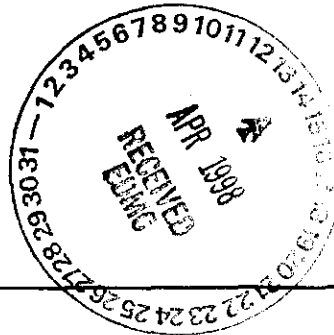


CERTIFICATE OF ANALYSIS

Bechtel Hanford, Inc.
 3350 George Washington Way
 Richland, WA 99352

September 17, 1997

Attention: Joan Kessner



SAF Number : B97-018
 Date First Sample Received : September 10, 1997
 Number of Samples : Two (2)
 Sample Type : Water
 SDG Number : W01876
 Data Deliverable : Summary

I. Introduction

On August 27, 1997, two 24 hour turn-around time water samples were received by the Quanterra Environmental Services Richland Laboratory (QESRL) for radiochemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

<u>QESRL ID#</u>	<u>BHI ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
70842301	B0HGV8	Water	8/27/97
70842302	B0HGV9	Water	8/27/97

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analysis was: **Gas Proportional Counting**
 Total Strontium by method RICH-RC-5006

Bechtel Hanford, Inc.
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Page 2

III. Quality Control

The analytical results for each analysis performed under SDG W01876 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate. Any exceptions have been noted in the "Comments" section.

Quality control sample results are reported in the same units as sample results.

IV. Comments

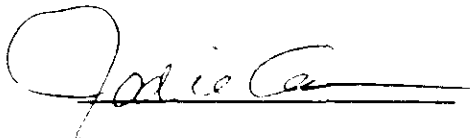
Gas Proportional Counting

Total Strontium by method RICH-RC-5006

There are no comments or nonconformances associated with the analysis of this SDG.

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

Reviewed and approved:



Jodie Carnes
Project Manager

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland **SDG: /RPT GRP:** W01876 / 3410
LAB SAMPLE ID: 70842301 **MATRIX:** WATER
CLIENT ID: B0HGV8 **DATE RECEIVED:** 8/27/97 12:30:00 PM

ANALYTE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	2.35E+03	2.4E+01	8.9E+02	3.39E+00	pCi/L	100.00%	RICHRC5006

Number of Results: 1

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland **SDG: /RPT GRP:** W01876 / 3410
LAB SAMPLE ID: 70842302 **MATRIX:** WATER
CLIENT ID: B0HGV9 **DATE RECEIVED:** 8/27/97 12:30:00 PM

ANALYTE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	2.17E+02	7.4E+00	8.4E+01	3.36E+00	pCi/L	100.00%	RICHRC5006

Number of Results:

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s):	708423			
Client ID:	BHW			
Due Date:	8/28/97			
Lab Sample Number or SDG:	W01376			
Method Test Parameters:	T3r			
Matrix:	H ₂ O			
Review Item	Yes (✓)	No (✓)	N/A (✓)	1st Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			/	/
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?	/			/
2. Were all sample holding times met?	/			/
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	/			/
C. QC Samples				
1. Is the blank yield within acceptance criteria?	/			/
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	/			/
3. Is the blank result < 1/2 the Contract Detection Limit?	/			/
4. Is the blank > 1/2 the Contract Detection Limit but < Contract Detection Limit?			/	/
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			/	/
6. Is the LCS result within acceptance criteria?	/			/
7. Is the LCS yield within acceptance criteria?	/			/
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	/			/
9. MS/MSD results and yield meet acceptance criteria?			/	/
10. Duplicate sample results and yield meet acceptance criteria?			/	/
D. Other				
1. Are all Nonconformances included and noted?			/	/
2. Are all required forms filed out?	/			/
3. Correct methodology used?	/			/
4. Transcription checked?	/			/
5. Were all calculations checked at a minimum frequency?	/			/
6. Units checked?	/			/

Comments on any "No" response: _____

First Level Review: *April Kingman*
 Second Level Review: *Jacine Co*
 Form #: LS-038,2/96/Rev.4

Date: 9-2-97
 Date: 9/16/97

CHAIN OF
CUSTODY FORMS

Data Turnaround
 Priority
 Normal

Collector DAN HIPKE	Company Contact Jane Bourghese	Telephone 375-4688
Project Designation N-Springs	Sampling Location N-Springs Pump/Treat	SAF No. 897-056 B97-018
Ice Chest No.	Field Logbook No. EL-1276^h 1345	Method of Shipment Sample
Shipped To Quanterra	Offsite Property No. N/A	Bill of Lading/Air Bill No. N/A

Possible Sample Hazards/Remarks Contamination	Preservation	N/A																		
	Type of Container	PL																		
	No. of Containers(s)	2																		
	Volume	500 mL																		
Special Handling and/or Storage																				
SAMPLE ANALYSIS 708423		SR																		
		90																		

Sample No.	Matrix*	Date Sampled	Time Sampled																	
BOHG V8 U1	water	8-19-97	0757	X																
BOHG V9 02	water	8-19-97	0759	X																

