H0095-T/W

0048876

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

SDG#: H0095
Laboratory Batch: 9708L995

W.O.#: 10985-001-001-9999-00
Collection Dates: 08-20-97

SAMPLE ID	LABORATORY ID
B0K0H7	9708L995-001
B0K0P8	9708L995-002

SEP 199
RECEIVED
Data
Log In

APR 1998
RECEIVED
EDMC

nip skl 995 cp

001

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

SEP 1997
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD
RFW# : 9708L995
SDG# : H0095

W.O.# : 10985-001-001-9999-00
Date Received : 08-22-97

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 analysis 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 contract were met.

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

5. The method blank for Chromium VI was within method criteria.

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

8. The replicate analysis for Percent Solids was within the 20% RPD control limit.

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

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

9-3-97
Date

njp\skl\i08-995

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 13 pages.

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

WET CHEMISTRY
METHODS GLOSSARY FOR ANALYSIS OF SOIL/SOLID SAMPLES

	ASTM	SW846	OTHER
%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: SW3060/SW7196

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 08/28/97

CLIENT: TNU-HANFORD

RECRA LOT #: 9708L995

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0K0H7	% Solids	99.2	%	0.01	1.0
		Chromium VI	0.81 u	MG/KG	0.81	1.0
-002	B0K0P8	% Solids	99.5	%	0.01	1.0
		Chromium VI	0.80 u	MG/KG	0.80	1.0

RECRA LabNet Use Only
97081995

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.
QC: STD Del: STD TAT: 15 DAY
Date Rec'd: 8-22-97 Date Due: 9-6-97
Account #: TNU/HANFORD

Refrigerator #				6					6		6					
#/Type Container	Liquid															
	Solid			1AG					1AG		1AG					
Volume	Liquid															
	Solid			500					250		250					
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Cr6					
									RECRA LabNet Use Only							
				0608H					MT8TO		TCR6					

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	BOK0H7			S	8/20/97	0625			X					X		X				
002	BOK0P8			S	1	0520			X							X				

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
RSA - Client info
Rmsc - Comp.

Cooler temp = 4.8°C

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

Relinquished by	Received by	Date	Time
FedEx	Marie Eh	8-22-97	10:00

Relinquished by	Received by	Date	Time

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

RECRA LabNet Use Only

Samples were:
1) Shipped X or Hand Delivered ___
Airbill # 4171415592
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

12

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B97-091-20	Page 1 of 1

Collector Mike Stankovich/Hamilton / RJ Nielson	Company Contact Gary Hamilton	Telephone No. 373-4887	Project Coordinator Koerner, CC	Data Turnaround 15 Days
Project Designation 107-D-1 Trench -- Confirmation	Sampling Location 100-DR-1		SAF No. B97-~~091~~- 094 RJN	
Ice Chest No. Shipping Van 96-004	Field Logbook No. EL-1339-1		Method of Shipment Hand deliver	
Shipped To TMA NORCAL	Offsite Property No. W97-0-0001-22		Bill of Lading/Air Bill No. 423579503090	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage
Cool to 4C

SAMPLE ANALYSIS SDG H0095

Preservation	None	None	None	Cool 4C	Cool 4C	None	none			
Type of Container	G/P	aG	aG	aG	aG	P	aG			
No. of Container(s)	1	1	1	1	1	2	1			
Volume	20g	60ml	60ml	250ml	500ml	1000ml	250ml			
	Activity Scan	Americium-241/Curium-244, Isotopic Plutonium, Isotopic Uranium	Strontium-89,90 -- Total Sr	Chromium Hex - 7196	Pest/PCBs - 8080 (TCL)	See item (1) in Special Instructions	Lead 7421			

Sample No.	Matrix *	Sample Date	Sample Time										
B0K0H7	Soil	8/20/97	0625	X	X	X	X	X	X	X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time 8/20/97 1050	Received By Fed. EX Shipping	Date/Time
Relinquished By Fed. EX Shipping	Date/Time	Received By	Date/Time 8/21/97 1:00PM
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

** The ERC Contractor acknowledges the 24-hour holding time is not likely achievable at TMA for Chromium Hex by EPA 7196.

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

Close SDG upon receipt

Ice Water & Sipped through plastic bag. CR 8/21/97

Matrix *

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B97-094-06	Page 1 of 1

Collector: Stankovich/Hamilton / RJNielson	Company Contact: Gary Hamilton — Telephone No.: 373-4887	Project Coordinator: Koerner, CC	Data Turnaround: 15 Days
Project Designation: 107-D-5 Trench – Confirmation	Sampling Location: 100 DR-1	SAF No.: B97-094	
Ice Chest No.: Shipping Van 96-004	Field Logbook No.: EL-1339-1	Method of Shipment: hand Deliver	
Shipped To: TMA NORCAL	Offsite Property No.: W97-0-0001-22	Bill of Lading/Air Bill No.: 4235795030 90	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage: cool 4C

