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W0931 57
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Environmental Services

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

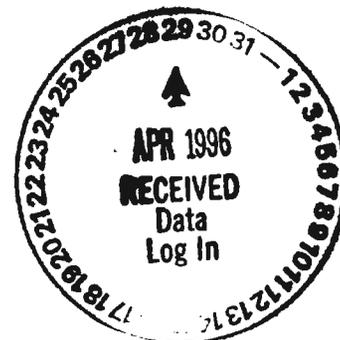
314 298-8566 Telephone
314 298-8757 Fax

CERTIFICATE OF ANALYSIS

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

March 29, 1996

Attention: Joan Kessner



Project number	:	550.109
Date Received by Lab	:	March 8, 1996
Number of Samples	:	Three (3)
Sample Type	:	Water
SDG Number	:	W0931
Data Deliverable	:	Summary



I. Introduction

On March 8, 1996, three (3) water samples were received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. Upon receipt, the samples were given the following laboratory ID numbers to correspond with the specific client IDs:

<u>St Louis ID</u>	<u>WHC ID</u>	<u>Richland ID</u>	<u>Matrix</u>	<u>Date of Receipt</u>
10525-001	BOGS44	60311601	Water	03/08/96
10525-002	BOGS45	60311602	Water	03/08/96
10525-003	BOGS46	60311603	Water	03/08/96

II. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits.

Analyses requested: Volatiles by EPA method 8240.

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Bechtel Hanford Incorporated
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III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike and Matrix Spike Duplicate analyses were performed per the protocol for each analyte.

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike

V. Comments

Volatiles

There are no comments or nonconformances associated with this analysis.

I certify that this data package 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:



Wade H. Price
Project Manager

e:\\price\$\\abbydave\\hanw0931.nar

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Project Manager: W. Price

Draft: Final

Entered and Reviewed by: *Shirley Melaney*

PM Review: *Abby Noh*

Sample Header Template:

Sample No. #	Comments Container Type	Client ID	C-Matrix Analysis	Date: Collected	Received	Due	Shipper	Rad Category	Rad Sample No. (Container Numbers:% Filled)
10535-001		BOGS44	Water	07-MAR-96 13:55	08-MAR-96 13:50	12-APR-96	FED-EX	1	Screening not Required
	NOTE: RICHLAND ID 60311601, TCL LIST (TWO 40ml VOA RECEIVED BROKEN)								
2	VI - Vial-40ml		HOLD//Q4	S HCL	11-888-**	11-888-**	109W		(219393:100 219394:100)
1			VOA/8240/Q4	S HCL	05-APR-96	21-MAR-96	109W		(219392:100)
10535-002		BOGS45	Water	07-MAR-96 14:10	08-MAR-96 13:50	12-APR-96	FED-EX	1	Screening not Required
	NOTE: RICHLAND ID 60311602, TCL LIST								
3	VI - Vial-40ml		VOA/8240/Q4	S HCL	05-APR-96	21-MAR-96	109W		(219395:100 219396:100 219397:100)
10535-002MS		BOGS45	Water	07-MAR-96 14:10	08-MAR-96 13:50	12-APR-96	FED-EX	1	Screening not Required
	NOTE: RICHLAND ID 60311602, TCL LIST								
3	VI - Vial-40ml		VOA/8240/Q4	S HCL	05-APR-96	21-MAR-96	109W		(219405:100 219406:100 219407:100)
10535-002MSD		BOGS45	Water	07-MAR-96 14:10	08-MAR-96 13:50	12-APR-96	FED-EX	1	Screening not Required
	NOTE: RICHLAND ID 60311602, TCL LIST								
3	VI - Vial-40ml		VOA/8240/Q4	S HCL	05-APR-96	21-MAR-96	109W		(219409:100 219410:100 219411:100)
10535-003		BOGS46	Water	07-MAR-96 10:10	08-MAR-96 13:50	12-APR-96	FED-EX	1	Screening not Required
	NOTE: RICHLAND ID 60311603, TCL LIST								
3	VI - Vial-40ml		VOA/8240/Q4	S HCL	05-APR-96	21-MAR-96	109W		(219398:100 219399:100 219400:100)

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3*=Sample has not been rad screened.

Chain of Custody Record

To: St Louis



QUA-4124-1

Client Bechtel Hanford		Project Manager Van Putney		Date 3-8-96	Chain Of Custody Number 54266
Address		Telephone Number (Area Code)/Fax Number		Lab Number	Page 1 of 1

City	State	Zip Code	Site Contact	Lab Contact	Analysis (Attach list if more space is needed)	Special Instructions/ Conditions of Receipt
Project Name SAF B96-031			Carrier/Waybill Number			

Sample I.D. No. and Description <small>(Containers for each sample may be combined on one line)</small>	Date	Time	Matrix			Containers & Preservatives														
			Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH									
60311601 BOG-544																				
↓ 2 ↓ 545																				
↓ 3 ↓ 546																				

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Possible Hazard Identification: Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal: Return To Client Disposal By Lab Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: 24 Hours 48 Hours 7 Days 14 Days 21 Days Other

QC Requirements (Specify) **SDG W0931**

1. Relinquished By Hudeberg Quanterra	Date 3-8-96	Time 16:00	1. Received By George w Byrd	Date 3-9-96	Time 08:40
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

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Comments

Bechtel Hanford, Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Data Turnaround

- Priority
- Normal

Collector K. Trapp <i>R. Fahlberg</i>	Company Contact F. W. Gustafson	Telephone (509) 372-9372
Project Designation 200-UP-1 Pump and Treat Operational Efficiency Sampling	Sampling Location 200-UP-1 Pump and Treat	SAF No. B96-031
Ice Chest No. <i>EL-1B</i>	Field Logbook No. NA	Method of Shipment Federal Express
Shipped To Quanterra	Offsite Property No. NA	Bill of Lading/Air Bill No. NA

Possible Sample Hazards/Remarks	Preservation	HCl	HNO ₃	HCl	None
	Type of Container	Gs	P/G	P/G	P
	No. of Container(s)	3	1	3	1
Special Handling and/or Storage Maintain samples between 2°C and 6°C.	Volume	40mL	500mL	1L	20mL

<p>SAMPLE ANALYSIS</p> <p><i>603116</i></p> <p><i>SDG</i></p> <p><i>W0931</i></p>	VOA - TCL	Total Uranium	Tc-99	Activity Scan					
	<i>Broken</i>	<i>603117</i>							

