	No. of Container(s)	1	1	1	1	1	1	1
	Special Handling and/or Storage Cool to 4C	Volume	20ml	60ml	60ml	125ml	250ml	250ml

<b>SAMPLE ANALYSIS</b>  SDG# H0091	Activity Scan	Americium-241/Cesium-134; Isotope Plutonium; Isotope Uranium	Strontium-90,90 - Total &	Chromium Hex - 7194	Pent/PCBs - 8088 (TCL)	Lead - 7421 - (CFAA)	See Item (1) in Special Instructions.
--	---------------	--	---------------------------	---------------------	------------------------	----------------------	---------------------------------------

Sample No.	Matrix *	Sample Date	Sample Time	X	X	X	X	X	X	X
BOK0F9	Soil	7-29-97	1015	X	X	X	X	X	X	X

<b>CHAIN OF POSSESSION</b>	Sign/Print Names	<b>SPECIAL INSTRUCTIONS</b>
Relinquished By <i>Doug Bryant</i>	Date/Time 7/29/97	Received By <i>[Signature]</i>
Relinquished By <i>[Signature]</i>	Date/Time 8/1/97 1020	Date/Time 7/20/97/10:20
Relinquished By	Date/Time	Date/Time
Relinquished By	Date/Time	Date/Time

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Uranium-238)

Matrix *	<ul style="list-style-type: none"> <li>S - Soil</li> <li>SE - Sediment</li> <li>SO - Solid</li> <li>SL - Sludge</li> <li>W - Water</li> <li>O - Oil</li> <li>A - Air</li> <li>DS - Drum Solids</li> <li>DL - Drum Liquids</li> <li>T - Tissue</li> <li>WI - Wipe</li> <li>L - Liquid</li> <li>V - Vegetation</li> <li>X - Other</li> </ul>
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<b>LABORATORY SECTION</b>	Received By	Title	Date/Time
<b>FINAL SAMPLE</b>	Disposal Method		

_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
DATE	RECEIVED BY	DATE	TRANSFERRED TO	DATE	RELEASED BY

7-30-97  
 RECRA LAB NET  
 7-30-97  
 [Signature]

DATE	STORAGE	TESTS
01A-S BOKOF9	RECRA LAB NET	WB074 WB101 WB185
01B-S BOKOF9 MS	RECRA LAB NET	WB074 WB101 WB185
01C-S BOKOF9 DUP	RECRA LAB NET	WB074 WB101 WB185



**COVER PAGE - INORGANIC ANALYSES DATA PACKAGE**

**SDG#:** H0091

**W.O.#:** 10985-001-001-9999-00

**Laboratory Batch:** 9708L694

**Collection Dates:** 07-29-97

**SAMPLE ID**

**LABORATORY ID**

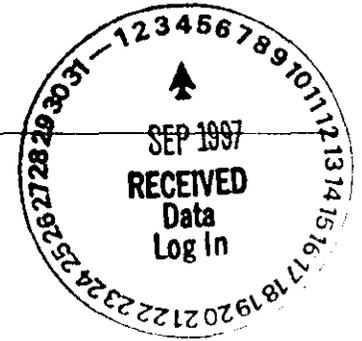
BOKOF9

9708L694-001





a division of Recra Environmental, Inc.  
Virtual Laboratories Everywhere



Recra LabNet Philadelphia  
Analytical Report

Client : TNU-HANFORD  
RFW# : 9708L694  
SDG# : H0091

W.O.# : 10985-001-001-9999-00  
Date Received : 08-01-97

INORGANIC CASE NARRATIVE

As of May 24, 1997, WESTON Lionville Laboratory became Recra LabNet Philadelphia. Some forms may still reference WESTON Lionville Laboratory.

