

0051481

CERTIFICATE OF ANALYSIS

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

May 17, 1999

Attention: Joan Kessner



SAF Number	:	B99-002
Date First Sample Received	:	April 19, 1999
Number of Samples	:	One
Sample Type	:	Soil
SDG Number	:	W02750
Data Deliverable	:	15 Day Priority

I. Introduction

On April 19, 1999 the Quanterra Environmental Services Richland Laboratory (QESRL) received one-priority soil sample for a 15-day priority radiochemical and chemical analysis. Upon receipt, the sample was 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>
9CTV3W10	BOV6P3	Soil	4/19/99

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 analyses were:

- Alpha Spectroscopy**
 - Plutonium-238, -239/40 by method RICH-RC-5010
 - Uranium-234, -235, -238 by method RICH-RC-5030
 - Americium 241 by method RICH-RC-5080
- Gamma Spectroscopy**

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Gamma Scan by method RICH-RC-5017
Gas Proportional Counting
Total Strontium by method RICH-RC-5006
Liquid Scintillation Counting
Nickel-63 by method RICH-RC-5069
Chemical Analyses
Chromium Hex by EPA method 7196

III. Quality Control

The analytical results for each analysis performed under SDG W02750 includes a minimum of two Laboratory Control Samples (LCS) and one method (reagent) blank. Any exceptions have been noted in the "Comments" section.

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

IV. Comments

Alpha Spectroscopy

Plutonium-238, -239/40 by method RICH-RC-5062

The LCS, batch blank, sample duplicate (B0V6P3) and sample results are within contractual requirements.

Uranium-234, -235, -238 by method RICH-RC-5030

The LCS, batch blank, sample duplicate (B0V6P3) and sample results are within contractual requirements

Americium 241 by method RICH-RC-5080

The LCS, batch blank, sample duplicate (B0V6P3) and sample results are within contractual requirements

Gamma Spectroscopy

Gamma Scan by method RICH-RC-5017

The LCS, batch blank, sample duplicate (B0V6P3) and sample results are within contractual requirements

Gas Proportional Counting

Total Strontium by method RICH-RC-5006

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The LCS, batch blank, sample duplicate (B0V6P3) and sample results are within contractual requirements

Liquid Scintillation Counting

Nickel-63 by method RICH-RC-5069

The LCS, batch blank, sample duplicate (B0V6P3) and sample results are within contractual requirements.

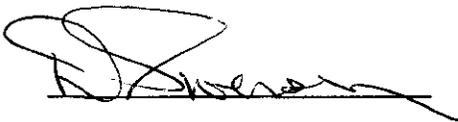
Chemical Analyses

Chromium Hex by EPA method 7196

The LCS, sample duplicate (B0V6P3), batch blank, matrix spike (B0V6P3) 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:



Doug Swenson
Project Manager

SAMPLE RESULTS

LAB NAME: QUANTERRA, Richland **SDG: /RPT GRP:** W02750 / 7767
LAB SAMPLE ID: 9CTV3W10 **MATRIX:** SOIL
CLIENT ID: B0V6P3 **DATE RECEIVED:** 4/19/99 1:30:00 PM

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	8.00E-02	U	N/A	N/A	N/A	mg/kg	N/A	EPA7196
AM-241	2.62E-01	J	7.7E-02	9.0E-02	2.80E-02	pCi/g	71.78%	RICHRC5080
PU-238	5.26E-03	U	1.3E-02	1.3E-02	2.86E-02	pCi/g	50.65%	RICHRC5010
PU-239	-5.01E-04	U	1.0E-03	1.0E-03	2.52E-02	pCi/g	50.65%	RICHRC5010
U-234	6.55E-01	J	1.4E-01	1.9E-01	4.09E-02	pCi/g	54.53%	RICHRC5079
U-235	1.06E-01	J	5.7E-02	6.1E-02	3.08E-02	pCi/g	54.53%	RICHRC5079
U-238	8.73E-01	J	1.6E-01	2.3E-01	5.41E-02	pCi/g	54.53%	RICHRC5079
AM-241	9.24E-03	U	4.7E-02	4.7E-02	8.06E-02	pCi/g	N/A	RICHRC5017
CO-60	1.43E-02	U	1.1E-02	1.1E-02	2.06E-02	pCi/g	N/A	RICHRC5017
CS-137	-7.81E-04	U	1.0E-02	1.0E-02	1.75E-02	pCi/g	N/A	RICHRC5017
EU-152	-8.32E-03	U	2.4E-02	2.4E-02	4.10E-02	pCi/g	N/A	RICHRC5017
EU-154	-8.09E-03	U	3.5E-02	3.5E-02	5.91E-02	pCi/g	N/A	RICHRC5017
EU-155	2.91E-02	U	2.8E-02	2.8E-02	4.63E-02	pCi/g	N/A	RICHRC5017
RA-226	4.94E-01		6.9E-02	6.9E-02	3.12E-02	pCi/g	N/A	RICHRC5017
RA-228	6.25E-01		9.9E-02	9.9E-02	9.09E-02	pCi/g	N/A	RICHRC5017
U-238	4.96E-01		6.6E-02	6.6E-02	2.98E-02	pCi/g	N/A	RICHRC5017
STRONTIUM	1.95E-02	U	5.5E-02	5.6E-02	1.27E-01	pCi/g	77.00%	RICHRC5006
NI-63	3.64E+00	U	2.1E-01	3.5E+00	5.47E+00	pCi/g	75.91%	RICHRC5069

Number of Results: 18

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CTV3W1ER MATRIX: SOIL
CLIENT ID: B0V6P3 DUP DATE RECEIVED: 4/19/99 1:30:00 PM
ORIG LAB SAMPLE ID: 9CTV3W10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
NI-63	4.21E+00	U	2.4E-01	3.4E+00	5.47E+00	pCi/g	77.03%	RICHRC5069	3.64E+00	14.43%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CTV3W1FR MATRIX: SOIL
CLIENT ID: B0V6P3 DATE RECEIVED: 4/19/99 1:30:00 PM
ORIG LAB SAMPLE ID: 9CTV3W10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
PU-238	-1.38E-03	U	1.6E-03	1.6E-03	2.86E-02	pCi/g	54.81%	RICHRC5010	5.26E-03	341.99%
PU-239	-9.19E-04	U	1.3E-03	1.3E-03	2.62E-02	pCi/g	54.81%	RICHRC5010	-5.01E-04	58.82%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CTV3W1GR MATRIX: SOIL
CLIENT ID: B0V6P3 DATE RECEIVED: 4/19/99 1:30:00 PM
ORIG LAB SAMPLE ID: 9CTV3W10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
AM-241	2.56E-01	J	7.4E-02	8.7E-02	2.87E-02	pCi/g	72.35%	RICHRC5080	2.62E-01	2.33%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland **SDG: /RPT GRP:** W02750 / 7767
LAB SAMPLE ID: CTV3W1HR **MATRIX:** SOIL
CLIENT ID: B0V6P3 **DATE RECEIVED:** 4/19/99 1:30:00 PM
ORIG LAB SAMPLE ID: 9CTV3W10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
AM-241	-7.95E-03	U	4.2E-02	4.2E-02	6.95E-02	pCi/g	N/A	RICHRC5017	9.24E-03	2672.37%
CO-60	-6.14E-03	U	1.0E-02	1.0E-02	1.66E-02	pCi/g	N/A	RICHRC5017	1.43E-02	502.84%
CS-137	1.95E-02	U	1.1E-02	1.1E-02	1.98E-02	pCi/g	N/A	RICHRC5017	-7.81E-04	216.70%
EU-152	-9.96E-03	U	3.2E-02	3.2E-02	4.44E-02	pCi/g	N/A	RICHRC5017	-8.32E-03	17.98%
EU-154	-4.79E-03	U	3.5E-02	3.5E-02	5.98E-02	pCi/g	N/A	RICHRC5017	-8.09E-03	51.30%
EU-155	7.73E-03	U	3.1E-02	3.1E-02	5.05E-02	pCi/g	N/A	RICHRC5017	2.91E-02	116.04%
RA-226	5.29E-01		7.2E-02	7.2E-02	3.22E-02	pCi/g	N/A	RICHRC5017	4.94E-01	6.77%
RA-228	5.90E-01		9.4E-02	9.4E-02	6.34E-02	pCi/g	N/A	RICHRC5017	6.25E-01	5.79%
U-238	4.99E-01		6.6E-02	6.6E-02	3.12E-02	pCi/g	N/A	RICHRC5017	4.96E-01	0.48%