Sample No.	Matrix*	Date Sampled	Time Sampled	VOA - TCL	Total Uranium	Tc-99	Activity Scan						
<i>BOG544</i>	<i>01</i>	<i>W</i>	<i>3/7/96</i>	<i>13:50</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>Inf</i>				
<i>BOG545</i>	<i>02</i>	<i>W</i>	<i>3/7/96</i>	<i>14:10</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>Eff</i>				
<i>BOG546</i>	<i>03</i>	<i>W</i>	<i>3/7/96</i>	<i>10:10</i>	<i>X</i>								
				<i>100%</i>									

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix*
Relinquished By	Date/Time <i>15:40</i>	Received By	Date/Time <i>1540</i>
<i>R. Fahlberg</i>	<i>3/7/96</i>	<i>K. Trapp</i>	<i>3/7/96</i>
Relinquished By <i>See</i>	Date/Time <i>1150</i>	Received By <i>R. Boyd</i>	Date/Time <i>3-8-96</i>
<i>Relinquished for Ken Trapp</i>	<i>3-8-96</i>		<i>1150</i>
Relinquished By	Date/Time	Received By	Date/Time

Ken Trapp was not available.

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

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Environmental
Restoration Contractor **ERC Team**

Interoffice Memorandum

Job No. 22192
Written Response Required: NO
CCN: N/A
OU: 100-UP-1
TSD: N/A
ERA: N/A
Subject Code: 5850

TO:	W. S. Thompson N1-28 F. G. Zwiesler X0-23	DATE:	December 28, 1995
COPIES:	T. L. Lafreniere X0-23 D. A. St John N1-28 C. D. Wittreich H6-02	FROM:	S. K. De Mers Radiological Controls T7-05/373-1913

SUBJECT: Sampling of Wells in support of 200 UP-1 Pump and Treat Operations Rev. 1

There is no need to perform total activities prior to offsite shipment to NRC licensed labs of samples taken from the attached list of wells.

The wells were reviewed for radiological content based on the previous 4 years of sampling data. The wells listed has a β activity $< 100,000$ pCi/l ($< .1$ uCi/sample based on a 1 liter sample size) and the α activity is $< 10,000$ pCi/l ($< .01$ uCi/l based on a 1 liter sample). The well shows activities $< 2,000$ pCi/gm (< 2 nCi/gm D.O.T. limit). The highest activity in recent samples is 3,500 pCi/l β and 1370 pCi/l α .

Wells 299-W19-34A, W19-37, W19-38 and W19-40 were not reviewed as there is no recent sampling data. However, the wells exist relatively in the same vicinity as the listed wells and have little or no potential for exceeding the DOT requirements.

Some of the wells listed exist inside radiological controlled areas and therefor have governing RWP's. Additionally, some wells have radioactive material stickers and will require an RCT to assist in taking samples. An RCT may be scheduled through Mr. Jim Parsons at 531-0716.

skd

*Beef
FYI
-wendy*

200 UP-1 WELL SAMPLE LIST

299-W19-19
299-W19-20
299-W19-23
299-W19-24
299-W19-25
299-W19-28
299-W19-29
299-W19-30
299-W19-34A
299-W19-35
299-W19-37
299-W19-38
299-W19-40

Figure 1

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 3/18/96 1150 Client Name BHE
 Project/Client # B96-031, B96-036 Batch or Case # _____
 - Cooler ID (if noted on outside of cooler) ERICB

1. Condition of shipping container? OK
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: 31
8. Samples have:

<input type="checkbox"/> tape	<input type="checkbox"/> hazard labels
<input checked="" type="checkbox"/> custody seals	<input checked="" 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
<input type="checkbox"/> other	
10. Coolant Present? Yes No Sample Temperature 30C
11. The following paperwork should be accounted for (N/A if not applicable):

Chain of Custody #(s) <u>N/A</u>
Request for Analysis #(s) <u>↓</u>
Airbill # _____ Carrier _____
12. Have any anomalies been identified above? Yes No
13. Memos have been initiated for all anomalies identified above? Yes

Printed Name/Signature R. Boyd A. Boyd Date/Time 3/18/96 1150

09-OCT-96 1630



QC

DATE: 3-9-96
TIME: 09:30
BY: BWB

Login No.: 10535

Condition Upon Receipt Variance Report
St. Louis Laboratory

Client: Bechtel Hartford
Project No: 550.109
Shipper/No: 236-9452-522

Date: 3-9-96 Time: 08:40
Initiated by: Dan W Byrd
RFA/COC Numbers: 54266

Condition/Variance (Check all that apply):

- 1. Sample received broken/leaking.
- 2. Sample received without proper preservative.
 - Cooler temperature not within 4°C ± 2°C
Record temperature: _____
 - pH _____
 - other: _____
- 3. Sample received in improper container.
- 4. Sample received without proper paperwork. Explain: _____
- 5. Paperwork received without sample.
- 6. No sample ID on sample container.
- 7. Custody tape disturbed/broken/missing.
- 8. Sample ID on container does not match sample ID on paperwork. Explain: _____
- 9. All coolers on airbill not received with shipment.
- 10. Other (explain below): _____

No variances were noted during sample receipt. Cooler Temperature Upon Receipt: 5°C

Notes: TWO
ONE 40 ml VOA 806544 RECEIVED BROKEN.

* samples were put on hold ALL 3/11/96

Corrective Action:

- Client's Name: _____ Informed verbally on: _____ By: _____
- Client's Name: _____ Informed in writing on: _____ By: _____
- Sample(s) processed "as is". _____
- Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: (or designate) Dan W Byrd Date: 3-9-96

Project Management Review: Abby Nold Date: 3-11-96

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE

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Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.109