SAMPLE ANALYSIS: SDG H0095

Preservation	None	None	None	Cool 4C	Cool 4C	None	None			
Type of Container	P	aG	aG	aG	aG	P	aG			
No. of Container(s)	1	1	1	1	1	2	1			
Volume	20g	60ml	60ml	250ml	500ml	1000ml	250ml			
	Activity Scan	Americium-241; Isotopic Uranium; Isotopic Plutonium	Strontium-89,90 – Total Sr	Chromium Hex - 7196	Pest/PCBs - 8080 (TCL)	See item (1) in Special Instructions.	Lead 7421			

Sample No.	Matrix *	Sample Date	Sample Time										
B0K0P8	Soil	8/20/97	0520	X	X	X	X	X	X				
~~B0K0H7~~	~~S~~	~~8/20/97~~	~~0625~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	RJN	8/20/97	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: [signature]	Date/Time: 8.20.97/1020	Received By: Fed Ex Shipping	Date/Time:
Relinquished By: Fed Ex. Shipping	Date/Time:	Received By: [signature]	Date/Time: 8.21.97/1000
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

** The ERC Contractor acknowledges the 24-hour holding time is not likely achievable at TMA for Chromium Hex by EPA 7196.

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

Close SDG upon receipt

Ice water seepd through the plastic bag

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

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Virtual Laboratories Everywhere

SEP 1997
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD
RFW# : 9708L995

W.O.# : 10985-001-001-9999-00
Date Received: 08-22-97

METALS CASE NARRATIVE

1. This narrative covers the Lead analysis 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) and matrix spike duplicate (MSD) recoveries were within the 80-120% control limits. Refer to the Inorganics Accuracy Report.
10. The MS and MSD was within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Matrix Spike Duplicate Report.
11. The duplicate analysis was outside the 20% RPD control limits. Refer to the Inorganics Precision Report.
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.

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

9-11-97
Date

pas\m08-995

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.

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METALS METHODS GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within th
RFW Lot#: 9708L995

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	USATHAM/
Aluminum	__6010A		__200.7				__99
Antimony	__6010A	__7041 [5]	__200.7	__204.2			__99
Arsenic	__6010A	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	__6010A		__200.7				__99
Beryllium	__6010A		__200.7				__99
Bismuth	__6010A [1]		__200.7 [1]			__1620	__99
Boron	__6010A [1]		__200.7				__99
Cadmium	__6010A	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010A		__200.7				__99
Chromium	__6010A	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010A		__200.7				__99
Copper	__6010A	__7211 [5]	__200.7	__220.2			__99
Iron	__6010A		__200.7				__99
Lead	✓6010A	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010A	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010A		__200.7				__99
Manganese	__6010A		__200.7				__99
Mercury	__7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010A		__200.7				__99
Nickel	__6010A		__200.7				__99
Potassium	__6010A	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010A [1]		__200.7 [1]			__1620	__99
Selenium	__6010A	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010A [1]		__200.7			__1620	__99
Silica	__6010A [1]		__200.7			__1620	__99
Silver	__6010A	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010A	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010A		__200.7				__99
Thallium	__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	__6010A		__200.7				__99
Zinc	__6010A		__200.7				__99
Zirconium	__6010A [1]		__200.7 [1]			__1620	__99

Other:_____ **Method:**_____

RFW 21-21-033/M-01/97

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.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 09/08/97

CLIENT: TNU-HANFORD

RECRA LOT #: 9708L995

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0K0H7	Lead, Total	5.6	MG/KG	3.4	1.0

RECRA LabNet Use Only
9708L995

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.
QC: STD Del: STD TAT: 15 DAY
Date Rec'd: 8-22-97 Date Due: 9-6-97
Account #: TNU/HANFORD

Refrigerator #				6					6		6						
#/Type Container	Liquid																
	Solid			1/16					1/16		1/16						
Volume	Liquid																
	Solid			500					250		250						
Preservatives																	
ANALYSES REQUESTED →				ORGANIC					INORG								
				VOA	BNA	Pest/PCB	Herb		Metal	CN	Cr6						
RECRA LabNet Use Only						8080H			MPBTO		ICR6						

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	VOA	BNA	Pest/PCB	Herb				Metal	CN	Cr6					
001	B0K0H7			S	8/20/97	0635			X					X		X					
002	B0K0P8			S	↓	0520			X							X					

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:
RSA - Client info
RMSC - Comp.

4.8°C

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

RECRA LabNet Use Only

Samples were:
1) Shipped X or Hand Delivered ___
Airbill # 4171415572
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

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
FedEx	Marie Elk	8-22-97	10:00				

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

011

RECRA LabNet

a division of Recra Environmental, Inc.

Virtual Laboratories Everywhere

SEP 1997 RECEIVED Data Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD
RFW# : 9708L995

W.O. #: 10985-001-001-9999-00
Date Received: 08-22-97
SDG #: H0095

PESTICIDE/PCB

1. The set of samples consisted of two (2) soil samples collected on 08-20-97.

2. The samples and their associated QC samples were extracted on 08-25-97 and analyzed based on SW846, 3rd Edition, procedures on 09-05,06,10-97. The extraction procedure used was based on Method 3520 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 method blank was below the reporting limits for all target compounds.