1. This narrative covers the analyses of 1 soil 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.
4. The cooler temperature was recorded on the chain-of-custody.
5. The method blank was within method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS was within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike recoveries for Chromium VI were within the 75-125% control limits. The matrix spike duplicates was within the 20% RPD control limit.
8. The replicate analyses were within the 20% RPD control limit.
9. Results for solid samples are reported on a dry weight basis.

*J. Michael Taylor*  
 J. Michael Taylor  
 Vice President and Laboratory Manager  
 Lionville Analytical Laboratory

8-20-97  
 Date

njp08-694

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

# WET CHEMISTRY METHODS GLOSSARY FOR ANALYSIS OF SOIL/SOLID SAMPLES

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
%Ash	__ D2216-80		
%Moisture	__ D2216-80		__ ILMO4.0 (e)
%Solids			✓ ILMO4.0 (e)
%Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Corrosivity __ by coupon __ by pH		__ 1110 (mod) __ 9045	
Cyanide, Total		__ 9010	__ ILMO4.0 (e)
Cyanide, Reactive		__ Sec 7.3	
Density			__ b
Halides, Extractable Organic			__ EPA 600/4/84-008 (mod)
Halides, Total			__ EPA 600/4/84-008 (mod)
EP-Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Carbon, Total Organic (by LOI)			__ c
Oil and 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 (mod)
pH, Soil		__ 9045B	
Sulfide, Reactive		__ Sec 7.3	
Specific Gravity	__ D1429-76C		
Sulfur, Total		__ 9056	
TCLP		__ 1311	
TCLV		__ 1311	
Synthetic Precipitation Leach		__ 1312	
Chlorine, Total		__ 9056	
Paint Filter		__ 9095	

Other: Chromium VI

Method: SW 3060/SW 7196

# 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.

RFW 21-21L-034/D-06/96

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 08/20/97

CLIENT: TNU-HANFORD

RECRA LOT #: 9708L694

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	BOKOF9	% Solids	99.0	%	0.01	1.0
		Chromium VI	0.81 u	MG/KG	0.81	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 08/20/97

CLIENT: TNU-HANFORD  
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 9708L694

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	97LVI030-MB1	Chromium VI	0.80 u	MG/KG	0.80	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 08/20/97

CLIENT: TNU-HANFORD

RECRA LOT #: 9708L694

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	BOKOF9	Chromium VI	40.7	0.81u	40.4	100.9	1.0
		Chromium VI MSD	40.9	0.81u	40.4	101.4	1.0
BLANK10	97LVI030-MB1	Chromium VI	39.8	0.80u	40.0	99.4	1.0
		Chromium VI MSD	40.1	0.80u	40.0	100.3	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 08/20/97

CLIENT: TNU-HANFORD

RECRA LOT #: 9708L694

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-001	BOKOP9	Chromium VI	100.9	101.4	0.53
BLANK10	97LVI030-MB1	Chromium VI	99.4	100.3	0.81

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 08/20/97

CLIENT: TMU-HANFORD

RECRA LOT #: 9708L694

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-001REP	BOKOF9	† Solids	99.0	99.2	0.12	1.0
		Chromium VI	0.81u	0.81u	NC	1.0

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

DATE RECEIVED: 08/01/97

RFW LOT # :9708L694

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOKOF9						
% SOLIDS	001	S	97L&S148	07/29/97	08/05/97	08/06/97
% SOLIDS	001 REP	S	97L&S148	07/29/97	08/05/97	08/06/97
CHROMIUM VI	001	S	97LVI030	07/29/97	08/08/97	08/08/97
CHROMIUM VI	001 REP	S	97LVI030	07/29/97	08/08/97	08/08/97
CHROMIUM VI	001 MS	S	97LVI030	07/29/97	08/08/97	08/08/97
CHROMIUM VI	001 MSD	S	97LVI030	07/29/97	08/08/97	08/08/97

LAB QC:

CHROMIUM VI	MB1	S	97LVI030	N/A	08/08/97	08/08/97
CHROMIUM VI	MB1 BS	S	97LVI030	N/A	08/08/97	08/08/97
CHROMIUM VI	MB1 BSD	S	97LVI030	N/A	08/08/97	08/08/97