Category: VOA-TCL EPA 8240
Method: EPA 8240
Matrix: LIQUID

Sample Date : 03/07/96
Receipt Date : 03/08/96
Report Date : 03/29/96

Client ID: BOGS44

Quanterra ID : 10535-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result Unit	Qual.	Detection Limit	Dilution
Chloromethane	74-87-3	QCBLK94313-1	03/17/96	03/17/96	10 UG/L	U	10	1
Bromomethane	74-83-9	QCBLK94313-1	03/17/96	03/17/96	10 UG/L	U	10	1
Vinyl Chloride	75-01-4	QCBLK94313-1	03/17/96	03/17/96	10 UG/L	U	10	1
Chloroethane	75-00-3	QCBLK94313-1	03/17/96	03/17/96	10 UG/L	U	10	1
Methylene Chloride	75-09-2	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Acetone	67-64-1	QCBLK94313-1	03/17/96	03/17/96	20 UG/L	U	20	1
Carbon Disulfide	75-15-0	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
1,1-Dichloroethene	75-35-4	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
1,1-Dichloroethane	75-34-3	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
trans-1,2-Dichloroethene	156-60-5	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Chloroform	67-66-3	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
1,2-Dichloroethane	107-06-2	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
2-Butanone	78-93-3	QCBLK94313-1	03/17/96	03/17/96	20 UG/L	U	20	1
1,1,1-Trichloroethane	71-55-6	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Carbon Tetrachloride	56-23-5	QCBLK94313-1	03/17/96	03/17/96	60 UG/L	U	5	1
Bromodichloromethane	75-27-4	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
1,2-Dichloropropane	78-87-5	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
cis-1,3-Dichloropropene	10061-01-5	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Trichloroethene	79-01-6	QCBLK94313-1	03/17/96	03/17/96	3 UG/L	J	5	1
Dibromochloromethane	124-48-1	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
1,1,2-Trichloroethane	79-00-5	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Benzene	71-43-2	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
trans-1,3-Dichloropropene	10061-02-6	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Bromoform	75-25-2	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
4-Methyl-2-Pentanone	108-10-1	QCBLK94313-1	03/17/96	03/17/96	20 UG/L	U	20	1
2-Hexanone	591-78-6	QCBLK94313-1	03/17/96	03/17/96	20 UG/L	U	20	1
Tetrachloroethene	127-18-4	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
1,1,2,2-Tetrachloroethane	79-34-5	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Toluene	108-88-3	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Chlorobenzene	108-90-7	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Ethylbenzene	100-41-4	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Styrene	100-42-5	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Xylene (total)	1330-20-7	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Toluene-d8 (SURR)	2037-26-5	QCBLK94313-1	03/17/96	03/17/96	96 %REC			1
Bromofluorobenzene (SURR)	460-00-4	QCBLK94313-1	03/17/96	03/17/96	90 %REC			1
1,2-Dichloroethane-d4 (SURR)	17070-07-0	QCBLK94313-1	03/17/96	03/17/96	95 %REC			1

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Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.109

Category: VOA-TCL EPA 8240
Method: EPA 8240
Matrix: LIQUID

Sample Date : 03/07/96
Receipt Date : 03/08/96
Report Date : 03/29/96

Client ID: BOGS45

Quanterra ID : 10535-002

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result Unit	Qual.	Detection Limit	Dilution
Chloromethane	74-87-3	QCBLK93991-1	03/12/96	03/12/96	10 UG/L	U	10	1
Bromomethane	74-83-9	QCBLK93991-1	03/12/96	03/12/96	10 UG/L	U	10	1
Vinyl Chloride	75-01-4	QCBLK93991-1	03/12/96	03/12/96	10 UG/L	U	10	1
Chloroethane	75-00-3	QCBLK93991-1	03/12/96	03/12/96	10 UG/L	U	10	1
Methylene Chloride	75-09-2	QCBLK93991-1	03/12/96	03/12/96	3 UG/L	BJ	5	1
Acetone	67-64-1	QCBLK93991-1	03/12/96	03/12/96	20 UG/L	U	20	1
Carbon Disulfide	75-15-0	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
1,1-Dichloroethene	75-35-4	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
1,1-Dichloroethane	75-34-3	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
trans-1,2-Dichloroethene	156-60-5	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
Chloroform	67-66-3	QCBLK93991-1	03/12/96	03/12/96	2 UG/L	J	5	1
1,2-Dichloroethane	107-06-2	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
2-Butanone	78-93-3	QCBLK93991-1	03/12/96	03/12/96	20 UG/L	U	20	1
1,1,1-Trichloroethane	71-55-6	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
Carbon Tetrachloride	56-23-5	QCBLK93991-1	03/12/96	03/12/96	4 UG/L	J	5	1
Bromodichloromethane	75-27-4	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
1,2-Dichloropropane	78-87-5	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
cis-1,3-Dichloropropene	10061-01-5	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
Trichloroethene	79-01-6	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
Dibromochloromethane	124-48-1	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
1,1,2-Trichloroethane	79-00-5	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
Benzene	71-43-2	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
trans-1,3-Dichloropropene	10061-02-6	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
Bromoform	75-25-2	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
4-Methyl-2-Pentanone	108-10-1	QCBLK93991-1	03/12/96	03/12/96	20 UG/L	U	20	1
2-Hexanone	591-78-6	QCBLK93991-1	03/12/96	03/12/96	20 UG/L	U	20	1
Tetrachloroethene	127-18-4	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
1,1,2,2-Tetrachloroethane	79-34-5	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
Toluene	108-88-3	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
Chlorobenzene	108-90-7	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
EthylBenzene	100-41-4	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
Styrene	100-42-5	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
Xylene (total)	1330-20-7	QCBLK93991-1	03/12/96	03/12/96	5 UG/L	U	5	1
Toluene-d8 (SURR)	2037-26-5	QCBLK93991-1	03/12/96	03/12/96	95 %REC			1
Bromofluorobenzene (SURR)	460-00-4	QCBLK93991-1	03/12/96	03/12/96	90 %REC			1
1,2-Dichloroethane-d4 (SURR)	17070-07-0	QCBLK93991-1	03/12/96	03/12/96	93 %REC			1

00013

9613453.1633

Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.109

Category: VOA-TCL EPA 8240
Method: EPA 8240
Matrix: LIQUID

Sample Date : 03/07/96
Receipt Date : 03/08/96
Report Date : 03/29/96

Client ID: BOGS45

Quanterra ID : 10535-002MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result Unit	Qual.	Detection	
							Limit	Dilution
1,1-Dichloroethene	75-35-4	QCBLK94529-1	03/19/96	03/19/96	150 %REC			1
Trichloroethene	79-01-6	QCBLK94529-1	03/19/96	03/19/96	108 %REC			1
Benzene	71-43-2	QCBLK94529-1	03/19/96	03/19/96	106 %REC			1
Toluene	108-88-3	QCBLK94529-1	03/19/96	03/19/96	102 %REC			1
Chlorobenzene	108-90-7	QCBLK94529-1	03/19/96	03/19/96	99 %REC			1
Toluene-d8 (SURR)	2037-26-5	QCBLK94529-1	03/19/96	03/19/96	97 %REC			1
Bromofluorobenzene (SURR)	460-00-4	QCBLK94529-1	03/19/96	03/19/96	90 %REC			1
1,2-Dichloroethane-d4 (SURR)	17070-07-0	QCBLK94529-1	03/19/96	03/19/96	100 %REC			1