6. All obtainable surrogate recoveries were within acceptance criteria.

7. All blank spike recoveries were within acceptance criteria.

8. Matrix spike recoveries were not obtained, due to the dilution required for the analysis.

9. Sample B0K0H7,MS,MSD required a 5-fold dilution due to high concentrations of target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.

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

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

Bruce C Bowlin unit leader

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

9-22-97
Date

jab\08-995.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 9 pages.

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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

Pesticide/PCBs by GC, CLP List

Report Date: 09/16/97 11:25

RFW Batch Number: **9708L995** Client: **TNU-HANFORD** Work Order: 10985001001 Page: 1

004

	Cust ID:	B0K0H7	B0K0H7	B0K0H7	B0K0P8	PBLKUB	PBLKUB BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	97LE1556-MB1	97LE1556-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	5.00	5.00	5.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Decachlorobiphenyl	D %	D %	D %	84 %	93 %	83 %
	Tetrachloro-m-xylene	D %	D %	D %	85 %	80 %	75 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		8.4 U	8.4 U	8.4 U	1.7 U	1.7 U	1.7 U
Beta-BHC		8.4 U	8.4 U	8.4 U	1.7 U	1.7 U	1.7 U
Delta-BHC		8.4 U	8.4 U	8.4 U	1.7 U	1.7 U	1.7 U
gamma-BHC (Lindane)		8.4 U	D %	D %	1.7 U	1.7 U	75 %
Heptachlor		8.4 U	D %	D %	1.7 U	1.7 U	85 %
Aldrin		8.4 U	D %	D %	1.7 U	1.7 U	80 %
Heptachlor epoxide		8.4 U	8.4 U	8.4 U	1.7 U	1.7 U	1.7 U
Endosulfan I		8.4 U	8.4 U	8.4 U	1.7 U	1.7 U	1.7 U
Dieldrin		17 U	D %	D %	3.3 U	3.3 U	82 %
4,4'-DDE		17 U	17 U	17 U	3.3 U	3.3 U	3.3 U
Endrin		17 U	D %	D %	3.3 U	3.3 U	84 %
Endosulfan II		17 U	17 U	17 U	3.3 U	3.3 U	3.3 U
4,4'-DDD		17 U	17 U	17 U	3.3 U	3.3 U	3.3 U
Endosulfan sulfate		17 U	17 U	17 U	3.3 U	3.3 U	3.3 U
4,4'-DDT		17 U	D %	D %	3.3 U	3.3 U	86 %
Methoxychlor		84 U	84 U	84 U	17 U	17 U	17 U
Endrin ketone		17 U	17 U	17 U	3.3 U	3.3 U	3.3 U
Endrin aldehyde		17 U	17 U	17 U	3.3 U	3.3 U	3.3 U
alpha-Chlordane		8.4 U	8.4 U	8.4 U	1.7 U	1.7 U	1.7 U
gamma-Chlordane		8.4 U	8.4 U	8.4 U	1.7 U	1.7 U	1.7 U
Toxaphene		840 U	840 U	840 U	170 U	170 U	170 U
Aroclor-1016		170 U	170 U	170 U	33 U	33 U	33 U
Aroclor-1221		340 U	340 U	340 U	67 U	67 U	67 U
Aroclor-1232		170 U	170 U	170 U	33 U	33 U	33 U
Aroclor-1242		170 U	170 U	170 U	33 U	33 U	33 U
Aroclor-1248		170 U	170 U	170 U	33 U	33 U	33 U
Aroclor-1254		170 U	170 U	170 U	33 U	33 U	33 U
Aroclor-1260		510	530	490	33 U	33 U	33 U

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

gw 09-17-97

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

DATE RECEIVED: 08/22/97 RFW LOT # :9708L995

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0K0H7	001	S	97LE1556	08/20/97	08/25/97	09/10/97
B0K0H7	001 MS	S	97LE1556	08/20/97	08/25/97	09/10/97
B0K0H7	001 MSD	S	97LE1556	08/20/97	08/25/97	09/10/97
B0K0P8	002	S	97LE1556	08/20/97	08/25/97	09/06/97
LAB QC:						
PBLKUB	MB1	S	97LE1556	N/A	08/25/97	09/05/97
PBLKUB	MB1 BS	S	97LE1556	N/A	08/25/97	09/05/97

09-17-97

RECRA LabNet Use Only

97081995

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.
QC: STD Del: STD TAT: 15 DAY
Date Rec'd: 8-22-97 Date Due: 9-6-97
Account #: TNUHANFORD

Refrigerator #				6					6		6						
#/Type Container	Liquid																
	Solid			1/AG					1/AG		1/AG						
Volume	Liquid																
	Solid			500					250		250						
Preservatives																	
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN	C6						
RECRA LabNet Use Only				0808H					MATO		ICR6						

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	B0K0H7			S	8/20/97	0625			X					X		X					
002	B0K0P8			S	1	0630			X							X					

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Special Instructions:

RSA - Client info
RMSC - Comp.