Number of Results:

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL

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DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CTV3W1JR MATRIX: SOIL
CLIENT ID: B0V6P3 DATE RECEIVED: 4/19/99 1:30:00 PM
ORIG LAB SAMPLE ID: 9CTV3W10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
STRONTIUM	3.64E-02	U	6.1E-02	6.2E-02	1.34E-01	pCi/g	80.00%	RICHRC5006	1.95E-02	60.56%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CTV3W1KR MATRIX: SOIL
CLIENT ID: B0V6P3 DATE RECEIVED: 4/19/99 1:30:00 PM
ORIG LAB SAMPLE ID: 9CTV3W10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
U-234	7.28E-01	J	1.4E-01	1.9E-01	3.14E-02	pCi/g	61.13%	RICHRC5079	6.55E-01	10.42%
U-235	1.15E-02	U	2.0E-02	2.0E-02	3.67E-02	pCi/g	61.13%	RICHRC5079	1.06E-01	160.87%
U-238	7.61E-01	J	1.4E-01	2.0E-01	3.43E-02	pCi/g	61.13%	RICHRC5079	8.73E-01	13.67%

Number of Results:

DUPLICATE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02750 / 7767
LAB SAMPLE ID: JCTV3W1R MATRIX: SOIL
CLIENT ID: B0V693 DATE RECEIVED: 4/19/99 1:30:00 PM
ORIG LAB SAMPLE ID: 9CTV3W10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
HEXCHROME	8.00E-02	U	N/A	N/A	8.00E-02	mg/kg	N/A	EPA7196	8.00E-02	0.00%

Number of Results:

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

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BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CV06V11B MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
HEXCHROME	0.00E+00	U	N/A	N/A	2.00E-03	mg/L	N/A	EPA7196

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CV11P11B MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
NI-63	6.78E+00		3.7E-01	3.0E+00	5.43E+00	pCi/g	91.87%	RICHRC5069

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CV11Q11B MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
PU-238	0.00E+00	U	0.0E+00	1.3E-02	1.41E-02	pCi/g	59.47%	RICHRC5010
PU-239	9.99E-03	U	1.5E-02	1.5E-02	2.10E-02	pCi/g	59.47%	RICHRC5010

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CV11T11B MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	1.30E-02	J	1.5E-02	1.5E-02	1.17E-02	pCi/g	96.62%	RICHRC5080

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland **SDG /RPT GRP:** W02750 / 7767
LAB SAMPLE ID: CV11V11X **MATRIX:** SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
AM-241	2.44E-04	U	2.0E-02	2.0E-02	3.25E-02	pCi/g	N/A	RICHRC5017
CO-60	-1.98E-04	U	6.6E-03	6.6E-03	1.16E-02	pCi/g	N/A	RICHRC5017
CS-137	-4.70E-03	U	6.9E-03	6.9E-03	1.14E-02	pCi/g	N/A	RICHRC5017
EU-152	-1.18E-02	U	1.8E-02	1.8E-02	2.91E-02	pCi/g	N/A	RICHRC5017
EU-154	7.50E-03	U	2.0E-02	2.0E-02	3.62E-02	pCi/g	N/A	RICHRC5017
EU-155	-1.43E-03	U	1.5E-02	1.5E-02	2.48E-02	pCi/g	N/A	RICHRC5017
RA-226	1.02E-01		2.6E-02	2.6E-02	2.26E-02	pCi/g	N/A	RICHRC5017
RA-228	5.99E-02	U	2.8E-02	2.8E-02	5.42E-02	pCi/g	N/A	RICHRC5017
U-238	9.78E-02		3.1E-02	3.1E-02	2.18E-02	pCi/g	N/A	RICHRC5017

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CV11X11B MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
STRONTIUM	4.42E-02	U	5.1E-02	5.3E-02	1.07E-01	pCi/g	91.10%	RICHRC5006

Number of Results:

BLANK RESULTS

LAB NAME: QUANTERRA, Richland SDG /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CV12111B MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	YIELD	METHOD NUMBER
U-234	1.28E-02	U	1.7E-02	1.7E-02	2.78E-02	pCi/g	93.69%	RICHRC5079
U-235	-1.97E-03	U	1.8E-03	1.8E-03	2.78E-02	pCi/g	93.69%	RICHRC5079
U-238	-1.97E-03	U	1.8E-03	1.8E-03	2.78E-02	pCi/g	93.69%	RICHRC5079

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CV06V12S MATRIX: SOIL

ANALYTE	RESULT	COUNTING Q ERROR (2s)	TOTAL ERROR (2s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
HEXCHROME	9.54E-01	N/A	N/A	2.00E-03	mg/L	N/A	1.00E+00	95.40%

Number of Results:

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

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LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CV11P12S MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVER
NI-63	4.83E+02		7.9E+00	3.6E+01	6.78E+00	pCi/g	85.02%	5.05E+02	95.69%

Number of Results:

93.

Result = IDL When Not Detecte
(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL

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LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CV11Q12S MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVER
PU239/40	3.80E+00		3.1E-01	7.5E-01	2.93E-02	pCi/g	49.71%	3.38E+00	112.45%

Number of Results:

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL

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LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CV11T12S MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
AM-241	3.47E+00		2.4E-01	7.0E-01	1.15E-02	pCi/g	95.07%	4.52E+00	76.94%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland **SDG: /RPT GRP:** W02750 / 7767
LAB SAMPLE ID: CV11V12M **MATRIX:** SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
CS-137	3.11E-01		5.5E-02	5.5E-02	3.94E-02	pCi/g	N/A	3.13E-01	99.63%
RA-226	1.09E+00		1.4E-01	1.4E-01	7.01E-02	pCi/g	N/A	1.15E+00	94.43%
RA-228	2.11E+00		2.7E-01	2.7E-01	1.38E-01	pCi/g	N/A	1.87E+00	112.53%
U-238	1.14E+00		1.4E-01	1.4E-01	6.70E-02	pCi/g	N/A	1.05E+00	107.98%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CV11X12S MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
STRONTIUM	6.31E+00		3.2E-01	1.7E+00	1.13E-01	pCi/g	91.40%	6.03E+00	104.74%

Number of Results:

LABORATORY CONTROL SAMPLE

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CV12112S MATRIX: SOIL

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
U-234	9.46E-01	J	1.5E-01	2.2E-01	3.05E-02	pCi/g	72.87%	8.62E-01	109.81%
U-235	3.20E-02	U	2.8E-02	2.9E-02	3.23E-02	pCi/g	72.87%	3.93E-02	81.34%
U-238	8.98E-01	J	1.4E-01	2.1E-01	3.80E-02	pCi/g	72.87%	9.02E-01	99.53%

Number of Results:

MATRIX SPIKE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CTV3W19W MATRIX: SOIL

ANALYTE	SPIKE RESULT* Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
HEXCHROME	3.42E+01	N/A	N/A	8.00E-02	mg/kg	8.00E-02	4.06E+01	84.21%

Number of Results:

*Spike Result Corrected For Sample Result

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,

J = No U qualifier and result < RDL.