00014

9613453.1634

Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.109

Category: VOA-TCL EPA 8240
Method: EPA 8240
Matrix: LIQUID

Sample Date : 03/07/96
Receipt Date : 03/08/96
Report Date : 03/29/96

Client ID: B0GS45

Quanterra ID : 10535-002MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
1,1-Dichloroethene	75-35-4	QCBLK94529-1	03/19/96	03/19/96	159	%REC			1
Trichloroethene	79-01-6	QCBLK94529-1	03/19/96	03/19/96	105	%REC			1
Benzene	71-43-2	QCBLK94529-1	03/19/96	03/19/96	104	%REC			1
Toluene	108-88-3	QCBLK94529-1	03/19/96	03/19/96	101	%REC			1
Chlorobenzene	108-90-7	QCBLK94529-1	03/19/96	03/19/96	101	%REC			1
Toluene-d8 (SURR)	2037-26-5	QCBLK94529-1	03/19/96	03/19/96	96	%REC			1
Bromofluorobenzene (SURR)	460-00-4	QCBLK94529-1	03/19/96	03/19/96	90	%REC			1
1,2-Dichloroethane-d4 (SURR)	17070-07-0	QCBLK94529-1	03/19/96	03/19/96	96	%REC			1

00015

9613453.1635

Quanterra-Richland
P.O. Box 1970
Richland, WA 99352

Project: 550.109

Category: VOA-TCL EPA 8240
Method: EPA 8240
Matrix: LIQUID

Sample Date : 03/07/96
Receipt Date : 03/08/96
Report Date : 03/29/96

Client ID: BOGS46

Quanterra ID : 10535-003

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result Unit	Qual.	Detection Limit	Dilution
Chloromethane	74-87-3	QCBLK94313-1	03/17/96	03/17/96	10 UG/L	U	10	1
Bromomethane	74-83-9	QCBLK94313-1	03/17/96	03/17/96	10 UG/L	U	10	1
Vinyl Chloride	75-01-4	QCBLK94313-1	03/17/96	03/17/96	10 UG/L	U	10	1
Chloroethane	75-00-3	QCBLK94313-1	03/17/96	03/17/96	10 UG/L	U	10	1
Methylene Chloride	75-09-2	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Acetone	67-64-1	QCBLK94313-1	03/17/96	03/17/96	20 UG/L	U	20	1
Carbon Disulfide	75-15-0	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
1,1-Dichloroethene	75-35-4	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
1,1-Dichloroethane	75-34-3	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
trans-1,2-Dichloroethene	156-60-5	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Chloroform	67-66-3	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
1,2-Dichloroethane	107-06-2	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
2-Butanone	78-93-3	QCBLK94313-1	03/17/96	03/17/96	20 UG/L	U	20	1
1,1,1-Trichloroethane	71-55-6	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Carbon Tetrachloride	56-23-5	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Bromodichloromethane	75-27-4	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
1,2-Dichloropropane	78-87-5	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
cis-1,3-Dichloropropene	10061-01-5	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Trichloroethene	79-01-6	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Dibromochloromethane	124-48-1	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
1,1,2-Trichloroethane	79-00-5	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Benzene	71-43-2	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
trans-1,3-Dichloropropene	10061-02-6	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Bromoform	75-25-2	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
4-Methyl-2-Pentanone	108-10-1	QCBLK94313-1	03/17/96	03/17/96	20 UG/L	U	20	1
2-Hexanone	591-78-6	QCBLK94313-1	03/17/96	03/17/96	20 UG/L	U	20	1
Tetrachloroethene	127-18-4	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
1,1,2,2-Tetrachloroethane	79-34-5	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Toluene	108-88-3	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Chlorobenzene	108-90-7	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Ethyl Benzene	100-41-4	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Styrene	100-42-5	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Xylene (total)	1330-20-7	QCBLK94313-1	03/17/96	03/17/96	5 UG/L	U	5	1
Toluene-d8 (SURR)	2037-26-5	QCBLK94313-1	03/17/96	03/17/96	97 %REC			1
Bromofluorobenzene (SURR)	460-00-4	QCBLK94313-1	03/17/96	03/17/96	91 %REC			1
1,2-Dichloroethane-d4 (SURR)	17070-07-0	QCBLK94313-1	03/17/96	03/17/96	96 %REC			1

00016

9613453.1636

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOGS44

Lab Name: QUANTERRA MO

Contract: 550-109

Lab Code: ITMO

Case No.: V53501

SDG No.: W0931

Matrix: (soil/water) WATER

Lab Sample ID: 10535-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B7834

Level: (low/med) LOW

Date Received: 03/08/96

% Moisture: not dec.

Date Analyzed: 03/17/96

Column: (pack/cap) CAP

Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

74-87-3	-----Chloromethane	10	U
74-83-9	-----Bromomethane	10	U
75-01-4	-----Vinyl Chloride	10	U
75-00-3	-----Chloroethane	10	U
75-09-2	-----Methylene Chloride	5	U
67-64-1	-----Acetone	20	U
75-15-0	-----Carbon Disulfide	5	U
75-35-4	-----1,1-Dichloroethene	5	U
75-34-3	-----1,1-Dichloroethane	5	U
540-59-0	-----1,2-Dichloroethene (total)	5	U
67-66-3	-----Chloroform	5	J
107-06-2	-----1,2-Dichloroethane	5	U
78-93-3	-----2-Butanone	20	U
71-55-6	-----1,1,1-Trichloroethane	5	U
56-23-5	-----Carbon Tetrachloride	60	U
75-27-4	-----Bromodichloromethane	5	U
78-87-5	-----1,2-Dichloropropane	5	U
10061-01-5	-----cis-1,3-Dichloropropene	5	U
79-01-6	-----Trichloroethene	3	J
124-48-1	-----Dibromochloromethane	5	U
79-00-5	-----1,1,2-Trichloroethane	5	U
71-43-2	-----Benzene	5	U
10061-02-6	-----trans-1,3-Dichloropropene	5	U
75-25-2	-----Bromoform	5	U
108-10-1	-----4-Methyl-2-Pentanone	20	U
591-78-6	-----2-Hexanone	20	U
127-18-4	-----Tetrachloroethene	5	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5	U
108-88-3	-----Toluene	5	U
108-90-7	-----Chlorobenzene	5	U
100-41-4	-----Ethylbenzene	5	U
100-42-5	-----Styrene	5	U
1330-20-7	-----Xylene (total)	5	U

9613453.1637

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BOGS44

Lab Name: QUANTERRA MO

Contract: 550-109

Lab Code: ITMO

Case No.: V53501

SDG No.: W0931

Matrix: (soil/water) WATER

Lab Sample ID: 10535-001

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B7834

Level: (low/med) LOW

Date Received: 03/08/96

% Moisture: not dec.