4.8°C

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

RECRA LabNet Use Only

Samples were:
1) Shipped X or Hand Delivered ___
Airbill # 4171415572
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

Relinquished by	Received by	Date	Time
FedEx	Marie Elk	8-22-97	10:00

Relinquished by	Received by	Date	Time

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

Reference W.O.# N7-08-043
P.O.# will follow!

007

Thermo NUtech

A Subsidiary of Thermo Remediation, a Thermo Electron Company

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 Richmond

ADDRESS:

PROJECT: SDG H0095

SAMPLERS SIGNATURE:

DATE: 8/21/97 PAGE 1 OF 1

SAMPLE NO	DATE	TIME	LOCATION	Chromium Hex-7196	PEST/PCBs-8080 (TCL)	LEAD 7421									SAMPLE TYPE OR MATRIX	# CONTAINERS	OBSERVATIONS, COMMENTS, VOLUMES, SPECIAL OR ADDITIONAL TEST
BOK0H7	8/20/97	06:25		X	X	X										3	
BOK0P8	8/20/97	05:20		X	X											2	

1) RELINQUISHED BY / DATE:	2) RECEIVED BY / DATE:	3) RELINQUISHED BY / DATE:	4) RECEIVED BY / DATE:
Elby A. Yamamoto 8/21/97		FEDEX 8/22/97	FOR BRIAN SHAFFER
COMPANY: Thermo Nutech	COMPANY:	COMPANY:	COMPANY: BECAA
5) RELINQUISHED BY / DATE:	6) RECEIVED BY / DATE:	7) RELINQUISHED BY / DATE:	8) RECEIVED BY / DATE:
COMPANY:	COMPANY:	COMPANY:	COMPANY:

TOTAL NO. OF CONTAINERS: 5

METHOD OF SHIPMENT:

SPECIAL SHIPMENT-HANDLING OR STORAGE REQUIREMENTS: 4.8°C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B97-091-20	Page 1 of 1

Collector Mike Stankovich/Hamilton / RJ Nielson	Company Contact Gary Hamilton	Telephone No. 373-4887	Project Coordinator Koerner, CC	Data Turnaround 15 Days
Project Designation 107-D-1 Trench -- Confirmation	Sampling Location 100-DR-1		SAF No. B97-~~091~~ 094 RJN	
Ice Chest No. Shipping Van 96-004	Field Logbook No. EL-1339-1		Method of Shipment Hand deliver	
Shipped To TMA NORCAL	Offsite Property No. W97-0-0001-22		Bill of Lading/Air Bill No. 4235795030 90	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage
Cool to 4C

SAMPLE ANALYSIS
SDG HC095

Preservation	None	None	None	Cool 4C	Cool 4C	None	none			
Type of Container	G/P	aG	aG	aG	aG	P	aG			
No. of Container(s)	1	1	1	1	1	2	1			
Volume	20g	60ml	60ml	250ml	500ml	1000ml	250ml			
	Activity Scan	Americium-241/Cerium-244; Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 -- Total Sr	Chromium Hex - 7196	Pest/PCBs - 8080 (TCL)	See item (1) in Special Instructions	Lead 7421			

Sample No.	Matrix *	Sample Date	Sample Time	Activity Scan	Americium-241/Cerium-244; Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 -- Total Sr	Chromium Hex - 7196	Pest/PCBs - 8080 (TCL)	See item (1) in Special Instructions	Lead 7421			
B0K0H7	Soil	8/20/97	0625	X	X	X	X	X	X	X			

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By: [signature] Date/Time: 8/20/97 1050	Received By: Fed. Ex Shipping	Date/Time
Relinquished By: Fed. Ex Shipping Date/Time	Received By: [signature]	Date/Time: 8/21/97 1:00PM
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
** The ERC Contractor acknowledges the 24-hour holding time is not likely achievable at TMA for Chromium Hex by EPA 7196

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

Close SDG upon receipt
ICE Water & Sipped through plastic bag. CAC 8/21/97

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B97-094-06	Page 1 of 1

Collector: Stankovich/Hamilton / RJNielson	Company Contact: Gary Hamilton	Telephone No.: 373-4887	Project Coordinator: Koerner, CC
Project Designation: 107-D-5 Trench – Confirmation	Sampling Location: 100 DR-1		SAF No.: B97-094
Ice Chest No.: Shipping Van 96-004	Field Logbook No.: EL-1339-1		Method of Shipment: hand Deliver
Shipped To: TMA NORCAL	Offsite Property No.: W97-0-0001-22		Bill of Lading/Air Bill No.: 4235795030 90

Data Turnaround: **15 Days**

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage: cool 4C

SAMPLE ANALYSIS: SDG H0095

Preservation	None	None	None	Cool 4C	Cool 4C	None	None			
Type of Container	P	aG	aG	aG	aG	P	aG			
No. of Container(s)	1	1	1	1	1	2	1			
Volume	20g	60ml	60ml	250ml	500ml	1000ml	250ml			
	Activity Scan	Americium-241; Isotopic Uranium; Isotopic Plutonium	Strontium-89,90 – Total Sr	Chromium Hex - 7196	Pest/PCBs - 8080 (TCL)	See item (1) in Special Instructions.	Lead 7421			

Sample No.	Matrix *	Sample Date	Sample Time										
B0K0P8	Soil	8/20/97	0520	X	X	X	X	X	X				
~~B0K0H7~~	~~S~~	~~8/20/97~~	~~0625~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	RJN	8/20/97	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: [signature]	Date/Time: 8.20.97/1030	Received By: Fed Ex Shipping	Date/Time:
Relinquished By: Fed Ex. Shipping	Date/Time:	Received By: [signature]	Date/Time: 8.21.97/1:00pm
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

** The ERC Contractor acknowledges the 24-hour holding time is not likely achievable at TMA for Chromium Hex by EPA 7196.