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rptChemRadMatrixSpike; v3.41

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MATRIX SPIKE RESULTS

LAB NAME: QUANTERRA, Richland SDG: /RPT GRP: W02750 / 7767
LAB SAMPLE ID: CTV3W1CW MATRIX: SOIL

ANALYTE	SPIKE RESULT* Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
HEXCHROME	6.95E+02	N/A	N/A	8.00E-02	mg/kg	8.00E-02	7.07E+02	98.41%

Number of Results:

*Spike Result Corrected For Sample Result

Result = IDL When Not Detected

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra Analytical Services, Inc
rptChemRadMatrixSpike; v3.41

0023B

MATRIX SPIKE RESULTS

LAB NAME: QUANTERRA, Richland **SDG: /RPT GRP:** W02750 / 7767
LAB SAMPLE ID: CTV3W1DW **MATRIX:** SOIL

ANALYTE	SPIKE RESULT* Q	COUNTING ERROR (2σ)	TOTAL ERROR (2σ)	MDA/IDL	REPORT UNIT	SAMPLE RESULT	EXPECTED	RECOVERY
NI-63	4.76E+02	8.6E+00	3.6E+01	6.83E+00	pCi/g	3.64E+00	5.09E+02	93.58%

Number of Results:

*Spike Result Corrected For Sample Result

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Quanterra Analytical Services, Inc
rptChemRadMatrixSpike; v3.41

0024

**Data Review Checklist
RADIOCHEMISTRY**

Lot Number: <u>J9D210109</u>				
Client ID: <u>BHI</u>				
Due Date: <u>5/4/99</u>				
QC Batch Number: <u>9113238</u>		SDG Number:		
Method Test Parameter: <u>AMTRD</u>				
Matrix: <u>SOIL</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. 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: Regueline Waddell

Date: 5/17/99

Second Level Review: [Signature]

Date: 5/17/99

Data Review Checklist
RADIOCHEMISTRY

Lot Number:	J9D210109			
Client ID:	BHI			
Due Date:	5/4/99			
QC Batch Number:	9113236	SDG Number:		
Method Test Parameter:	Pu250			
Matrix:	SILIC			
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: Regina Waddell
 Second Level Review: [Signature]

Date: 5/7/99
 Date: 5/17/99

**Data Review Checklist
RADIOCHEMISTRY**

Lot Number: <u>JFD210/09</u>				
Client ID: <u>BHE</u>				
Due Date: <u>5/4/99</u>				
QC Batch Number: <u>9113242</u>		SDG Number:		
Method Test Parameter: <u>UFSU</u>				
Matrix: <u>SOL</u>				
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. Does the blank result meet the Contract criteria?	X			✓
4. Is the blank result < the 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			✓
7. Is the LCS yield within acceptance criteria?	X			✓
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	X			✓
9. Do the MS/MSD results and yields meet acceptance criteria?			X	✓
10. Do the duplicate sample results and yields meet acceptance criteria?	X			✓
D. Other				
1. Are all Nonconformances included and noted?			X	
2. Are all required forms filled out?	X			✓
3. Was the correct methodology used?	X			✓
4. Was transcription checked?	X			✓
5. Were all calculations checked at a minimum frequency?	X			✓
6. Were units checked?	X			✓

Comments on any "No" response: _____

First Level Review:
 Second Level Review:

Date: 5/6/99
 Date: 5/17/99

**Data Review Checklist
RADIOCHEMISTRY**

Lot Number: <u>J9D210109</u>				
Client ID: <u>127642</u>				
Due Date: <u>5-4-99</u>				
QC Batch Number: <u>9113239</u>			SDG Number: <u>2750</u>	
Method Test Parameter: <u>Gamma</u>				
Matrix: <u>Soil</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. 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: [Signature] Date: 5-7-99
 Second Level Review: [Signature] Date: 5/17/99

**Data Review Checklist
RADIOCHEMISTRY**

Lot Number: <u>BH1</u> <u>29D210109</u>				
Client ID: <u>BH1</u>				
Due Date: <u>5/4/99</u>				
QC Batch Number: <u>9113241</u>		SDG Number:		
Method Test Parameter: <u>Sr tet</u>				
Matrix: <u>Soil</u>				
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. Does the blank result meet the Contract criteria?	X			✓
4. Is the blank result < the 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			✓
7. Is the LCS yield within acceptance criteria?	X			✓
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	X			✓
9. Do the MS/MSD results and yields meet acceptance criteria?			X	
10. Do the duplicate sample results and yields meet acceptance criteria?	X			✓
D. Other				
1. Are all Nonconformances included and noted?			X	
2. Are all required forms filled out?	X			✓
3. Was the correct methodology used?	X			✓
4. Was transcription checked?	X			✓
5. Were all calculations checked at a minimum frequency?	X			✓
6. Were units checked?	X			✓

Comments on any "No" response: _____

First Level Review: Date: 5/3/99
 Second Level Review: Date: 5/17/99

**Data Review Checklist
RADIOCHEMISTRY**

Lot Number: <u>39D210109</u>				
Client ID: <u>BH7</u>				
Due Date: <u>5-4-99</u>				
QC Batch Number: <u>9113234</u>			SDG Number: <u>W02750</u>	
Method Test Parameter: <u>Ni-63</u>				
Matrix: <u>Soil</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. 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? <u>DM 5-11-99</u>	✓			✓
5. Were all calculations checked at a minimum frequency?	✓			✓
6. Were units checked?	✓			✓

Comments on any "No" response: _____

First Level Review: *Regina Waddell*
 Second Level Review: *[Signature]*

Date: 5/18/99
 Date: 5/18/99



Richland Laboratory
Data Review Check List
METALS

Work Order Number(s): <i>CTV3W101 (QC Batch 9112373)</i>				
Lab Sample Numbers or SDG: <i>WO 2750</i>				
Method/Test/Parameter: <i>CR+6 in SOIL</i>				
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Initial Calibration				
1. Performed at required frequency with required number of levels?	✓			✓
2. Correlation coefficient within QC limits?	✓			✓
3. Initial calibration verification (ICV) analyzed immediately after calibration and results within QC limits?	✓			✓
4. Initial calibration blank(ICB) analyzed immediately after ICV and concentrations of all parameters \leq reporting limit?	✓			✓
B. Continuing Calibration				
1. CCV analyzed at required frequency and all parameters within QC limits?	✓			✓
2. CCB analyzed at required frequency and all results \leq reporting limit?	✓			✓
C. Sample Analysis				
1. Were any samples with concentrations above the linear range for any parameter diluted and reanalyzed?	✓			✓
2. Were all sample holding times met?	✓			✓
D. QC Samples				
1. All results for the preparation blank below limits?	✓			✓
2. MS or MS/MSD recoveries within QC limits and %RPD (for MSD) acceptable?	✓			✓
3. LCS percent recovery within QC limits and %RPD (for LCSD) acceptable?	✓			✓
4. Analytical spikes within QC limits where applicable?			✓	
5. ICP only: One serial dilution performed per SDG?			✓	
6. ICP only: CRDL standard (CRI or CRA) analyzed at required frequency?			✓	
7. ICP only: Interference check samples (ICSA, ICSAB) and HICAL analyzed at the required frequencies and within QC limits?			✓	

Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
E. Other				
1. Are all nonconformances included and noted?			✓	
2. Is the correct date and time of analysis shown?	✓			✓
3. Did the analyst sign and date the front page of the analytical run?	✓			✓
4. Correct methodology used?	✓			✓
5. Transcriptions checked?	✓			✓
6. Calculations checked at minimum frequency?	✓			✓
7. Units checked?	✓			✓