Date Analyzed: 03/17/96

Column (pack/cap) CAP

Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

9613453.1638

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0GS45

Lab Name: QUANTERRA MO

Contract: 550-109

Lab Code: ITMO

Case No.: V53501

SDG No.: W0931

Matrix: (soil/water) WATER

Lab Sample ID: 10535-002

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B7724

Level: (low/med) LOW

Date Received: 03/08/96

% Moisture: not dec.

Date Analyzed: 03/12/96

Column: (pack/cap) CAP

Dilution Factor: 1.0

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

74-87-3	-----Chloromethane	10	U
74-83-9	-----Bromomethane	10	U
75-01-4	-----Vinyl Chloride	10	U
75-00-3	-----Chloroethane	10	U
75-09-2	-----Methylene Chloride	3	BJ
67-64-1	-----Acetone	20	U
75-15-0	-----Carbon Disulfide	5	U
75-35-4	-----1,1-Dichloroethene	5	U
75-34-3	-----1,1-Dichloroethane	5	U
540-59-0	-----1,2-Dichloroethene (total)	5	U
67-66-3	-----Chloroform	2	J
107-06-2	-----1,2-Dichloroethane	5	U
78-93-3	-----2-Butanone	20	U
71-55-6	-----1,1,1-Trichloroethane	5	U
56-23-5	-----Carbon Tetrachloride	4	J
75-27-4	-----Bromodichloromethane	5	U
78-87-5	-----1,2-Dichloropropane	5	U
10061-01-5	-----cis-1,3-Dichloropropene	5	U
79-01-6	-----Trichloroethene	5	U
124-48-1	-----Dibromochloromethane	5	U
79-00-5	-----1,1,2-Trichloroethane	5	U
71-43-2	-----Benzene	5	U
10061-02-6	-----trans-1,3-Dichloropropene	5	U
75-25-2	-----Bromoform	5	U
108-10-1	-----4-Methyl-2-Pentanone	20	U
591-78-6	-----2-Hexanone	20	U
127-18-4	-----Tetrachloroethene	5	U
79-34-5	-----1,1,2,2-Tetrachloroethane	5	U
108-88-3	-----Toluene	5	U
108-90-7	-----Chlorobenzene	5	U
100-41-4	-----Ethylbenzene	5	U
100-42-5	-----Styrene	5	U
1330-20-7	-----Xylene (total)	5	U

9613453.1639

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B0GS45

Lab Name: QUANTERRA MO

Contract: 550-109

Lab Code: ITMO

Case No.: V53501

SDG No.: W0931

Matrix: (soil/water) WATER

Lab Sample ID: 10535-002

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B7724

Level: (low/med) LOW

Date Received: 03/08/96

% Moisture: not dec.

Date Analyzed: 03/12/96

Column (pack/cap) CAP

Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

9613453.1640

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B0GS46

Lab Name: QUAN TERRA MO

Contract: 550-109

Lab Code: ITMO

Case No.: V53501

SDG No.: W0931

Matrix: (soil/water) WATER

Lab Sample ID: 10535-003

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B7835

Level: (low/med) LOW

Date Received: 03/08/96

% Moisture: not dec.

Date Analyzed: 03/17/96

Column: (pack/cap) CAP

Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3-----	Chloromethane	10	U
74-83-9-----	Bromomethane	10	U
75-01-4-----	Vinyl Chloride	10	U
75-00-3-----	Chloroethane	10	U
75-09-2-----	Methylene Chloride	5	U
67-64-1-----	Acetone	20	U
75-15-0-----	Carbon Disulfide	5	U
75-35-4-----	1,1-Dichloroethene	5	U
75-34-3-----	1,1-Dichloroethane	5	U
540-59-0-----	1,2-Dichloroethene (total)	5	U
67-66-3-----	Chloroform	5	U
107-06-2-----	1,2-Dichloroethane	5	U
78-93-3-----	2-Butanone	20	U
71-55-6-----	1,1,1-Trichloroethane	5	U
56-23-5-----	Carbon Tetrachloride	5	U
75-27-4-----	Bromodichloromethane	5	U
78-87-5-----	1,2-Dichloropropane	5	U
10061-01-5-----	cis-1,3-Dichloropropene	5	U
79-01-6-----	Trichloroethene	5	U
124-48-1-----	Dibromochloromethane	5	U
79-00-5-----	1,1,2-Trichloroethane	5	U
71-43-2-----	Benzene	5	U
10061-02-6-----	trans-1,3-Dichloropropene	5	U
75-25-2-----	Bromoform	5	U
108-10-1-----	4-Methyl-2-Pentanone	20	U
591-78-6-----	2-Hexanone	20	U
127-18-4-----	Tetrachloroethene	5	U
79-34-5-----	1,1,2,2-Tetrachloroethane	5	U
108-88-3-----	Toluene	5	U
108-90-7-----	Chlorobenzene	5	U
100-41-4-----	Ethylbenzene	5	U
100-42-5-----	Styrene	5	U
1330-20-7-----	Xylene (total)	5	U

9613453.1641

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0GS46

Lab Name: QUANTERRA MO

Contract: 550-109

Lab Code: ITMO

Case No.: V53501

SDG No.: W0931

Matrix: (soil/water) WATER

Lab Sample ID: 10535-003

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: B7835

Level: (low/med) LOW

Date Received: 03/08/96

% Moisture: not dec.

Date Analyzed: 03/17/96

Column (pack/cap) CAP

Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
=====	=====	=====	=====	=====

9613453.1642



Quanterra Incorporated
2800 George Washington Way
Richland, Washington 99352

509 375-3131 Telephone
509 375-5590 Fax

Analytical Data Package Prepared For

Westinghouse/Bechtel Hanford

Radiochemical Analysis By

Quanterra Environmental Services
Richland Laboratory

Sample Delivery Group Number: W0931



CLIENT ID NUMBER

QUANTERRA ID NUMBER

B0GS44

60311701

B0GS45

60311702

000001

9613453.1643



Quanterra Incorporated
2800 George Washington Way
Richland, Washington 99352

509 375-3131 Telephone
509 375-5590 Fax

CERTIFICATE OF ANALYSIS

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

May 6, 1996

Attention: Joan Kessner



SAF Number	:	B96-031
Date SDG Closed	:	March 22, 1996
Number of Samples	:	Two (2)
Sample Type	:	Water
SDG Number	:	W0931
Data Deliverable	:	Summary

I. Introduction

On March 8, 1996, two water samples were received by the Quanterra Environmental Services Richland Laboratory (QTESRL) 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>QTESRL ID#</u>	<u>BHI ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
60311701	B0GS44	WATER	03/8/96
60311702	B0GS45	WATER	03/8/96

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.