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

Close SDG upon receipt

Ice water spilled through the plastic bag

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

Case Narrative

1.0 GENERAL

Thermo NUtech Sample Delivery Group H0095 is comprised of the two soil samples designated as SAF B97-094 delivered under Project Designation 107-D-5 Trench - Confirmation.

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

2.0 ANALYSIS NOTES

2.1 Isotopic Plutonium Analyses

The MDA of the duplicate analysis was greater than the RDL due to the relatively low yield of 21%. Activity greater than the MDA or RDL was not detected in the sample. The results from the original analysis indicated plutonium activities at the MDA's of the original sample analysis, however the activity detected was less than the RDL.

2.2 Isotopic Uranium Analyses

No problems were encountered with the analysis.

2.3 Americium-241/Curium-244 Analyses

No problems were encountered with the analysis.

2.4 Total Strontium Analyses

No problems were encountered with the analysis.

2.5 Gamma Scan Analyses

No problems were encountered during analysis.

N708045-01

THERMO NUTECH

SAMPLE DELIVERY GROUP H0095

DATA SHEET

BOKOH7

SDG 7448 Client/Case no Westinghouse Hanford SDG H0095
Contact N. Joseph Verville Case no TSH-SBV-207925

Lab sample id N708045-01 Client sample id BOKOH7
Dept sample id 7448-001 Location/Matrix 100 DR-1 SOLID
Received 08/21/97 Collected 08/20/97 06:25
Custody/SAF No B97-091-20 B97-094

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.50	0.048	0.014	0.30		U
Uranium 235	15117-96-1	0.031	0.013	0.010	0.30	J	U
Uranium 238	U-238	0.41	0.043	0.011	0.30		U
Plutonium 238	13981-16-3	0.031	0.022	0.031	0.050	J	PU
Plutonium 239/240	15117-48-3	0.028	0.017	0.021	0.050	J	PU
Americium 241	14596-10-2	0.007	0.019	0.035		U	TP
Strontium-90	10098-97-2	0.086	0.10	0.14		U	SR
Curium 244	13981-15-2	0.017	0.019	0.035		U	TP
GAMMA SCAN ANALYTES		U					
Potassium 40	13966-00-2	10	0.42				GAM
Cobalt 60	10198-40-0	U		0.021	0.050	U	GAM
Cesium 137	10045-97-3	0.078	0.020		0.050		GAM
Europium 152	14683-23-9	U		0.047	0.10	U	GAM
Europium 154	15585-10-1	U		0.028	0.10	U	GAM
Europium 155	14391-16-3	U		0.049	0.10	U	GAM
Radium 226	13982-63-3	0.40	0.036		0.10		GAM
Radium 228	15262-20-1	0.64	0.10		0.20		GAM
Thorium 228	14274-82-9	0.54	0.022				GAM
Thorium 232	7440-29-1	0.64	0.10				GAM
Americium 241	14596-10-2	U		0.070		U	GAM
Uranium 238	U-238	U		2.6		U	GAM

Lab id TMANC
Protocol WHC-HASM-1
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 09/10/97

N708045-02

THERMO NUTECH

SAMPLE DELIVERY GROUP H0095

DATA SHEET

BOKOP8

SDG 7448 Client/Case no Westinghouse Hanford SDG H0095
Contact N. Joseph Verville Case no TSH-SBV-207925

Lab sample id N708045-02 Client sample id BOKOP8
Dept sample id 7448-002 Location/Matrix 100 DR-1 SOLID
Received 08/21/97 Collected 08/20/97 05:20
Custody/SAF No B97-094-06 B97-094

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.43	0.046	0.024	0.30		U
Uranium 235	15117-96-1	0.052	0.018	0.010	0.30	J	U
Uranium 238	U-238	0.35	0.041	0.017	0.30		U
Plutonium 238	13981-16-3	0.003	0.008	0.015	0.050	U	PU
Plutonium 239/240	15117-48-3	0	0.005	0.013	0.050	U	PU
Americium 241	14596-10-2	0.009	0.017	0.031		U	TP
Strontium-90	10098-97-2	0.083	0.11	0.14		U	SR
Curium 244	13981-15-2	0.002	0.017	0.031		U	TP
GAMMA SCAN ANALYTES		U					
Potassium 40	13966-00-2	9.7	0.24				GAM
Cobalt 60	10198-40-0	U		0.010	0.050	U	GAM
Cesium 137	10045-97-3	0.040	0.006		0.050	J	GAM
Europium 152	14683-23-9	U		0.025	0.10	U	GAM
Europium 154	15585-10-1	U		0.016	0.10	U	GAM
Europium 155	14391-16-3	U		0.026	0.10	U	GAM
Radium 226	13982-63-3	0.36	0.021		0.10		GAM
Radium 228	15262-20-1	0.53	0.051		0.20		GAM
Thorium 228	14274-82-9	0.56	0.019				GAM
Thorium 232	7440-29-1	0.53	0.051				GAM
Americium 241	14596-10-2	U		0.037		U	GAM
Uranium 238	U-238	U		1.2		U	GAM