4171415231



10/2/8  
10/1/8

RECRA LabNet Use Only  
97086694

# Custody Transfer Record/Lab Work Request

Client <u>TNU-HANFORD</u>			Refrigerator #			5	5	5														
Est. Final Proj. Sampling Date			#/Type Container			Liquid																
Project # <u>10985-001-001-9999-00</u>			Volume			Solid	176	16L	16L													
Project Contact/Phone #			Preservatives			Liquid																
RECRA Project Manager <u>K.B.</u>			ANALYSES REQUESTED →			Solid	250	125	150													
QC <u>STD</u> Del <u>STD</u> TAT <u>15 DAY</u>			ORGANIC			INORG																
Date Rec'd <u>8-7-97</u> Date Due <u>8-16-97</u>			VOA			BNA			Pes/PCB			Herb			Metal			CN				
Account # <u>TNUHANFORD</u>			RECRA LabNet Use Only																			
<b>MATRIX CODES:</b> 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 (✓)		Matrix	Date Collected	Time Collected															
			MS	MSD																		
		<u>001 BOKOP9</u>	✓	✓	<u>S</u>	<u>7-29-97</u>	<u>1015</u>															

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:  
RSA-CLIENT INRO  
AMSC-COMP

DATE/REVISIONS:

1 \_\_\_\_\_  
 2 \_\_\_\_\_  
 3 \_\_\_\_\_  
 4 \_\_\_\_\_  
 5 \_\_\_\_\_  
 6 \_\_\_\_\_

RECRA LabNet Use Only

Samples were:  Shipped or  Hand Delivered  
 Airbill # 4222

2) Ambient or  Chilled  
 3) Received in Good Condition  or N

4) Labels Indicate Properly Preserved  or N

5) Received Within Holding Times  or N

COC Tape was:  
 1) Present on Outer Package  or N  
 2) Unbroken on Outer Package  or N  
 3) Present on Sample  or N  
 4) Unbroken on Sample  or N  
 COC Record Present Upon Sample Rec't  or N

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
<u>Franz</u>	<u>A. Fessl</u>	<u>8/1/97</u>	<u>1020</u>				

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES  
NO RADIONUCLIDES

**ORIGINAL  
 REWRITTEN**

**COVER PAGE - INORGANIC ANALYSES DATA PACKAGE**

**SDG#:** H0091  
**Laboratory Batch:** 9708L694

**W.O.#:** 10985-001-001-9999-00  
**Collection Dates:** 07-29-97

**SAMPLE ID**  
BOKOF9

**LABORATORY ID**  
9708L694-001





a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere



Recra LabNet Philadelphia Analytical Report

Client : TNU-HANFORD
RFW# : 9708L694

W.O.# : 10985-001-001-9999-00
Date Received: 08-01-97

METALS CASE NARRATIVE

- 1. This narrative covers the Lead analyses of 1 soil sample.
2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.
3. The analysis was 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. The preparation/method blank was within method criteria. Refer to the Inorganics Method Blank Data Summary.
8. The laboratory control sample (LCS) was within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.
9. The matrix spike (MS) recovery was outside the 80-120% control limits and the matrix spike duplicate (MSD) recovery was 120%. Refer to the Inorganics Accuracy Report.
10. For analytes where the GFAA MS is out-of-control, an interference test is performed.
11. The MS and MSD were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Matrix Spike Duplicate Report.
12. The duplicate analysis was outside the 20% RPD control limits. Refer to the Inorganics Precision Report.
13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

J. Michael Taylor
Vice President and Laboratory Manager
Lionville Analytical Laboratory

8-23-97
Date

sklm08-694
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 011 pages.