000002

Bechtel Hanford, Inc.
May 6, 1996
Page 2

The requested analyses were: **Liquid Scintillation Counting**
Technetium-99 by method ITAS-IT-RS-0001
Total Uranium
Total Uranium by method RICHRC-5058

II. Quality Control

The analytical results for each analysis performed under SDG W0931 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

Liquid Scintillation Counting

Technetium-99 by method ITAS-IT-RS-0001

The matrix spike recovery was low 31.1% due to a low spike relative to the sample activity. Except as noted, the matrix spike, LCS, batch blank, sample and sample duplicate (BOGS44) results are within contractual requirements.

Total Uranium

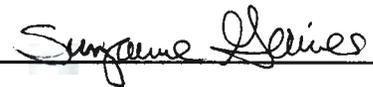
Total Uranium by method RICHRC-5058

The matrix spike, LCS, batch blank, sample and sample duplicate (BOGS45) results are within contractual requirements.

Bechtel Hanford, Inc.
May 6, 1996
Page 3

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:



Suzanne Gaines
Project Manager

9613453.1646



SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND SDG: W0931
LAB SAMPLE ID: 60311701 MATRIX: WATER
CLIENT ID: B0GS44 DATE RECEIVED: 3/8/96 11:50:00 AM

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
TC-99	4.14E+03	2.0E+01	4.5E+02	3.86E+00	pCi/L	95.10%	ITAS-IT-RS-0001
TOTAL-URANIUM	2.91E+02	N/A	4.0E+01	2.17E-02	ug/L	N/A	RICHRC5058

Number of Results:

000005

9613453.1647

**SAMPLE RESULTS**

LAB NAME: ITAS-RICHLAND **SDG:** W0931
LAB SAMPLE ID: 60311702 **MATRIX:** WATER
CLIENT ID: B0GS45 **DATE RECEIVED:** 3/8/96 11:50:00 AM

ISOTOPE	RESULT	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA	REPORT UNIT	YIELD	METHOD NUMBER
TC-99	7.18E+02	8.7E+00	8.2E+01	3.86E+00	pCi/L	95.10%	ITAS-IT-RS-0001
TOTAL-URANIUM	7.80E-02	N/A	2.2E-02	2.17E-02	ug/L	N/A	RICHRC5058

Number of Results:

000006

9613453.1648

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s): 603117

Client ID: BNI

Due Date: 5-6-96

Lab Sample Number or SDG: W0931

Method Test Parameters: TC-99

Matrix: Water

Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			X	✓
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?			X	✓
2. Were all sample holding times met?			X	✓
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	X			✓
C. QC Samples				
1. Is the blank yield within acceptance criteria	X			✓
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	X			✓
3. Is the blank result < 1/2 the Contract Detection Limit?	X			✓
4. Is the blank > 1/2 the Contract Detection Limit but < Contract Detection Limit?			X	✓
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			X	✓
6. Is the LCS result within acceptance criteria?	X		X	✓
7. Is the LCS yield within acceptance criteria	X			✓
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	X			✓
9. MS/MSD results and yield meet acceptance criteria?		X		✓
10. Duplicate sample results and yield meet acceptance criteria?	X			✓
D. Other				
1. Are all Nonconformances included and noted?	X			✓
2. Are all required forms filed out?	X			✓
3. Correct methodology used?	X			✓
4. Transcription checked?	X			✓
5. Were all calculations checked at a minimum frequency?	X			✓
6. Units checked?	X			✓

Comments on any "No" response: _____

First Level Review: Henry E. [Signature]

Second Level Review: Serg [Signature]

Form #: LS-038,2 /96, Rev.4

Date: 4/26/96

Date: 5/6/96

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QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

PAGE 1 OF 2

LOG #: RD-95-_____

Project ID: B#1 NCM Initiated by: 96w 4/22/96
 Sample Numbers: A0311702
 Tests: Tc94
 Matrix: H₂O W0931

Analytical Area (check appropriate area):

- | | | | |
|--|--------------------------------|--|--|
| <input type="checkbox"/> Sample control | <input type="checkbox"/> GC | <input type="checkbox"/> Wet chemistry | <input type="checkbox"/> Data review |
| <input type="checkbox"/> Organic preparation | <input type="checkbox"/> HPLC | <input type="checkbox"/> Metals | <input checked="" type="checkbox"/> Radiochemistry |
| <input type="checkbox"/> Inorganic preparation | <input type="checkbox"/> GC/MS | <input type="checkbox"/> Reporting | <input type="checkbox"/> Bioassay |

Nonconformance (check appropriate area):

Holding Time Violations (exceeded by _____ days)

Category I: Laboratory Independent

- 1. Holding time expired in transit
- 2. Sample received > 48 hrs. or 1/2 holding time has expired
- 3. Test added by client after expiration

Category II: Laboratory Dependent

- 4. Instrument failure
- 5. Analyst error
- 6. Login error
- 7. Miscommunication
- 8. Other (complete description required)

Category III: Analysis Reruns (QA/QC)

- 9. Surrogates
- 10. Internal Standards
- 11. Spike Recoveries
- 12. Blank Contamination

Category IV: Analysis Reruns (Confirmation)

- 13. Second column
- 14. Contamination check
- 15. Confirmation of matrix effects
- 16. Other (complete description required)

Quality Assurance/Quality Control

- 17. QC data reported outside of controls
- 18. Incorrect procedure used
- 19. SOP intentionally modified with QA and Tech. approval
- 20. Invalid instrument calibration
- 21. Insufficient sample received for proper analysis

Incorrect or Incomplete Client Deliverable

- 22. Hardcopy deliverable error
- 23. Electronic deliverable error

Reported detection limits elevated due to:

- 24. Sample matrix
- 25. Insufficient sample volume
- 26. Other (complete description required)

27. Other (specify): 31.1% MS yield

Comments/Explanation: _____

Notification (check appropriate area):

Client notified by (name and date): _____	Client's name and response: _____
<input type="checkbox"/> in writing	<input type="checkbox"/> process "as is"
<input type="checkbox"/> by telephone	<input type="checkbox"/> on hold until _____
<input type="checkbox"/> by facsimile	<input type="checkbox"/> re-sample
<input type="checkbox"/> other (explain)	<input type="checkbox"/> other (explain)

