

Bechtel Hanford, Inc.
March 13, 2000
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III. Quality Control

The analytical results for each analysis performed under SDG W03088 includes a minimum of two Laboratory Control Samples (LCS) and one method (reagent) blank. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments

Gas Proportional Counting

Total Strontium by method RICH-RC-5006:

The laboratory control samples, batch blank and sample results are within contractual requirements.

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:



Jackie Waddell
Project Manager

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03088 / 9898
LAB SAMPLE ID: 9D8V7110 MATRIX: WATER
CLIENT ID: B0NLR9 DATE RECEIVED: 2/22/2000 1:00:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	1.97E+03		2.6E+01	5.6E+02	3.20E+00	pCi/L	99.10%	RICHRC5006

Number of Results: 1

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03088 / 9898
LAB SAMPLE ID: 9D8V7510 MATRIX: WATER
CLIENT ID: B0XN09 DATE RECEIVED: 2/22/2000 1:00:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	2.77E+02		9.9E+00	8.0E+01	3.40E+00	pCi/L	94.30%	RICHRC5006

Number of Results: 1

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W03088 / 9898
LAB SAMPLE ID: D8XDH11B MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	9.27E-02	U	1.2E+00	1.2E+00	2.97E+00	pCi/L	97.20%	RICHRC5006

Number of Results: 1

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03088 / 9898
LAB SAMPLE ID: D8XDH12S MATRIX: WATER

ANALYTE	RESULT	COUNTING Q ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
STRONTIUM	5.73E+01	4.6E+00	1.7E+01	3.11E+00	pCi/L	97.00%	6.77E+01	84.65%

Number of Results: 1

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W03088 / 9898
LAB SAMPLE ID: D8XDH13S MATRIX: WATER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
STRONTIUM	6.10E+01		4.7E+00	1.8E+01	3.25E+00	pCi/L	96.90%	6.76E+01	90.26%

Number of Results: 1

Data Review Checklist
RADIOCHEMISTRY

Priority

Lot Number: 30B220195
 Client ID: BHI
 Due Date: 2-29-00
 QC Batch Number: 0055171 SDG Number: W43C886
 Method Test Parameter: TOTAL SR
 Matrix: Water

Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd 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. Does the blank result meet the Contract criteria?	✓			
4. Is the blank result < the 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. Do the MS/MSD results and yields meet acceptance criteria?			✓	
10. Do the duplicate sample results and yields meet acceptance criteria?	✓		✓	
D. Other				
1. Are all Nonconformances included and noted?			✓	
2. Are all required forms filled out?				
3. Was the correct methodology used?	✓			
4. Was transcription checked?	✓			
5. Were all calculations checked at a minimum frequency?	✓			
6. Were units checked?	✓			

Comments on any "No" response: _____

First Level Review: Pam Kautzner Date: 2/28/00
 Second Level Review: Debbie Waddell Date: 2/29/00

CHAIN OF CUSTODY

Q-27040

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					B99-014-02		Page #/Error of #/Error		
Collector <i>Adair</i>		Company Contact <i>Julian Larenz</i>		Telephone No. <i>372-9582</i>		Project Coordinator <i>TRENT, SJ</i>		Price Code 1D		Data Turnaround 7 Days	
Project Designation <i>100-NR-2 Pump & Treat Operational Sampling</i>		Sampling Location <i>CON NR2</i>			SAF No. <i>B99-014</i>		Air Quality <input type="checkbox"/>				
Ice Chest No. <i>ERC 99.050</i>		Field Logbook No. <i>EE1345-1</i>		COA		Method of Shipment <i>Govt Vehicle</i>					
Shipped To <i>Quanterra Incorporated</i>		Offsite Property No. <i>N/A</i>			Bill of Lading/Air Bill No. <i>N/A</i>						
POSSIBLE SAMPLE HAZARDS/REMARKS				Preservation		<i>NA</i>					
				Type of Container		<i>PL</i>					
				No. of Container(s)		<i>2</i>					
				Volume		<i>500ml</i>					
Special Handling and/or Storage											
<i>SPG</i>				SAMPLE ANALYSIS		<i>Done 2/24</i>		<i>TOTAL</i>			
<i>W03088</i>				<i>W03220195</i>		<i>SR</i>					
Sample No.	Matrix *	Sample Date	Sample Time								
<i>BCIVLR4 (InE)</i>	<i>W</i>	<i>2-22-00</i>	<i>0855</i>	<input checked="" type="checkbox"/>		<i>DBV</i>	<i>71</i>				
<i>BCXN09 (EFF)</i>	<i>W</i>	<i>2-22-00</i>	<i>0855</i>	<input checked="" type="checkbox"/>		<i>DBV</i>	<i>75</i>				
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS			
Relinquished By <i>J. Larenz</i>		Date/Time <i>2/22/00 0905</i>		Received By <i>D. W. Shea DWSHEA</i>		Date/Time <i>2/22/00 0905</i>		<p><i>SAMPLE Acquired in non RAD controlled area < 2000 pCi/g NO TA Required</i></p>			
Relinquished By <i>D. W. Shea DWSHEA</i>		Date/Time <i>2/22/00 1046</i>		Received By <i>R. Thoren</i>		Date/Time <i>2/22/00 1046</i>					
Relinquished By <i>R. Thoren</i>		Date/Time <i>2/22/00 1300</i>		Received By <i>K. Henderson</i>		Date/Time <i>2/22/00 1300</i>					
Relinquished By		Date/Time		Received By		Date/Time					
Relinquished By		Date/Time		Received By		Date/Time					
LABORATORY SECTION	Received By			Title			Date/Time				
FINAL SAMPLE DISPOSITION	Disposal Method			Disposed By			Date/Time				