Comments on any "No" response:

c1 - PbCrO₄ Spike required 20 fold dilution

Analyst: *Roxie Ross*
 Second-Level Review: *[Signature]*

Date: *4-27-99*
 Date: *5/17/99*

**CHAIN OF
CUSTODY FORMS**

IX-21030

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-002-82		Page 1 of 1	
Collector Fahlberg/Kerkow		Company Contact R Coffman		Telephone No. 373-6425		Project Coordinator TRENT. SJ		Price Code	
Project Designation 100 BC Areas - Full Protocol		Sampling Location 100BC 116-B-9 Shallow		SAF No. B99-002		Data Turnaround 15 Days			
Ice Chest No. ERC99 004		Field Logbook No. EL 1327-2		Method of Shipment GOV. VEHICLE					
Shipped To Quanterra Incorporated		Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A					
				COA R116 B92600					

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	Cool 4C	None	None	None	None							
	Type of Container	aG	aG	aG	aG	Marinelli							
	No. of Container(s)	1	1	1	1	1							
Special Handling and/or Storage	Volume	60mL	60mL	60mL	125mL	500mL							

SAMPLE ANALYSIS **Due 5-3-99**

SDG W02750 JAD210109

Sample No.	Matrix *	Sample Date	Sample Time	Chromium Hex - 7196	Activity Scan	See item (1) in Special Instructions.	ICP Metals - 6010A (SW-846) (Chromium, Lead); Mercury - 7471 - (CV)	See item (2) in Special Instructions.					
BOV6P3 CTV3W	Soil	4-15-99	0915	X	X	X	X	X					

CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By R. Fahlberg	Date/Time 4/15/99	Received By Ref. 1-B	Date/Time 4-15-99	(1) Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Nickel-63 (2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241, Uranium-238)				Soil Water Vapor Other Solid Other Liquid			
Relinquished By REEFB	Date/Time 4/19/99 1100	Received By J. GALE	Date/Time 4/19/99 1100								
Relinquished By SJ GALE	Date/Time 4/19/99 1330	Received By K. Stenberg	Date/Time 4/19-99								
Relinquished By	Date/Time	Received By	Date/Time 2:00 PM								

LABORATORY SECTION	Received By	Title	Date/Time
	Disposal Method	Disposed By	Date/Time

100

Post-It™ brand fax transmittal memo 7671 # of pages **2**

To <i>Randy Coffman</i>	From <i>K.A. Robertson-DeMers</i>
Co.	Co.
Dept.	Phone # <i>373-9731</i>
Fax # <i>373-9779</i>	Fax #

GAMMA-RAY ENERGY ANALYSIS REPORT
 Thermo Hanford Inc.
 Radiological Counting Facility THI - RCF

Project: 118-B-9
 Customer ID: **BOV688** Other Solid
 RCF ID: RCF5667

Sample time, date: 12:42 4/1/99
 Analysis date: 4/5/99

Isotope	Activity pCi/gm	2 σ err	CI/gm	MDC (pCi/g)
K-40	1.1E+01	+/- 1.4E+00	1.1E-11	9.2E-01
Co-60 #	< 1.0E-02		< 1.0E-14	1.0E-02
Cs-137 #	< 1.7E-02		< 1.7E-14	1.7E-02
Eu-152	1.5E-01	+/- 7.0E-02	1.5E-13	5.0E-02
Eu-154	< 3.7E-02		< 3.7E-14	3.7E-02
Eu-155	< 8.3E-02		< 8.3E-14	8.3E-02
Th-232dau	7.7E-01	+/- 1.0E-01	7.7E-13	3.1E-01
U-235	< 1.8E-01		< 1.8E-13	1.8E-01
U-238 #	< 2.7E+00		< 2.7E-12	2.7E+00
U-238dau	5.4E-01	+/- 1.2E-01	5.4E-13	5.5E-02
Np-237	< 5.0E-02		< 5.0E-14	5.0E-02
Am-241	< 6.5E-02		< 6.5E-14	6.5E-02
Tot Act Gem (pCi/gm)	1.3E+01	+/- 1.7E+00	1.3E-11	

BOV688
B-9 VAR
A1-03
4-15-99 {
BOV6N7
BOV6N8
BOV6P3

Y/Sr-90	< N/R	MDC (pCi/g)
Gross Alpha **	< N/R	
Gross Beta	< N/R	
AEA total	< N/R	

Definitions:

All errors reported at 2 standard deviations
 N/R = no result or analysis not requested. <MDA = Less than detection limit.
 A Assigned as residual beta from Gamma/Beta balance.
 For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
 The analysis of Np-237 is based on the activity of Pa-233.
 U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
 Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
 Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuramics and daughter products. The results must then be balanced for the gross alpha analysis.
 **The gross alpha results are not corrected for mass absorption

Note: 152-Eu is not a 100% Beta emitter.

No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Kathryn A. Robertson-DeMers
 K. A. Robertson-DeMers 4/7/99
 ERC Radiological Counting Facility Date

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 419-99 1330 SG#: W02750
Work Order Number: JAD 210109 SAF #: B99-002
Shipping Container ID: ERC99-004 Chain of Custody #: B99-002-82

- 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 40 c
- 5. Vermiculite/packing materials is Wet Dry
- 6. Number of samples in shipping container: 5
- 7. Sample holding times exceeded? Yes No

8.	Samples have: <input checked="" type="checkbox"/> tape <input checked="" type="checkbox"/> custody seals	<input type="checkbox"/> hazard labels <input type="checkbox"/> appropriate sample labels	
9.	Samples are: <input type="checkbox"/> in good condition <input type="checkbox"/> broken	<input type="checkbox"/> leaking <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: _____ Date: _____

Telephoned To: _____ On _____ By _____

Client Sample Screening Results

R3 4/22/99

22-Apr-99

CLIENT CODE	ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B	
BH	B0V6P3		4/21/99 8:56:00 AM	QUAD21D	4/21/99 3:49:50 PM	B0V6P3	30	12	0.31	108	2.45875	
	CTV3W	SOIL		Bkg:	4/21/99 4:47:19 AM	BKG	800	72	0.09	913	1.14125	
Anl Date:	4/22/99	Tot Sa, Alq:	1.46E+02	, 9.40E+01	Alp;	(Dpm/ 1.93E+00	(uCi/ 1.35E-03	(pCi/ 9.24E+00	+ 6.0E+00	CAT	5.4E+00	Lab
Ppt mg:	94	Units:	g	, mg	Bet; Alq):	5.34E+00	Sa): 3.73E-03	Llg): 2.56E+01	+ 3.7E+00	1	3.9E+00	Alq L/g

0037

22-Apr-99

COC Signature Page

W02750

Batch #:	Initials/Date	Procedure #
Released By	TA 4/23/99	Richard Cooper
Received	TA 4/23/99	RICHRC 5013
Released By	TA 4/24/99	n/a
Received	SK 4/26/99	RC 5019
Released By	SK 4/29/99	n/a
Received	Ⓢ 5/3/99	RICHRC 5080
Released By	Ⓢ 5/6/99	n/a
Received	CE 5-6-99 ^{CPM}	5-6-99 RICHRC 5008
Released By	CE 5-6-99	n/a
Received	Ⓢ 5/6/99	RICHRC 5008 R.1 RICHRC 50
Released By	CE 5/7/99	n/a Ⓢ 5/6/99
Received	JW 5/10/99	RICHRC 0002/2
Released By	JW 5/17/99	n/a
Received		

RQC053

Quanterra Incorporated
RAD PREP BENCH WORKSHEET

Run Date: 4/23/99
Time: 10:57:33

<u>Prep</u>	<u>Sep1</u>	<u>Sep2</u>	Samples Covered
---	---	---	Labware Labeled
---	---	---	Verify Test/Container
---	---	---	Samples Ordered Sequentially
---	---	---	Logbooks Entered