# METALS METHODS GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this RFW Lot#: 9708L694

Leaching Procedure: 1310 1311 1312 Other: \_\_\_\_\_

CLP Metals    Digestion and    Analysis Methods:   ILM03.0   ILM04.0

Metals Digestion Methods:   3005A   3010A   3015   3020A   ~~3050A~~   3051   200.7   SS17  
  Other:   \_\_\_\_\_

## Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	<u>  </u> 6010A	<u>  </u> 200.7			<u>  </u> 99
Antimony	<u>  </u> 6010A <u>  </u> 7041 <sup>5</sup>	<u>  </u> 200.7	<u>  </u> 204.2		<u>  </u> 99
Arsenic	<u>  </u> 6010A <u>  </u> 7060A <sup>5</sup>	<u>  </u> 200.7	<u>  </u> 206.2	<u>  </u> 3113B	<u>  </u> 99
Barium	<u>  </u> 6010A	<u>  </u> 200.7			<u>  </u> 99
Beryllium	<u>  </u> 6010A	<u>  </u> 200.7			<u>  </u> 99
Bismuth	<u>  </u> 6010A <sup>1</sup>	<u>  </u> 200.7 <sup>1</sup>		<u>  </u> 1620	<u>  </u> 99
Boron	<u>  </u> 6010A <sup>1</sup>	<u>  </u> 200.7			<u>  </u> 99
Cadmium	<u>  </u> 6010A <u>  </u> 7131A <sup>5</sup>	<u>  </u> 200.7	<u>  </u> 213.2		<u>  </u> 99
Calcium	<u>  </u> 6010A	<u>  </u> 200.7			<u>  </u> 99
Chromium	<u>  </u> 6010A <u>  </u> 7191 <sup>5</sup>	<u>  </u> 200.7	<u>  </u> 218.2		<u>  </u> SS17
Cobalt	<u>  </u> 6010A	<u>  </u> 200.7			<u>  </u> 99
Copper	<u>  </u> 6010A <u>  </u> 7211 <sup>5</sup>	<u>  </u> 200.7	<u>  </u> 220.2		<u>  </u> 99
Iron	<u>  </u> 6010A	<u>  </u> 200.7			<u>  </u> 99
Lead	<u>  </u> 6010A <u>  </u> 7421 <sup>5</sup>	<u>  </u> 200.7	<u>  </u> 239.2	<u>  </u> 3113B	<u>  </u> 99
Lithium	<u>  </u> 6010A <u>  </u> 7430 <sup>4</sup>	<u>  </u> 200.7		<u>  </u> 1620	<u>  </u> 99
Magnesium	<u>  </u> 6010A	<u>  </u> 200.7			<u>  </u> 99
Manganese	<u>  </u> 6010A	<u>  </u> 200.7			<u>  </u> 99
Mercury	<u>  </u> 7470A <sup>3</sup> <u>  </u> 7471A <sup>3</sup>	<u>  </u> 245.1 <sup>2</sup>	<u>  </u> 245.5 <sup>2</sup>		<u>  </u> 99
Molybdenum	<u>  </u> 6010A	<u>  </u> 200.7			<u>  </u> 99
Nickel	<u>  </u> 6010A	<u>  </u> 200.7			<u>  </u> 99
Potassium	<u>  </u> 6010A <u>  </u> 7610 <sup>4</sup>	<u>  </u> 200.7	<u>  </u> 258.1 <sup>4</sup>		<u>  </u> 99
Rare Earths	<u>  </u> 6010A <sup>1</sup>	<u>  </u> 200.7 <sup>1</sup>		<u>  </u> 1620	<u>  </u> 99
Selenium	<u>  </u> 6010A <u>  </u> 7740 <sup>5</sup>	<u>  </u> 200.7	<u>  </u> 270.2	<u>  </u> 3113B	<u>  </u> 99
Silicon	<u>  </u> 6010A <sup>1</sup>	<u>  </u> 200.7		<u>  </u> 1620	<u>  </u> 99
Silica	<u>  </u> 6010A <sup>1</sup>	<u>  </u> 200.7		<u>  </u> 1620	<u>  </u> 99
Silver	<u>  </u> 6010A <u>  </u> 7761 <sup>5</sup>	<u>  </u> 200.7	<u>  </u> 272.2		<u>  </u> 99
Sodium	<u>  </u> 6010A <u>  </u> 7770 <sup>4</sup>	<u>  </u> 200.7	<u>  </u> 273.1 <sup>4</sup>		<u>  </u> 99
Strontium	<u>  </u> 6010A	<u>  </u> 200.7			<u>  </u> 99
Thallium	<u>  </u> 6010A <u>  </u> 7841 <sup>5</sup>	<u>  </u> 200.7	<u>  </u> 279.2	<u>  </u> 200.9	<u>  </u> 99
Tin	<u>  </u> 6010A <sup>1</sup>	<u>  </u> 200.7			<u>  </u> 99
Titanium	<u>  </u> 6010A <sup>1</sup>	<u>  </u> 200.7			<u>  </u> 99
Uranium	<u>  </u> 6010A <sup>1</sup>	<u>  </u> 200.7 <sup>1</sup>		<u>  </u> 1620	<u>  </u> 99
Vanadium	<u>  </u> 6010A	<u>  </u> 200.7			<u>  </u> 99
Zinc	<u>  </u> 6010A	<u>  </u> 200.7			<u>  </u> 99
Zirconium	<u>  </u> 6010A <sup>1</sup>	<u>  </u> 200.7 <sup>1</sup>		<u>  </u> 1620	<u>  </u> 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