Lab id TMANC
Protocol WHC-HASM-1
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 09/10/97

THERMO NUTECH

SAMPLE DELIVERY GROUP H0095

Test	PU
Matrix	SOLID
SDG	7448
Contact	N. Joseph Verville

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Westinghouse Hanford
Contract	TSH-SBV-207925
Case no	SDG H0095

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 2785-046						
BOKOH7	N708045-01			7448-001	0.031 J	0.028 J
BOKOP8	N708045-02			7448-002	U	U
BLK (QC ID=27306)	N708045-04			7448-004	U	U
LCS (QC ID=27305)	N708045-03			7448-003	ok	ok
Duplicate (N708045-01)	N708045-05			7448-005	ok U	ok U
Nominal values and limits from method				RDLs (pCi/g)	0.050	0.050

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2785-046	2σ prep error 5.0 %				Reference Lab		Notebook #2785 pg. 046									
BOKOH7	N708045-01			0.031	1.00			66		608			15	09/03/97	09/04	SS-043
BOKOP8	N708045-02			0.015	1.00			82		1028			14	09/03/97	09/03	SS-047
BLK (QC ID=27306)	N708045-04			0.029	1.00			73		1028				09/03/97	09/03	SS-049
LCS (QC ID=27305)	N708045-03			0.021	1.00			89		1028				09/03/97	09/03	SS-048
Duplicate (N708045-01) (QC ID=27307)	N708045-05			0.085	1.00			21		1028			14	09/03/97	09/03	SS-050
Nominal values and limits from method				0.050	1.00			20-105		700	100		180			

PROCEDURES	REFERENCE	PUPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD FOR 5 SAMPLES				
MDA	0.036	±	0.056
YIELD	66	±	53

Lab id	TMANC
Protocol	WHC-HASM-1
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	09/10/97

THERMO NUTECH

SAMPLE DELIVERY GROUP H0095

Test TP	Matrix SOLID
SDG 7448	
Contact N. Joseph Verville	

METHOD SUMMARY

AMERICIUM 241/CURIUM IN SOLIDS

ALPHA SPECTROSCOPY

Client	Westinghouse Hanford
Contract	TSH-SBV-207925
Case no	SDG H0095

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241		Curium 244	
Preparation batch 2785-046								
BOKOH7	N708045-01			7448-001	U		U	
BOKOP8	N708045-02			7448-002	U		U	
BLK (QC ID=27306)	N708045-04			7448-004	U		U	
LCS (QC ID=27305)	N708045-03			7448-003	ok		ok	
Duplicate (N708045-01)	N708045-05			7448-005	-	U	-	U
Nominal values and limits from method				RDLs (pCi/g)				

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2785-046	2σ prep error 5.0 %				Reference Lab Notebook #2785 pg. 046											
BOKOH7	N708045-01			0.035	1.00			79		609			15	09/04/97	09/04	SS-035
BOKOP8	N708045-02			0.031	1.00			86		609			15	09/04/97	09/04	SS-036
BLK (QC ID=27306)	N708045-04			0.040	1.00			79		609				09/04/97	09/04	SS-038
LCS (QC ID=27305)	N708045-03			0.098	1.00			80		578				09/04/97	09/09	SS-034
Duplicate (N708045-01) (QC ID=27307)	N708045-05			0.045	1.00			84		608			15	09/04/97	09/04	SS-039
Nominal values and limits from method					1.00			20-105		700	100		180			

PROCEDURES	REFERENCE	AM/CMPLATE
	EP-960	Americium-Curium Purification, rev 0
	EP-070	Soil Dissolution, rev 0

AVERAGES ± 2 SD	MDA	0.050	± 0.055
FOR 5 SAMPLES	YIELD	82	± 6

Lab id	TMANC
Protocol	WHC-HASM-1
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	09/10/97

THERMO NUTECH

SAMPLE DELIVERY GROUP H0095

Test U	Matrix SOLID
SDG 7448	
Contact N. Joseph Verville	

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Client	Westinghouse Hanford
Contract	TSH-SBV-207925
Case no	SDG H0095