 * QC BATCH: 9113238 *

Prep Dt/Tm/Person:	4/23/99	0
Sep1 Dt/Tm/Person:	0/00/00	000000
Sep2 Dt/Tm/Person:	0/00/00	000000
Cocktail Date/Time:	0/00/00	

W02750

SX: Americium-241 by Alpha Spec
 6I: PuAm PrpRC5013/RC5019, SepRC5080 (5003)/RC5010 (5039)
 5I: RCH: HANFORD ANALYTICAL

<u>ANL</u> <u>DUE</u>	<u>LOT#,MSRUN#/ WORK ORDER</u>	<u>CLIENT</u> <u>MATRIX</u>	<u>INIT/ FINAL</u>	DISH	GEOM	PPT1WT	pH	COUNT TIME	MID/AVE DATE/TIME	TRACER ID/ SPIKE ID	CRDL	UNITS
5/04/99	J9D210109-001 CTV3W-1-0GX	SOLID									1	pCi/g
5/04/99	J9D210109-001 CTV3W-1-06	SOLID									1	pCi/g
0/00/00	J9D230000-238 CV11T-1-01B	SOLID									1	pCi/g
0/00/00	J9D230000-238 CV11T-1-02C	SOLID									1	pCi/g

PRIORITY

NUMBER OF WORK ORDERS IN BATCH: 4

0039

COC Signature Page

W02750

Batch #:	Initials/Date	Procedure #
9113236		
Released By	<u>MOA 4-23-99</u>	<u>RICHRC0009</u>
Received	<u>TAL 4/23/99</u>	<u>RICHRC5013</u>
Released By	<u>TAL 4/26/99</u>	<u>n/a</u>
Received	<u>SK 4/26/99</u>	<u>RC5019</u>
Released By	<u>SK 4/29/99</u>	<u>n/a</u>
Received	<u>(S) 5/3/99</u>	<u>RICHRC5080</u>
Released By	<u>(S) 5/5/99</u>	<u>n/a</u>
Received	<u>cd 5-5-99</u> ed 5-5-99	<u>RICHRC5039.1</u>
Released By	<u>kol 5-5-99</u>	<u>n/a</u>
Received	<u>(R) 5-5-99</u>	<u>RICHRC0008 R.1</u> <u>RICHRC50 (R) 5/5/99</u>
Released By	<u>JW 5/6/99</u>	<u>n/a</u>
Received	<u>JW 5/7/99</u>	<u>RICHRC0002/2</u>
Released By		<u>n/a</u>
Received		

RQC053

Quanterra Incorporated
RAD PREP BENCH WORKSHEET

Run Date: 4/23/99
Time: 10:57:00

<u>Prep</u>	<u>Sep1</u>	<u>Sep2</u>	Samples Covered
---	---	---	Labware Labeled
---	---	---	Verify Test/Container
---	---	---	Samples Ordered Sequentially
---	---	---	Logbooks Entered

 * QC BATCH: 9113236 *

Prep Dt/Tm/Person:	4/23/99	0
Sep1 Dt/Tm/Person:	0/00/00	000000
Sep2 Dt/Tm/Person:	0/00/00	000000
Cocktail Date/Time:	0/00/00	

W02750

SO: Plutonium-238,239/40 by Alpha Spec
 6I: PuAm PrpRC5013/RC5019, SepRC5080(5003)/RC5010(5039)
 5I: RCH: HANFORD ANALYTICAL

ANL DUE	LOT#,MSRUN#/ WORK ORDER	CLIENT MATRIX	INIT/ FINAL	DISH	GEOM	PPT1WT	pH	COUNT TIME	MID/AVE DATE/TIME	TRACER ID/ SPIKE ID	CRDL	UNITS
5/04/99	J9D210109-001 CTV3W-1-0FX	SOLID									1	pCi/g
5/04/99	J9D210109-001 CTV3W-1-05	SOLID									1	pCi/g
0/00/00	J9D230000-236 CV11Q-1-01B	SOLID									1	pCi/g
0/00/00	J9D230000-236 CV11Q-1-02C	SOLID									1	pCi/g

PRIORITY

NUMBER OF WORK ORDERS IN BATCH: 4

1041

COC Signature Page

W02750

Batch #: 9113242 Initials/Date Procedure #

Released By	TAZ 4-23-99	RICKR0009
Received	TAZ 4/23/99	RICKR05013
Released By	TAZ 4/24/99	n/a
Received	SIC 4/26/99	RC 5019
Released By	SK 4/29/99	n/a
Received	TAZ 04-29-99	RC 5079
Released By	TAZ 04-30-99	n/a
Received	Ⓢ 4/30/99	RICKR05079
Released By	Ⓢ 5/3/99	n/a
Received	id 5/3/99	extracted 5-3-99 RICKR05030
Released By	Ⓢ 5-4-99	extracted 5-4-99 RICKR05039.1 n/a
Received	Ⓢ 5-4-99	RICKR00008 R.1
Released By	Ⓢ 5/5/99	n/a
Received	SB 5/6/99	RICKR00002 R.v2
	SB 5/6/99	

RQC053

Quanterra Incorporated
RAD PREP BENCH WORKSHEET

Run Date: 4/23/99
Time: 10:59:05

Prep	Sep1	Sep2	
---	---	---	Samples Covered
---	---	---	Labware Labeled
---	---	---	Verify Test/Container
---	---	---	Samples Ordered Sequentially
---	---	---	Logbooks Entered

 * QC BATCH: 9113242 *
 *

Prep Dt/Tm/Person:	4/23/99	0
Sep1 Dt/Tm/Person:	0/00/00	000000
Sep2 Dt/Tm/Person:	0/00/00	000000
Cocktail Date/Time:	0/00/00	

W02750

SR: Uranium-234,235,238 by Alpha Spec
 7S: UIso PrpRC5013/RC5019, SepRC5079(5039)
 5I: RCH: HANFORD ANALYTICAL

ANL DUE	LOT#,MSRUN#/ WORK ORDER	CLIENT MATRIX	INIT/ FINAL	DISH	GEOM	PPT1WT	pH	COUNT TIME	MID/AVE DATE/TIME	TRACER ID/ SPIKE ID	CRDL	UNITS
5/04/99	J9D210109-001 CTV3W-1-0KX	SOLID									1	pCi/g
5/04/99	J9D210109-001 CTV3W-1-02	SOLID									1	pCi/g
0/00/00	J9D230000-242 CV121-1-01B	SOLID									1	pCi/g
0/00/00	J9D230000-242 CV121-1-02C	SOLID									1	pCi/g

PRIORITY

NUMBER OF WORK ORDERS IN BATCH: 4

0043

COC Signature Page

W02750

Batch #: 9113239

	Initials/Date	Procedure #
Released By	<u>RA 4/23/99</u>	<u>RICHCO009</u>
Received	<u>TAL 4/23/99</u>	<u>RICHRCSD15/5017</u>
Released By	<u>TAL 4/26/99</u>	<u>n/a</u>
Received	<u>CO 4/26/99</u>	<u>RECHRD007</u>
Released By	<u>CO 5/7/99</u>	<u>n/a</u>
Received	<u>DUC 5-7-99</u>	<u>RECHRC002-2</u>
Released By	<u>DUC 5-7-99</u>	<u>n/a</u>
Received		
Released By		<u>n/a</u>
Received		
Released By		<u>n/a</u>
Received		
Released By		<u>n/a</u>
Received		

RQC053

Quanterra Incorporated
RAD PREP BENCH WORKSHEET

Run Date: 4/23/99
Time: 10:58:02

<u>Prep</u>	<u>Sep1</u>	<u>Sep2</u>	
_____	_____	_____	Samples Covered
_____	_____	_____	Labware Labeled
_____	_____	_____	Verify Test/Container
_____	_____	_____	Samples Ordered Sequentially
_____	_____	_____	Logbooks Entered