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix*
Relinquished By <i>D. Hipke</i>	Date/Time 8-19-97	Received By <i>Rebecka Nelson</i>	Date/Time 8-21-97 11:15
Relinquished By <i>Renee Nielsen</i>	Date/Time 8-21-97 12:30	Received By <i>Jessica K. [unclear]</i>	Date/Time 8-27-97 10:30
Relinquished By	Date/Time	Received By <i>2100 [unclear]</i>	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

- S - Soil
- SE - Sediment
- SO - Solid
- SL - Sludge
- W - Water
- O - Oil
- A - Air
- DS - Drums - Solids
- DL - Drums - 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

1000

Figure 1

SAMPLE CHECK-IN LIST

U.S. Environmental Protection Agency

Date/Time Received 8-27-97 1230 Client Name BHQ

Project/Client # _____ Batch or Case # _____

- Cooler ID (if noted on outside of cooler) ERC-96-039

1. Condition of shipping container? O.K.

2. Custody Seals on cooler intact? Yes No

3. Custody Seals dated and signed? Yes No

4. Chain of Custody record is taped on inside of cooler lid? Yes No

5. Vermiculite/packing material is: Wet Dry

6. Each sample is in a plastic bag? Yes No

7. Number of sample containers in cooler: 2

8. Samples have: tape _____ hazard labels

custody seals _____ appropriate sample labels

9. Samples are: in good condition _____ leaking

_____ broken _____ have air bubbles

_____ other

10. Coolant Present? Yes No Sample Temperature 4°C

11. The following paperwork should be accounted for (N/A if not applicable):

Chain of Custody # (s) N/A

Request for Analysis # (s) _____

Airbill # _____ Carrier GOV. Van

12. Have any anomalies been identified above? Yes No

13. Memos have been initiated for all anomalies identified above? Yes

Printed Name/Signature Karen Attending Date/Time 8-27-97 230

708423 Rad.

Client Sample Screening Results

28-Aug-97

CLIENT CODE	ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTSA	NET CPM A	CNTS B	NET CPM B	
BHQ	B0LGV8		8/28/1997 6:00:00 AM	QUAD21B	8/28/1997 9:20:50 AM	B0LGV8	30	56	1.84095238	1641	53.782857	
	01	LIQUID		Bkg:	8/28/1997 1:07:40 AM	BKG	700	18	0.02571429	642	0.9171429	
Anl Date:	8/28/1997	Tot Sa, Alq:	1.00E+00	, 1.00E+01	Alp;	(Dpm/ 4.13E+00	(uCV/ 1.86E-04	(pCV/ 1.86E+02	± 3.3E+01	CAT	1.3E-01	Lab
Ppt mg:	1.7	Units:	L	, ml	Bet;	Alq): 1.03E+02	Sa): 4.65E-03	I.g): 4.65E+03	± 1.2E+02	1	1.1E-02	Alq
												I.g
BHQ	B0LGV9		8/28/1997 6:00:00 AM	QUAD21C	8/28/1997 9:20:50 AM	B0LGV9	30	10	0.29761905	213	6.24	
	02	LIQUID		Bkg:	8/28/1997 1:07:40 AM	BKG	700	25	0.03571429	602	0.86	
Anl Date:	8/28/1997	Tot Sa, Alq:	1.00E+00	, 1.00E+01	Alp;	(Dpm/ 7.02E-01	(uCV/ 3.16E-05	(pCV/ 3.16E+01	± 2.1E+01	CAT	7.9E-01	Lab
Ppt mg:	2	Units:	L	, ml	Bet;	Alq): 1.21E+01	Sa): 5.46E-04	I.g): 5.46E+02	± 4.3E+01	1	9.2E-02	Alq
												I.g

Reviewed 8/28/97

00013

Dub
8-25-97

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

27-Aug-1997

Page 1

CUSTOMER: BHQ

SAF

SAMPLE DELIVERY GROUP

W11876

MATRIX WATER

BAT-C18

BATCH NUMBER

CP-423

QES ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
--------	-----	---------	-------------	----------

*)	T084231B		BHQ	ESF13090 Pr. 5/10/97 Ex. 2/13/98
*)	T084231S		BHQ	EQL1711 Pr. 7/25/97 Ex. 2/13/98
*)	T084232S		BHQ	EQL1712 Pr. 7/25/97 Ex. 2/13/98
4)	70842301		BHQ BOHGV8	ESF13091 Pr. 5/9/97 Ex. 2/13/98
5)	70842302		BHQ BOHGV9	ESF13092 Pr. 5/9/97 Ex. 2/13/98

ACTIONS (Initial & Date)

1) INITIATED

SA 8/27/97
KD JSLC

SOP(S) #

5) COUNTING/MEASUREMENT LAB

8/29/97

SOP(S) #

RICHR0003

2) PREP LAB RECEIVED

on 8-27-97

SOP(S) #

RICHRC 5006 #2

6) DATA REVIEWED AND ANALYTICAL PREP STORED

JR 9-2-97

SOP(S) #

RICHR0022pe

3) SAMPLE REMAINDER STORED

SOP(S) #

↓

4) SEPARATION LAB RECEIVED

on 8-29-97

SOP(S) #

RICHRC 5006 #2

24 HRC
TAT