Recre LabNo: Monville

INORGANICS DATA SUMMARY REPORT 08/25/97

CLIENT: TND-HANFORD  
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 97081004

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	BOKOF9	Lead, Total	6.5	MG/KG		1.0



Thermo NUtech  
W.O. No. N7-07-078, SDG H0091

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

## Case Narrative

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### 1.0 GENERAL

Thermo NUtech Sample Delivery Group H0091 is comprised of the single water sample designated as SAF B97-091 delivered under Project Designation 107-D-1 Trench Confirmation.

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

### 2.0 ANALYSIS NOTES

#### 2.1 Total Strontium Analysis

No problems were encountered with the analyses

#### 2.2 Isotopic Uranium

No problems were encountered with the analyses

#### 2.3 Isotopic Plutonium

No problems were encountered with the analyses

#### 2.4 Gamma Scan

Sample preparation included sieving the received material. After sieving there was insufficient prepared sample to perform a duplicate analysis

#### 2.5 Americium-241/Curium-244

No problems were encountered with the analyses

**THERMO NUTECH**  
SAMPLE DELIVERY GROUP H0091

N707078-01

BOKOF9

**DATA SHEET**

SDG 7444 Client/Case no Westinghouse Hanford SDG H0091  
Contact N. Joseph Verville Case no TSH-SBV-207925

Lab sample id N707078-01 Client sample id BOKOF9  
Dept sample id 7444-001 Location/Matrix 100-DR-1 SOLID  
Received 07/30/97 Collected 07/29/97 10:15  
Custody/SAF No B97-091-18 B97-091