 * QC BATCH: 9113239 *
 *

Prep Dt/Tm/Person:	4/23/99	0
Sep1 Dt/Tm/Person:	0/00/00	000000
Sep2 Dt/Tm/Person:	0/00/00	000000
Cocktail Date/Time:	0/00/00	

W02750

T9: Gamma by HPGE 10 day ingrowth
 AX: Gamma Prep R5013/5017
 SI: RCH: HANFORD ANALYTICAL

ANL DUE	LOT#,MSRUN#/ WORK ORDER	CLIENT MATRIX	INIT/ FINAL	DISH	GEOM	PPT1WT	pH	COUNT TIME	MID/AVE DATE/TIME	TRACER ID/ SPIKE ID	CRDL	UNITS
5/04/99	J9D210109-001 CTV3W-1-0HX	SOLID										pCi/g
5/04/99	J9D210109-001 CTV3W-1-08	SOLID										pCi/g
0/00/00	J9D230000-239 CV11V-1-01B	SOLID										pCi/g
0/00/00	J9D230000-239 CV11V-1-02C	SOLID										pCi/g

PRIORITY

NUMBER OF WORK ORDERS IN BATCH: 4

0045

COC Signature Page

W02750

Batch #: 9113241

	Initials/Date	Procedure #
Released By	<u>MA 4-23-99</u>	<u>Richard 0009</u>
Received	<u>TAR 4/23/99</u>	<u>RICHARD C SD13</u>
Released By	<u>TAR 4/26/99</u>	<u>n/a</u>
Received	<u>SK 4/26/99</u>	<u>RC 5013</u>
Released By	<u>SK 4/27/99</u>	<u>n/a</u>
Received	<u>RTM 4/27/99</u>	<u>Rich RC 5006/2</u>
Released By	<u>RTM 4/29/99</u>	<u>n/a</u>
Received	<u>CD 4/29/99</u>	<u>RICHARD 0003</u>
Released By	<u></u>	<u>n/a</u>
Received	<u></u>	<u></u>
Released By	<u></u>	<u>n/a</u>
Received	<u></u>	<u></u>
Released By	<u></u>	<u>n/a</u>
Received	<u></u>	<u></u>

RQC053

Quanterra Incorporated
RAD PREP BENCH WORKSHEET

Run Date: 4/23/99
Time: 10:58:32

<u>Prep</u>	<u>Sep1</u>	<u>Sep2</u>	
_____	_____	_____	Samples Covered
_____	_____	_____	Labware Labeled
_____	_____	_____	Verify Test/Container
_____	_____	_____	Samples Ordered Sequentially
_____	_____	_____	Logbooks Entered

 * QC BATCH: 9113241 *
 *

Prep Dt/Tm/Person:	4/23/99	0
Sep1 Dt/Tm/Person:	0/00/00	000000
Sep2 Dt/Tm/Person:	0/00/00	000000
Cocktail Date/Time:	0/00/00	

W02750

TH: Total Strontium by GPC
CH: Sr-Total PrpRC5013, SepRC5006
SI: RCH: HANFORD ANALYTICAL

<u>ANL</u> <u>DUE</u>	<u>LOT#,MSRUN#/ WORK ORDER</u>	<u>CLIENT</u> <u>MATRIX</u>	<u>INIT/ FINAL</u>	<u>DISH</u>	<u>GEOM</u>	<u>PPT1WT</u>	<u>pH</u>	<u>COUNT</u> <u>TIME</u>	<u>MID/AVE</u> <u>DATE/TIME</u>	<u>TRACER ID/ SPIKE ID</u>	<u>CRDL</u>	<u>UNITS</u>
5/04/99	J9D210109-001 CTV3W-1-0JX	SOLID									1	pCi/g
5/04/99	J9D210109-001 CTV3W-1-03	SOLID									1	pCi/g
0/00/00	J9D230000-241 CV11X-1-01B	SOLID									1	pCi/g
0/00/00	J9D230000-241 CV11X-1-02C	SOLID									1	pCi/g

PRIORITY

NUMBER OF WORK ORDERS IN BATCH: 4

0047

COC Signature Page

W02750

Batch #: 9113234

	Initials/Date	Procedure #
Released By	TRA 4/23/99	RICHK0009
Received	TAL 4/23/99	PKHRC 5013
Released By	TAL 4/26/99	n/a
Received	SK 4/26/99 SK 4/29/99	RC 5019
Released By	SK 4/29/99	n/a
Received	RB 4/29/99	RICHRC5069
Released By	RB 4/30/99	n/a
Received	OR 4/30/99	RICHRC0001 Rev 1
Released By	d 4/3/99	n/a
Received	JM 5-3-99	N/A
Released By	JM 5-11-99	n/a
Received	JW 5/12/99	RICHRC0002 1/2
Released By	JW 5/18/99	n/a
Received		

RQC053

Quanterra Incorporated
RAD PREP BENCH WORKSHEET

Run Date: 4/23/99
Time: 10:56:24

Prep	Sep1	Sep2
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Samples Covered
 Labware Labeled
 Verify Test/Container
 Samples Ordered Sequentially
 Logbooks Entered

 *
 * QC BATCH: 9113234 *
 *

Prep Dt/Tm/Person: 4/23/99 0
 Sep1 Dt/Tm/Person: 0/00/00 000000
 Sep2 Dt/Tm/Person: 0/00/00 000000
 Cocktail Date/Time: 0/00/00

W02750

S4: Nickel by ICP and Nickel-63 by Liquid Scint
 AF: Ni-63 PrpRC5013/5019, SepRC5069
 SI: RCH: HANFORD ANALYTICAL

ANL DUE	LOT#,MSRUN#/ WORK ORDER	CLIENT MATRIX	INIT/ FINAL	DISH	GEOM	PPT1WT	pH	COUNT TIME	MID/AVE DATE/TIME	TRACER ID/ SPIKE ID	CRDL	UNITS
5/04/99	J9D210109-001 CTV3W-1-0DS	SOLID									30	pCi/g
5/04/99	J9D210109-001 CTV3W-1-0EX	SOLID									30	pCi/g
5/04/99	J9D210109-001 CTV3W-1-04	SOLID									30	pCi/g
0/00/00	J9D230000-234 CV11P-1-01B	SOLID									30	pCi/g
0/00/00	J9D230000-234 CV11P-1-02C	SOLID									30	pCi/g
0/00/00	J9D230000-234 CV11P-1-03B	SOLID									30	pCi/g

PRIORITY

NUMBER OF WORK ORDERS IN BATCH: 6

0049

COC Signature Page

Batch #:	Initials/Date	Procedure #
9112373		
Released By	<i>[Signature]</i> 4/26/99	RICKK0009
Received	<i>[Signature]</i> 4/26/99	RICHWC5005 R.3
Released By	<i>[Signature]</i> 4/27/99	n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		
Released By		n/a
Received		

Analytical Data Package Prepared For

Bechtel Hanford

Chemical Analysis By

**Quanterra Environmental Services
*St. Louis Laboratory***

Sample Delivery Group Number: W02750



BHI Identification Number
B0V6P3

Quanterra Identification Number
21167-001

000001

Quanterra Incorporated
13715 Rider Trail North
Earth City, Missouri 63045

314 298-8566 Telephone
314 298-8757 Fax

CASE NARRATIVE

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

May 6, 1999

Attention: Joan Kessner

Project Number	:	550.186
SDG	:	W02750
Number of Samples	:	One (1)
Sample Matrix	:	Soil
Data Deliverable	:	Priority/Summary
Date SDG Closed	:	April 19, 1999

II. Introduction

On April 19, 1999, one (1) "soil" sample was received by Quanterra, Richland and transferred to Quanterra, St. Louis for chemical analysis. The samples were received at Quanterra, St. Louis on April 19, 1999 at a temperature of 2° C. Upon receipt, the samples were given the following laboratory ID numbers to correspond with the specific client ID's:

<u>St. Louis ID</u>	<u>BHI ID</u>	<u>SAF ID</u>	<u>Matrix</u>	<u>Date of Receipt</u>
21167-001	B0V6P3	B99-002	SOIL	19-APR-99

III. 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: ICP Metals (Chromium & Lead) by EPA method 6010A
Mercury by EPA method 7471

Deviation from Request: No Deviation from requested methods.