Project Manager (signature and date): Suzanne 5/6/96

000013

QUANTERRA LABORATORY NONCONFORMANCE MEMO (NCM)

Corrective Action

Root Cause

Initial and date: 4/26/96 GE

sa activity 719 ± 40.9 spk level 90.
spk small relative sample activity

Corrective Action

Initial and Date: GE 4/26/96

Report data -

Responsibility for performing CA assigned to: _____

Actions to prevent recurrence

Initial and Date: _____

First Level Supervisor:

Thomas E. McKeel

Date:

4/26/96

Responsible Manager:

W. MacKillop

Date:

5/6/96

Quality Assurance Review

Anomaly

Deficiency

Rerun

Further action required: _____

Assigned to: _____

QA signature:

Beverly Stinson

Date:

5/6/96

Corrective Action Verification

Verified

Cannot Verify (specify reason): _____

Nonconformance Memo Closure

QA signature/date:

Beverly Stinson

5/6/96

9613453.1651

Quanterra Data Review Checklist
RADIOCHEMISTRY

Work Order number (s): <u>603117</u>				
Client ID: <u>BHI</u>				
Due Date: <u>5-6-96</u>				
Lab Sample Number or SDG: <u>W0931 03-117</u>				
Method Test Parameters: <u>Aluminum</u>				
Matrix: <u>water</u>				
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. 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: Pat Thompson
 Second Level Review: Serg Delina
 Form #: LS-038,2/96, Rev.4

Date: 4-22-96
 Date: 5/6/96

000015

Bechtel Hanford, Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Data Turnaround

- Priority
- Normal

Collector K. Trapp <i>R. Fahlberg</i>	Company Contact F. W. Gustafson	Telephone (509) 372-9372
Project Designation 200-UP-1 Pump and Treat Operational Efficiency Sampling	Sampling Location 200-UP-1 Pump and Treat	SAF No. B98-031
Ice Chest No. <i>ER-1B</i>	Field Logbook No. NA	Method of Shipment Federal Express
Shipped To Quanterra	Offsite Property No. NA	Bill of Lading/Air Bill No. NA

Possible Sample Hazards/Remarks	Preservation	HCl	HNO ₃	HCl	None
		Type of Container	Gs	P/G	P/G
	No. of Container(s)	3	1	3	1
Special Handling and/or Storage Maintain samples between 2°C and 6°C.	Volume	40mL	500mL	1L	20mL

<p>SAMPLE ANALYSIS</p> <p><i>603116</i></p>	<p><i>SDG</i></p> <p><i>W0931</i></p>	VOA - TCL	Total Uranium <i>603117</i>	Tc-99	Activity Scan
---	---------------------------------------	-----------	--------------------------------	-------	---------------

Sample No.	Matrix*	Date Sampled	Time Sampled	VOA - TCL	Total Uranium	Tc-99	Activity Scan						
<i>BOG544 01</i>	<i>W</i>	<i>3/7/96</i>	<i>13:55</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>Inf</i>					
<i>BOG545 02</i>	<i>W</i>	<i>3/7/96</i>	<i>14:10</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>Eff</i>					
<i>BOG546 03</i>	<i>W</i>	<i>3/7/96</i>	<i>10:10</i>	<i>X</i>									

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By <i>R. Fahlberg</i>	Date/Time <i>3/7/96 15:40</i>	<p><i>Ken Trapp was not available.</i></p>
Received By <i>K. Trapp / K. Trapp</i>	Date/Time <i>3/7/96 15:40</i>	
Relinquished By <i>R. Fahlberg</i>	Date/Time <i>3/7/96 11:50</i>	
Received By <i>R. Boyd</i>	Date/Time <i>3-8-96 11:50</i>	
Relinquished By <i>R. Boyd</i>	Date/Time <i>3-8-96</i>	
Relinquished By	Date/Time	
Received By	Date/Time	

- 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

470000

9613453.1652

Environmental
Restoration
Contractor **ERC Team**
Interoffice Memorandum

Job No. 22192
Written Response Required: NO
CCN: N/A
OU: 100-UP-1
TSD: N/A
ERA: N/A
Subject Code: 5850

TO: W. S. Thompson N1-28 DATE: December 28, 1995
F. G. Zwiesler X0-23

COPIES: T. L. Lafreniere X0-23 FROM: S. K. De Mers
D. A. St John N1-28 Radiological Controls
C. D. Wittreich H6-02 T7-05/373-1913

SUBJECT: **Sampling of Wells in support of 200 UP-1 Pump and Treat Operations Rev. 1**

There is no need to perform total activities prior to offsite shipment to NRC licensed labs of samples taken from the attached list of wells.

The wells were reviewed for radiological content based on the previous 4 years of sampling data. The wells listed has a β activity $< 100,000$ pCi/l ($< .1$ uCi/sample based on a 1 liter sample size) and the α activity is $< 10,000$ pCi/l ($< .01$ uCi/l based on a 1 liter sample). The well shows activities $< 2,000$ pCi/gm (< 2 nCi/gm D.O.T. limit). The highest activity in recent samples is 3,500 pCi/l β and 1370 pCi/l α .

Wells 299-W19-34A, W19-37, W19-38 and W19-40 were not reviewed as there is no recent sampling data. However, the wells exist relatively in the same vicinity as the listed wells and have little or no potential for exceeding the DOT requirements.

Some of the wells listed exist inside radiological controlled areas and therefor have governing RWP's. Additionally, some wells have radioactive material stickers and will require an RCT to assist in taking samples. An RCT may be scheduled through Mr. Jim Parsons at 531-0716.

skd

Beel
F3I
-wendy

000018

200 UP-1 WELL SAMPLE LIST

299-W19-19
299-W19-20
299-W19-23
299-W19-24
299-W19-25
299-W19-28
299-W19-29
299-W19-30
299-W19-34A
299-W19-35
299-W19-37
299-W19-38
299-W19-40

Figure 1

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

SDG
W0931

Date/Time Received 3/8/96 1150 Client Name BHE
Project/Client # B96-031, B96-036 Batch or Case # _____
- Cooler ID (if noted on outside of cooler) ER1B

- 1. Condition of shipping container? OIC
- 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: 31

- 8. Samples have:

_____ tape	_____ hazard labels
<u>X</u> custody seals	<u>X</u> appropriate sample labels
- 9. Samples are:

<u>X</u> in good condition	_____ leaking
_____ broken	_____ have air bubbles
_____ other	