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

0011

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 2-22-00/1300 SG#: W03088
 Work Order Number: JOB220195 SAF #: B99-014
 Shipping Container ID: ER99-050 Chain of Custody #: B99-014-02

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 17°C
5. Vermiculite/packing materials is Wet Dry
6. Number of samples in shipping container: 2
7. Sample holding times exceeded? Yes No

8.	Samples have:	<input checked="" type="checkbox"/> tape	<input type="checkbox"/> hazard labels
		<input checked="" type="checkbox"/> custody seals	<input type="checkbox"/> appropriate sample labels

9.	Samples are:	<input checked="" type="checkbox"/> in good condition	<input type="checkbox"/> leaking
		<input type="checkbox"/> broken	<input type="checkbox"/> have air bubbles

10. Where any anomalies identified in sample receipt? Yes No
11. Description of anomalies (include sample numbers): _____

 Sample Custodian/Laboratory: Laura S. Anderson Date: 2-22-00
 Telephoned To: _____ On _____ By _____

RQC053

Quanterra Incorporated
Information Sheet Rad Prep

Run Date: 2/24/00
Time: 9:08:37

Parent Batch:
Associated Batches:

*
* QC BATCH: 0055171 *
*

PRIORITY

Page: 1

PRIORITY
7day

TH: Total Strontium by GPC
CG: Sr-Total Prp/SepRC5006
SI: CLIENT: HANFORD

Analytical Due Date: 2/29/00

Project Manager: JW2

Lot# Work Order	Analyt Due Client Matrix	Client Name Aliquot Geometry	Count	Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Info - (Ci) Alpha	Beta	PM Bin
JOB220195-001 D8V71-1-01 Comments: WATER	2/29/00 WATER	Bechtel Hanford, .0000	.000		2/22/00 8:55		2.00E+00	pCi/L	**NYS 24-02/00	**NYS	JW2
JOB220195-002 D8V75-1-01 Comments: WATER	2/29/00 WATER	Bechtel Hanford, .0000	.000		2/22/00 8:55		2.00E+00	pCi/L	**NYS 24-02/00	**NYS	JW2
JOB240000-171 B D8XDH-1-01 Comments:	2/29/00 WATER	Bechtel Hanford,			2/22/00 8:55		2.00E+00	pCi/L	**NA	**NA	JW2
JOB240000-171 C D8XDH-1-02 Comments:	2/29/00 WATER	Bechtel Hanford,			2/22/00 8:55		2	pCi/L	**NA	**NA	JW2
JOB240000-171 C D8XDH-1-03 Comments:	2/29/00 WATER	Bechtel Hanford,			2/22/00 8:55		2	pCi/L	**NA	**NA	JW2

Total Number of Samples In Batch: 00005

Batch Information:

Dry Wt: N

Decay Correct: Y

Blank Sub: None

Call In:

Uncert: Both

Sigma: 1.960

ODR: Target List + Other Detected

BLANK CRDL
Strontium 90

2.00E+00

Tracer Yield
Strontium Tface (020-105)

Type
RPD

QC Control Limits

** NYS = Not Yet Screened

** NA = Not Applicable

** Other = Other than Gross Alpha or Gross Beta

** Indicates that Batch Information has changed for this sample. Print worksheet for details.

PRIORITY
7day

0013

COC Signature Page

W03088

Lot or Batch #: C055171	Initials/Date	Procedure #
Released By	<u>PHI 2-24-00</u>	<u>RICHRC0009</u>
Received	<u>DM 2-24-00</u>	<u>RICHRC 5006</u>
Released By	<u>DM 2-25-00</u>	n/a
Received	<u>PH 2/25/00</u>	<u>RICHRC0003</u>
Released By	<u>CS 2/25/00</u>	n/a
Received	<u>DM 2-25-00</u>	<u>RICHRC 004</u>
Released By	<u>DM 2-25-00</u>	n/a
Received	<u>PK 2-28-00</u>	<u>RICHRC0002</u>
Released By	<u>PK 2-29-00</u>	n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		