000002

Bechtel Hanford Incorporated

May 6, 1999

Project Number: 550.186

SDG: W02750

Page 2

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

MS- Matrix Spike.

MSD- Matrix Spike Duplicate.

V. Comments

General: Priority results were sent on 05/04/99.

Condition Upon Receipt (CUR) number 018492 included in the package incorrectly states that COC number B99-002-82 was not relinquished. This occurred because of an internal misunderstanding. This comment will not be on future CURs when this situation occurs. When both radiochemical and chemical samples are received at Quanterra-Richland the chemical containers are forwarded on to Quanterra-St. Louis with a copy of the Bechtel COC for information and a Quanterra-Richland COC to document that only the chemical portion was shipped. Therefore, only the Quanterra-Richland COC is relinquished because to relinquish the Bechtel COC would imply that all samples on the Bechtel COC were relinquished to Quanterra-St. Louis.

Metals: A Laboratory Control Sample, Method Blank, Matrix Spike and Matrix Spike Duplicate were analyzed with each preparation batch per the protocol for this analysis.

Percent solids was not determined for sample B0V6P3. Due to software configuration, the CLP forms list solid sample result units as " dry weight" and % solids as " 100 ". The results on the forms are actually mg/Kg as is and are not corrected for percent solids. The figure of 100 was used as percent solids for calculation purposes only and does not represent measured solids content of the sample.

000003

Bechtel Hanford Incorporated

May 6, 1999

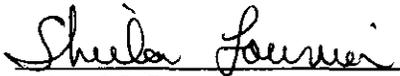
Project Number: 550.186

SDG: W02750

Page 3

I certify that this Summary 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:

A handwritten signature in cursive script that reads "Shiela Louvier".

Shiela M. Louvier

St. Louis Project Manager

W02750

Quanterra April 23, 1999 08:26 am
Account: 10722 Project: 550.186 Quanterra-Richland QAS No. 550.186 Rev. 2
Master Sample Login: 21167

Project Manager: S. Louvier

Reviewed by and Date: *Smith 4-23-99*

Sample Header Template:

Sample No.	Client ID	C-Matrix	Date Collected	Received	Due	Shipper	Rad Category	Rad Sample No.
#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date Site	(Container Numbers: % Filled)	
21167-001	B0V6P3	Soil	15-APR-99 09:15	19-APR-99 11:00	03-MAY-99	FEDX	1	Screening not Required
SAF B99-002/ICAP=CR AND PB ONLY								
1	AN - Amber Glass-120ML	HG/7471/Q4	S	NONE	30-APR-99	13-MAY-99 R1C	(439748:100)	
1		ICAP/6010/Q4	S	NONE	30-APR-99	12-OCT-99 R1C	(439748:100)	
21167-001MS	B0V6P3	Soil	15-APR-99 09:15	19-APR-99 11:00	03-MAY-99	FEDX	1	Screening not Required
SAF B99-002/ICAP=CR AND PB ONLY								
1	AN - Amber Glass-120ML	HG/7471/Q4	S	NONE	30-APR-99	13-MAY-99 R1C	(439748:100)	
1		ICAP/6010/Q4	S	NONE	30-APR-99	12-OCT-99 R1C	(439748:100)	
21167-001MSD	B0V6P3	Soil	15-APR-99 09:15	19-APR-99 11:00	03-MAY-99	FEDX	1	Screening not Required
SAF B99-002/ICAP=CR AND PB ONLY								
1	AN - Amber Glass-120ML	HG/7471/Q4	S	NONE	30-APR-99	13-MAY-99 R1C	(439748:100)	
1		ICAP/6010/Q4	S	NONE	30-APR-99	12-OCT-99 R1C	(439748:100)	

000000

-Sample has not been rad screened.

GAMMA-RAY ENERGY ANALYSIS REPORT
 Thermo Hanford Inc.
 Radiological Counting Facility

THI - RCF

To <i>Randy Coffman</i>	From <i>K.A. Robertson-DeMers</i>
Co.	Co.
Dept.	Phone # <i>373-9731</i>
Fax # <i>373-9779</i>	Fax #

Project: 118-B-9
 Customer ID: BOV688
 RCF ID: RCF5887
 Other Solid

Sample time, date 12:42 4/1/99
 Analysis date 4/5/99

isotope	Activity pCi/gm	2 σ err	CI/gm	MDC (pCi/g)
K-40	1.1E+01	+/- 1.4E+00	1.1E-11	9.2E-01
Co-60 #	< 1.0E-02		< 1.0E-14	1.0E-02
Cs-137 #	< 1.7E-02		< 1.7E-14	1.7E-02
Eu-152	1.5E-01	+/- 7.0E-02	1.5E-13	5.0E-02
Eu-154	< 3.7E-02		< 3.7E-14	3.7E-02
Eu-155	< 8.3E-02		< 8.3E-14	8.3E-02
Th-232dau	7.7E-01	+/- 1.0E-01	7.7E-13	3.1E-01
U-235	< 1.8E-01		< 1.8E-13	1.8E-01
U-238 #	< 2.7E+00		< 2.7E-12	2.7E+00
U-238dau	5.4E-01	+/- 1.2E-01	5.4E-13	5.5E-02
Np-237	< 5.0E-02		< 5.0E-14	5.0E-02
Am-241	< 6.5E-02		< 6.5E-14	6.5E-02
Tot Act Gam (pCi/gm)	1.3E+01	+/- 1.7E+00	1.3E-11	
Y/Sr-90	< N/R			MDC (pCi/g)
Gross Alpha	< N/R			
Gross Beta	< N/R			
AEA total	< N/R			

BOV688
B-9 VAR
A1-03
BOV6N7
BOV6N8
BOV6P3
 4-15-99

Definitions:

All errors reported at 2 standard deviations

N/R = no result or analysis not requested. <MDA = Less than detection limit.

A Assigned as residual beta from Gamma/Beta balance.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
 The analysis of Np-237 is based on the activity of Pa-233.
 U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
 Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
 Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
 The gross alpha results are not corrected for mass absorption

Note! 152-Eu is not a 100% Beta emitter.

No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Kathryn A. Robertson-DeMers
 K. A. Robertson-DeMers
 ERC Radiological Counting Facility
 4/7/99
 Date

Figure 1

SAMPLE CHECK-IN LIST

Date/Time Received: 419-99 1330 SG#: W02750
Work Order Number: JAD 210109 SAF #: B99-002
Shipping Container ID: ERC99-004 Chain of Custody #: B99-002-82

- 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 40 c
- 5. Vermiculite/packing materials is Wet [] Dry []
- 6. Number of samples in shipping container: 5
- 7. Sample holding times exceeded? Yes [] No []

8. Samples have:
 tape hazard labels
 custody seals appropriate sample labels

9. Samples are:
 in good condition leaking
 broken have air bubbles

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

Sample Custodian/Laboratory: _____ Date: _____
Telephoned To: _____ On _____ By _____

FROM THE DESK OF:

ALLEN NELLESEN *Allen Nellesen*
ERC TEAM RAD-CON SUPPORT
373-1925/X0-23

TO: R.T.Fahlberg N1-28

DATE: August 15, 1996

SUBJECT: WATER SAMPLES FROM 183N POTABLE WATER PLANT

Water samples are routinely collected and sent off-site for analysis to assure compliance with Washington State Department of Health drinking water requirements. The history of 183-N which provides treated water to support the operation of the N-Reactor shows that a radiological survey of the water samples is not warranted.