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 233/234	U-233/234	0.47	0.066	0.024	0.30		U
Uranium 235	15117-96-1	0.041	0.019	0.018	0.30	J	U
Uranium 238	U-238	0.46	0.062	0.019	0.30		U
Plutonium 238	13981-16-3	0.016	0.023	0.039	0.050	U	PU
Plutonium 239/240	15117-48-3	0.003	0.012	0.021	0.050	U	PU
Americium 241	14596-10-2	0.002	0.008	0.016		U	TP
Strontium-90	10098-97-2	0.11	0.14	0.19		U	SR
Curium 244		0.001	0.008	0.016		U	TP
GAMMA SCAN ANALYTES		U					
Potassium 40	13966-00-2	10	0.26				GAM
Cobalt 60	10198-40-0	0.028	0.011		0.050	J	GAM
Cesium 137	10045-97-3	0.21	0.015		0.050		GAM
Europium 152	14683-23-9	U		0.041	0.10	U	GAM
Europium 154	15585-10-1	U		0.027	0.10	U	GAM
Europium 155	14391-16-3	U		0.039	0.10	U	GAM
Radium 226	13982-63-3	0.37	0.025		0.10		GAM
Radium 228	15262-20-1	0.64	0.055		0.20		GAM
Thorium 228	14274-82-9	0.53	0.015				GAM
Thorium 232	7440-29-1	0.64	0.055				GAM
Americium 241	14596-10-2	U		0.044		U	GAM
Uranium 238	U-238	U		1.5		U	GAM

DATA SHEETS

Page 1

SUMMARY DATA SECTION

Page 10

Lab id TMANC  
Protocol WHC-HASM-1  
Version Ver 1.0  
Form DVD-DS  
Version 3.06  
Report date 08/13/97

Collector <i>Doug Bryant</i>	Company Contact Duane Jacques	Telephone No. 372-9400	Project Coordinator Koerner, CC	Data Turnaround 15 Days
Project Designation 107-D-1 Trench - Confirmation	Sampling Location 100-DR-1	SAF No. B97-091		
Ice Chest No. 124	Field Logbook No. EL7301	Method of Shipment Hand deliver		

Shipped To TMA NORCAL	Offsite Property No. W97-0-0001-17	Bill of Lading/Air Bill No. 4235-7950-2050
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POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	None	None	Cool 4C	Cool 4C	None	None		
	Type of Container	P	G	G	G	uG	GP	SP2A		
	No. of Container(s)	1	1	1	1	1	1	1		
Special Handling and/or Storage Cool to 4C	Volume	20ml	60ml	60ml	125ml	250ml	250ml	1000ml		

SAMPLE ANALYSIS <i>SDG# H0091</i>	Activity Scan	Americium-241/Curium-244, Isotopic Plutonium, Isotopic Uranium	Strontium-89,90 - Total Sr	Chromium Hex - 7196	Pest/PCBs - 8080 (TCL)	Lead - 7421 - (GFAA)	See item (1) in Special Instructions			
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Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	Americium-241/Curium-244, Isotopic Plutonium, Isotopic Uranium	Strontium-89,90 - Total Sr	Chromium Hex - 7196	Pest/PCBs - 8080 (TCL)	Lead - 7421 - (GFAA)	See item (1) in Special Instructions
B0K0F9	Soil	7-29-97	1015	X	X	X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names		SPECIAL INSTRUCTIONS							Matrix * S - Soil SE - Sediment SO - Solid SL - Sludge W - Water O - Oil A - Air DS - Drum Solids DL - Drum Liquids T - Tissue WI - Wipe L - Liquid V - Vegetation X - Other		
	Relinquished By <i>Doug Bryant</i>	Date/Time 7-29-97	Received By <i>J. Jacobs</i>	Date/Time 7-29-97/10:20	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155), Gamma Spec - Add-on (Americium-241, Uranium-238)							
	Relinquished By	Date/Time	Received By	Date/Time								
	Relinquished By	Date/Time	Received By	Date/Time								

LABORATORY SECTION	Received By	Title	Date/Time
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FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time
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Contractor <b>134E</b>	<b>OFF-SITE PROPERTY CONTROL</b>	CONTROL NO. <i>(To be obtained from PROPERTY MANAGEMENT)</i> <b>W97-0-0001-17</b>
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**PART I - TO BE COMPLETED BY ORIGINATOR**

Department <b>ER ENG Support</b>	Section <b>Field + Daily Support</b>	Unit <b>ER Field Support</b>
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The following items are to be shipped from  Contractor  Vendor