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 2785-046											
BOKOH7	N708045-01			7448-001	0.50	0.031 J	0.41	122	17	8	3
BOKOP8	N708045-02			7448-002	0.43	0.052 J	0.35	123	19	15	5
BLK (QC ID=27306)	N708045-04			7448-004	U	U	U				
LCS (QC ID=27305)	N708045-03			7448-003	ok	ok	ok				
Duplicate (N708045-01)	N708045-05			7448-005	ok	ok J	ok	98	15	6	3
Nominal values and limits from method				RDLs (pCi/g)	0.30	0.30	0.30	100		4	
							Averages	114		9	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2785-046 2σ prep error 5.0 % Reference Lab Notebook #2785 pg. 046																
BOKOH7	N708045-01			0.014	1.00			84		1330			8	08/28/97	08/28	SS-039
BOKOP8	N708045-02			0.024	1.00			81		1330			8	08/28/97	08/28	SS-043
BLK (QC ID=27306)	N708045-04			0.011	1.00			90		1330				08/28/97	08/28	SS-047
LCS (QC ID=27305)	N708045-03			0.092	1.00			91		1330				08/28/97	08/28	SS-044
Duplicate (N708045-01) (QC ID=27307)	N708045-05			0.018	1.00			72		1330			8	08/28/97	08/28	SS-048
Nominal values and limits from method				0.30	1.00			30-105		150	100		180			

PROCEDURES	REFERENCE	UPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-910	Uranium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD	MDA	0.032	± 0.068
FOR 5 SAMPLES	YIELD	84	± 15

Lab id	TMANC
Protocol	WHC-HASM-1
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	09/10/97

THERMO NUTECH

SAMPLE DELIVERY GROUP H0095

Test	SR
Matrix	SOLID
SDG	7448
Contact	N. Joseph Verville

METHOD SUMMARY

STRONTIUM, TOTAL IN SOIL

BETA COUNTING

Client	Westinghouse Hanford
Contract	TSH-SBV-207925
Case no	SDG H0095

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Strontium-90	
Preparation batch 2785-046						
BOKOH7	N708045-01			7448-001	U	
BOKOP8	N708045-02			7448-002	U	
BLK (QC ID=27306)	N708045-04			7448-004	U	
LCS (QC ID=27305)	N708045-03			7448-003	ok	
Duplicate (N708045-01)	N708045-05			7448-005	-	U
Nominal values and limits from method				RDLs (pCi/g)		

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2785-046	2σ prep error 10.0 %				Reference Lab		Notebook #2785 pg. 046									
BOKOH7	N708045-01				1.00			97		400			13	09/02/97	09/02	GRB-217
BOKOP8	N708045-02				1.00			93		400			13	09/02/97	09/02	GRB-218
BLK (QC ID=27306)	N708045-04				1.00			82		400				09/02/97	09/02	GRB-220
LCS (QC ID=27305)	N708045-03				1.00			84		400				09/02/97	09/02	GRB-219
Duplicate (N708045-01) (QC ID=27307)	N708045-05				1.00			91		400			13	09/02/97	09/02	GRB-225
Nominal values and limits from method				1.0	1.00			20-105		100			180			

PROCEDURES	REFERENCE	SR8990
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-500	Strontium-89,90 - Purification, rev 0

AVERAGES ± 2 SD FOR 5 SAMPLES			
MDA		±	
YIELD	89	±	13

Lab id	TMANC
Protocol	WHC-HASM-1
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	09/10/97

THERMO NUTECH

SAMPLE DELIVERY GROUP H0095

Test GAM	Matrix SOLID
SDG 7448	
Contact N. Joseph Verville	

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Client	Westinghouse Hanford
Contract	TSH-SBV-207925
Case no	SDG H0095

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137
Preparation batch 2785-046							
BOKOH7	N708045-01			7448-001	U		0.078
BOKOP8	N708045-02			7448-002	U		0.040 J
BLK (QC ID=27306)	N708045-04			7448-004	U		U
LCS (QC ID=27305)	N708045-03			7448-003	ok		ok
Duplicate (N708045-01)	N708045-05			7448-005	ok	J	ok
Nominal values and limits from method				RDLs (pCi/g)	0.050		0.050

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 2785-046	2σ prep error 15.0 % Reference Lab Notebook #2785 pg. 046															
BOKOH7	N708045-01			0.021	756					551			6		08/26/97	02,03,00
BOKOP8	N708045-02			0.010	756					551			6		08/26/97	02,04,00
BLK (QC ID=27306)	N708045-04			0.006	750					978					08/29/97	01,03,00
LCS (QC ID=27305)	N708045-03				750					449					08/27/97	01,04,00
Duplicate (N708045-01) (QC ID=27307)	N708045-05				751					978			9		08/29/97	02,01,00
Nominal values and limits from method				0.050	750					100			180			

PROCEDURES	REFERENCE	GAMMAHI
	EP-060	Soil Preparation, rev 0
	EP-100	Ge(Li) Preparation for Environmental Samples, rev 0

AVERAGES ± 2 SD FOR 3 SAMPLES	MDA	0.012 ± 0.016
	YIELD	____ ± ____

Lab id	TMANC
Protocol	WHC-HASM-1
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	09/10/97