10. Coolant Present? Yes No Sample Temperature 30C

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 _____

- 12. Have any anomalies been identified above? Yes No
- 13. Memos have been initiated for all anomalies identified above? Yes

Printed Name/Signature R. Boyd A. Boyd Date/Time 3/8/96 1150

856
W0931

603116 Chem
603117 Rad

Client Sample Screening Results

(P) 3/18/96

08-Mar-96

CLIENT CODE ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTSA	NET CPM A	CNTS B	NET CPM B		
BHI B0G544		3/8/96 12:00:00 PM	QUAD21A	3/8/96 2:56:19 PM	B0G544	30	93	3.03	1053	34.15		
01	LIQUID		Bkg:	3/8/96 4:52:27 AM	BKG	800	56	0.07	760	0.95		
Anl Date: 3/8/96	Tot Sa, Alq: 1.00E+00	1.00E+01	Alp; (Dpm/	8.75E+00	(uCV 3.94E-04	(pCV 3.94E+02	± 4.6E+01	CAT I	6.3E-02	Lab		
Ppt mg: 8.1 ✓	Units: L	ml	Bet; Alq): 6.77E+01	Sa): 3.05E-03	Llg): 3.05E+03	± 9.7E+01			1.6E-02	Llg		
BHI B0G545		3/8/96 11:00:00 AM	QUAD21B	3/8/96 2:56:19 PM	B0G545	30	25	0.78958333	265	7.9795833		
02	LIQUID		Bkg:	3/8/96 4:52:27 AM	BKG	800	35	0.04375	683	0.85375		
Anl Date: 3/8/96	Tot Sa, Alq: 2.00E+00	1.00E+01	Alp; (Dpm/	2.44E+00	(uCV 2.20E-04	(pCV 1.10E+02	± 3.0E+01	CAT I	2.3E-01	Lab		
Ppt mg: 8 ✓	Units: L	ml	Bet; Alq): 1.52E+01	Sa): 1.37E-03	Llg): 6.85E+02	± 4.7E+01			7.3E-02	Llg		
BHI B0H656		3/8/96 11:00:00 AM	QUAD21C	3/8/96 2:56:19 PM	B0H656	30	16	0.48458333	838	27.088333		
	LIQUID		Bkg:	3/8/96 4:52:27 AM	BKG	800	39	0.04875	676	0.845		
Anl Date: 3/8/96	Tot Sa, Alq: 2.00E+00	1.00E+01	Alp; (Dpm/	6.23E-01	(uCV 5.61E-05	(pCV 2.81E+01	± 2.0E+01	CAT I	8.9E-01	Lab		
Ppt mg: 0.7 ✓	Units: L	ml	Bet; Alq): 5.29E+01	Sa): 4.77E-03	Llg): 2.38E+03	± 8.5E+01			2.1E-02	Llg		
BHI B0H657		3/8/96 11:00:00 AM	QUAD21D	3/8/96 2:56:19 PM	B0H657	30	12	0.345	57	1.0375		
	LIQUID		Bkg:	3/8/96 4:52:27 AM	BKG	800	44	0.055	690	0.8625		
Anl Date: 3/8/96	Tot Sa, Alq: 2.00E+00	1.00E+01	Alp; (Dpm/	1.04E+00	(uCV 9.35E-05	(pCV 4.67E+01	± 2.3E+01	CAT I	5.3E-01	Lab		
Ppt mg: 0.7 ✓	Units: L	ml	Bet; Alq): 1.84E+00	Sa): 1.66E-04	Llg): 8.28E+01	± 2.2E+01			6.0E-01	Llg		
BHI B0H697		3/8/96 11:00:00 AM	QUAD22A	3/8/96 2:56:23 PM	B0H697	30	1029	34.25125	23814	792.86875		
	SOLID		Bkg:	3/8/96 4:52:37 AM	BKG	800	39	0.04875	745	0.93125		
Anl Date: 3/8/96	Tot Sa, Alq: 1.48E+03	5.34E+01	Alp; (Dpm/	1.36E+02	(uCV 1.70E+00	(pCV 1.15E+03	± 3.7E+01	CAT III	4.4E-02	Lab		
Ppt mg: 53.4 ✓	Units: g	mg	Bet; Alq): 1.60E+03	Sa): 2.00E+01	Llg): 1.35E+04	± 8.8E+01			7.4E-03	Llg		

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08-Mar-96

9613453.1657
 *** TC-99 ***
 CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

8-Mar-1996
 Page 1

CUSTOMER: BHI SAF
 MATRIX : WATER B96-031
 SAMPLE DELIVERY GROUP W0931
 BATCH NUMBER 03-117

ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
PO31171N		PO31171B	A0311702	
PO31172N		PO31171S	C0311701	
1) 60311701		BHI	BOG544	
2) 60311702		BHI	BOG545 X	

ACTIONS (Initial & Date)

- | | | | |
|----------------------------|-----------------------------|---|--------------|
| 1) INITIATED | RD2800 JH 3/8/96 | 5) COUNTING/MEASUREMENT LAB | RD 4/15/96 |
| 2) PREP LAB RECEIVED | H/09/96 mm | 6) DATA REVIEWED AND ANALYTICAL PREP STORED | RD RDU6000EV |
| 3) SAMPLE REMAINDER STORED | NA | | RD 4/26/96 |
| 4) SEPARATION LAB RECEIVED | H/09/96 mm
ITAS ITR50001 | | RICHR 00002 |

9613453.1658

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

DUE
5-6-96

CUSTOMER: BHI SAF SAMPLE DELIVERY GROUP W0931
MATRIX : WATER B96-031 BATCH NUMBER 03-117

ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
PO311716				
PO311715		EQIP 353		
1) 60311701		BHI	BOG544	REDUCED ALIQUOT: HIGH ALPHA SCREENING RESULTS PH 2.2
2) 60311702		BHI	BOG545	↓ 2.2
CO311702	DUP			
A0311702	M.S.	EQIP354		

ACTIONS (Initial & Date)

- 1) INITIATED RD2800 JH 3/8/96
- 2) PREP LAB RECEIVED RICH EC 5016 4-1-96
- 3) SAMPLE REMAINDER STORED 4-3-96
- 4) SEPARATION LAB RECEIVED JH 4-3-96
- 5) COUNTING/MEASUREMENT LAB RICH RC 5058 JH 4/11/96
- 6) DATA REVIEWED AND ANALYTICAL PREP STORED JH 4-19-96 RICH RC 5002 RWP

Samples w/ pH > 2 WERE ADJUSTED W/ CON HNO3 TO PH < 2