Routing  Prepaid  Collect

Shipped to Company <b>TMA/NORCAL</b> Address <b>2030 Wright Ave</b> City <b>Richmond</b> State <b>CA</b> Zip Code <b>94804</b> Country	Off-site Custodian	Payroll No.
	On-site Custodian	

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1	10165	Cooler ID: 129 Polycooler with Environmental Test Samples Packed in wet ice and Vermiculite	N/A

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. **134E-1 Remedial Action Project**

Business Trip

Off-site Assignment

Shipment to Subcontractor. List Subcontract No. \_\_\_\_\_ **134E-1 Action #**

Other (Please specify) \_\_\_\_\_ **4735-7952-1000**

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

RM Clearance for Public Release <b>N/A</b>	RM Survey No.	Date
Location of and Contact for Property (Name/Phone No./Bldg./Area) <b>Daisy Bryant / (504) 76-8278 / 4730 RW / 4000</b>		
Date Ready for Shipment <b>7-25-97</b>	Cost Code to be Charged <b>4730 RW / 4000</b>	Approximate Date This Property will be Returned
Originated By <b>Daisy Bryant</b>	Date <b>7-25-97</b>	Authorized By <b>Daisy Bryant</b>
Property Representative Signature	Date	Property Management Approval <b>[Signature]</b>
		Date <b>7-25-97</b>

**PART II - TO BE COMPLETED BY SHIPPING**

Authorized Shipping Signature <b>[Signature]</b>	Date <b>7-25-97</b>
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**DISTRIBUTION (AFTER FINAL SIGNATURES)**

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

WHC/BHI SAMPLE CHECK-IN LIST

Date/Time Received: 7-30-97/10:20 SDG #: H0091  
Work Order Number: \_\_\_\_\_ SAF#: B97-091  
Shipping Container ID: 124 Chain-of-Custody #: EL-1301

- 1. Custody Seals on shipping container intact? Yes  No [ ]
- 2. Custody Seals dated and signed? Yes  No [ ]
- 3. Chain-of-Custody record present? Yes  No [ ]
- 4. Cooler Temperature 1°C 174 THERMO#
- 5. Vermiculite/packing materials is Wet [ ] Dry
- 6. Number of samples in shipping container: 7 BOTS
- 7. Sample holding times exceeded? Yes [ ] No [ ]
- 8. Samples have: \_\_\_\_\_ tape \_\_\_\_\_ hazard labels  
 custody seals  appropriate sample labels
- 9. Samples are:  in good condition \_\_\_\_\_ leaking  
\_\_\_\_\_ broken \_\_\_\_\_ have air bubbles
- 10. Were any anomalies identified in sample receipt? Yes [ ] No [ ]
- 11. Description of anomalies (include sample numbers): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Sample Custodian [Signature] on 7-30-97/10:20

Telephoned To: \_\_\_\_\_ on \_\_\_\_\_ By \_\_\_\_\_

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

SHIP DATE: 29JUL97  
ACC# 188288189

ACTUAL WGT: 65 LBS MAN-WT

TO: TMA NORCAL/SAMPLE RECEIVING  
TMA NORCAL  
2030 WRIGHT AVE.

RICHMOND

CA 94804-9949

4235 7950 2050

**FedEx** BILL THIRD PARTY

Form 0201

REF: r000042900 197-0-0001\*17

**PRIORITY OVERNIGHT WED**

CAD# 0053292 29JUL97

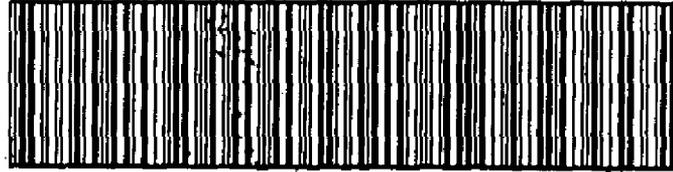
IRK# 4235 7950 2050 Form 0201 Deliver by:

**OAK**

**30JUL97**

94804-CA-US

**WA JEM**



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