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B97-094-06	Page 1 of 1

Collector Stankovich/Hamilton / RJNielson	Company Contact Gary Hamilton	Telephone No. 373-4887	Project Coordinator Koerner, CC	Data Turnaround 15 Days
Project Designation 107-D-5 Trench -- Confirmation	Sampling Location 100 DR-1		SAF No. B97-094	
Ice Chest No. Shipping Van 96-004	Field Logbook No. EL-1339-1		Method of Shipment hand Deliver	
Shipped To TMA NORCAL	Offsite Property No. W97-0-0001-22		Bill of Lading/Air Bill No. 4235795030 90	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage
cool 4C

SAMPLE ANALYSIS SDG #0095

Preservation	None	None	None	Cool 4C	Cool 4C	None	None			
Type of Container	P	aG	aG	aG	aG	P	aG			
No. of Container(s)	1	1	1	1	1	2	1			
Volume	20g	60ml	60ml	250ml	500ml	1000ml	250ml			
	Activity Scan	Americium-241; Isotopic Uranium; Isotopic Plutonium	Strontium-89,90 -- Total Sr	Chromium Hex - 7196	Pest/PCBs - 8080 (TCL)	See item (1) in Special Instructions.	Lead 7421			

Sample No.	Matrix *	Sample Date	Sample Time										
B0K0P8	Soil	8/20/97	0520	X	X	X.	X	X	X				
~~B0K0H1~~	~~S~~	~~8/20/97~~	~~0622.5~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	RJN	8/20/97	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time 8.20.97/1030	Received By Fed Ex Shipping	Date/Time
Relinquished By Fed Ex. Shipping	Date/Time	Received By	Date/Time 8.21.97/1:00pm
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

** The ERC Contractor acknowledges the 24-hour holding time is not likely achievable at TMA for Chromium Hex by EPA 7196.

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

Close SDG upon receipt
Ice water seepd through the plastic bag

Matrix *

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

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B97-091-20	Page 1 of 1

Collector Mike Stankovich/Hamilton / RJ Nielson	Company Contact Gary Hamilton Telephone No. 373-4887	Project Coordinator Koerner, CC	Data Turnaround 15 Days
Project Designation 107-D-1 Trench – Confirmation	Sampling Location 100-DR-1	SAF No. B97-~~091~~- 094 RJN	
Ice Chest No. Shipping Van 96-004	Field Logbook No. EL-1339-1	Method of Shipment Hand deliver	
Shipped To TMA NORCAL	Offsite Property No. W97-0-0001-22	Bill of Lading/Air Bill No. 423579503090	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage
Cool to 4C

SAMPLE ANALYSIS SDG H0095

Preservation	None	None	None	Cool 4C	Cool 4C	None	none				
Type of Container	G/P	aG	aG	aG	aG	P	aG				
No. of Container(s)	1	1	1	1	1	2	1				
Volume	20g	60ml	60ml	250ml	500ml	1000ml	250 ml				
	Activity Scan	Americium-241/Curium-244; Isotopic Plutonium; Isotopic Uranium	Strontium-89,90 – Total Sr	Chromium Hex - 7196	Pest/PCBs - 8080 (TCL)	See item (1) in Special Instructions.	Lead 7421				

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)	See item (1) in Special Instructions.	Lead 7421			
B0K0H7	Soil	8/20/97	0625	X	X	X	X	X	X	X			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time 8-20-97/1050	Received By Fed. Ex Shipping	Date/Time
Relinquished By Fed. Ex Shipping	Date/Time	Received By	Date/Time 8/21/97 1:00PM
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

** The ERC Contractor acknowledges the 24-hour holding time is not likely achievable at TMA for Chromium Hex by EPA 7196.

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

Close SDG upon receipt.
Ice Water ~~p~~ Supplied through plastic bag. CR 8/21/97

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

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
BHI		WA7-0-0001-22

PART I - TO BE COMPLETED BY ORIGINATOR

Department: ERC Env. Support	Section: Field & Analytical Support	Unit: Field Sampling
The following items are to be shipped from	☑ Contractor	☐ Vendor
Fed Ex Routing	☑ Prepaid	☐ Collect

Shipped to: TMA Norcal Company: 2030 Wright Ave Address: Richmond CA City / State / Zip Code: 94804-6149 Country:	Off-site Custodian: On-site Custodian: Payroll No.

Qty.	Property No.	Description (Include Manufacture Name, Model, Serial No.)	Acquisition Cost
1	85 lbs	Sample # BOK0P8, BOK0H7 Cooler ID # Shipping Van 96-004 Poly cooler packed with 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. 100-DR-1 Remediation

☐ Business Trip

☐ Off-site Assignment

☐ Shipment to Subcontractor. List Subcontract No. _____

Bill of lading # 4235795030 90

☐ Other (Please specify) _____

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
NA		

Location of and Contact for Property (Name/Phone No./Bldg./Area): Renee Nielson (509) 376 5054 / 4706 / 100 Area

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
8/20/97	R00D222700 / CHE-8352	

Originated By	Date	Authorized By	Date
Mike Stankovich	8/20/97		
Property Representative Signature	**Date**	**Property Management Approval**	**Date**

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date
C.R. Nelson	8-20-97

DISTRIBUTION (AFTER FINAL SIGNATURES)

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

*U.S. GPO: 1994-592-170/00029

54-3000-479 (01/94)