If you need further help or have any questions, please call me at the phone number displayed above.

cc: D. D. Blankenship X7-75
T. A. Edwards X0-23
J. E. Parsons X0-23
R. K. Stafford X1-86
J. P. Zoric X5-57

000010

SAMPLE CHECK-IN LIST

Date/Time Received: 4-21-99 1230 SG#: _____

Work Order Number: _____ SAF #: B99-018 B99-014

Shipping Container ID: 99-018 Chain of Custody # B99-018-12

1. Custody Seals on shipping container intact? B99-014 Yes No

2. Custody Seals dated and signed? Yes No

3. Chain-of-Custody record present? LOC Yes No

4. Cooler temperature _____ 4 Wet Dry

5. Vermiculite/packing materials is _____ 19 Wet Dry

6. Number of samples in shipping container: _____ 19

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: K. W. ... Date: 4-21-99

Telephoned To: _____ On _____ By _____

Login No.: 21167

**Condition Upon Receipt Variance Report
St. Louis Laboratory**

W02750

Client: Richland / BHI
Project No: 550.184
Shipper/No: FEDER

Date: 04/22/99 Time: 0755
Initiated by: [Signature]
RFA/COC Numbers: 882 B99-002-02
COC# JRS-4/22/99

Condition/Variance (Check all that apply):

1. <input type="checkbox"/> Sample received broken/leaking.	8. <input type="checkbox"/> Sample ID on container does not match sample ID on paperwork. Explain: _____
2. <input type="checkbox"/> Sample received without proper preservative. <input type="checkbox"/> Cooler temperature not within 4-C ± 2-C Record temperature: _____ <input type="checkbox"/> pH _____ <input type="checkbox"/> other: _____	9. <input type="checkbox"/> All coolers on airbill not received with shipment.
3. <input type="checkbox"/> Sample received in improper container.	10. <input type="checkbox"/> Other (explain below): _____
4. <input type="checkbox"/> Sample received without proper paperwork. Explain: _____	
5. <input checked="" type="checkbox"/> Paperwork received without sample.	
6. <input type="checkbox"/> No sample ID on sample container.	
7. <input type="checkbox"/> Custody tape disturbed/broken/missing/not tamper evident (circle all that apply).	

No variances were noted during sample receipt. Cooler Temperature Upon Receipt: 2°
Temperature Variance Does Not Affect the Following Analyses: _____

Notes: Only received one sample + received paperwork.

Samples included on paperwork that were not received are at Richland for analysis. JRS 4-22-99
COC B99-002-02 was not relinquished JRS 4-22-99

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

Sample Control Supervisor Review: [Signature] Date: 04/21/99
Project Management Review: Jennifer Smith Date: 4/22/99

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE



Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.186

Category: ICAP Metals TAL + Lead
Method: EPA 6010
Matrix: SOLID

Sample Date : 04/15/99
Receipt Date : 04/19/99
Report Date : 05/03/99

Client ID: BOV6P3

Quanterra ID : 21167-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chromium	7440-47-3	QCBLK198351-1	04/28/99	04/30/99	11.4	MG/KG		1.0	1
Lead	7439-92-1	QCBLK198351-1	04/28/99	04/29/99	6.5	MG/KG	B	10.0	1

000014



Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.186

Category: ICAP Metals TAL + Lead
Method: EPA 6010
Matrix: SOLID

Sample Date : 04/15/99
Receipt Date : 04/19/99
Report Date : 05/04/99

Client ID: B0V6P3

Quanterra ID : 21167-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result Unit	Qual.	Detection Limit	Dilution
Chromium	7440-47-3	QCBLK198351-1	04/28/99	04/30/99	111	REC		1
Lead	7439-92-1	QCBLK198351-1	04/28/99	04/29/99	97	REC		1

000015



Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.186

Category: ICAP Metals TAL + Lead
Method: EPA 6010
Matrix: SOLID

Sample Date : 04/15/99
Receipt Date : 04/19/99
Report Date : 05/03/99

Client ID: B0V6P3

Quanterra ID : 21167-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chromium	7440-47-3	QCSLX198351-1	04/28/99	04/30/99	102	%REC			1
Lead	7439-92-1	QCSLX198351-1	04/28/99	04/29/99	96	%REC			1

000016



Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.186

Category: ICAP Metals TAL + Lead
Method: EPA 6010
Matrix: SOLID

Sample Date : 04/15/99
Receipt Date : 04/19/99
Report Date : 05/03/99

Client ID: BOV6P3

Quanterra ID : 21167-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chromium	7440-47-3	QCBLK198351-1	04/28/99	04/30/99	11.4	MG/KG		1.0	1
Lead	7439-92-1	QCBLK198351-1	04/28/99	04/29/99	6.5	MG/KG	B	10.0	1

000014



Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.186

Category: ICAP Metals TAL + Lead
Method: EPA 6010
Matrix: SOLID

Sample Date : 04/15/99
Receipt Date : 04/19/99
Report Date : 05/04/99

Client ID: B0V6P3

Quanterra ID : 21167-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result Unit	Qual.	Detection Limit	Dilution
Chromium	7440-47-3	QCBLK198351-1	04/28/99	04/30/99	111 %REC			1
Lead	7439-92-1	QCBLK198351-1	04/28/99	04/29/99	97 %REC			1

000015



Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.186

Category: ICAP Metals TAL + Lead
Method: EPA 6010
Matrix: SOLID

Sample Date : 04/15/99
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Report Date : 05/03/99

Client ID: B0V6P3

Quanterra ID : 21167-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result Unit	Qual.	Detection	
							Limit	Dilution
Chromium	7440-47-3	QCCLX198351-1	04/28/99	04/30/99	102	%REC		1
Lead	7439-92-1	QCCLX198351-1	04/28/99	04/29/99	96	%REC		1

000016



Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.186

Category: ICAP Metals TAL + Lead
Method: EPA 6010
Matrix: SOLID

Sample Date : 04/15/99
Receipt Date : 04/19/99
Report Date : 05/03/99

Client ID: B0V6P3

Quanterra ID : 21167-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dilution
Chromium	7440-47-3	QCBLK198351-1	04/28/99	04/30/99	11.4	MG/KG		1.0	1
Lead	7439-92-1	QCBLK198351-1	04/28/99	04/29/99	6.5	MG/KG	B	10.0	1

000014



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Project: 550.186

Category: ICAP Metals TAL + Lead
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Matrix: SOLID

Sample Date : 04/15/99
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Client ID: B0V6P3

Quanterra ID : 21167-001MS

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result Unit	Detection		
						Qual.	Limit	Dilution
Chromium	7440-47-3	QCBLK198351-1	04/28/99	04/30/99	111 %REC			1
Lead	7439-92-1	QCBLK198351-1	04/28/99	04/29/99	97 %REC			1

000015



Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.186

Category: ICAP Metals TAL + Lead
Method: EPA 6010
Matrix: SOLID

Sample Date : 04/15/99
Receipt Date : 04/19/99
Report Date : 05/03/99

Client ID: B0V6P3

Quanterra ID : 21167-001MSD

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result Unit	Detection	
						Qual.	Limit Dilution
Chromium	7440-47-3	QCSLX198351-1	04/28/99	04/30/99	102 %REC		1
Lead	7439-92-1	QCSLX198351-1	04/28/99	04/29/99	96 %REC		1

000010



Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.186

Category: Mercury
Method: SW846 7471
Matrix: SOLID

Sample Date : 04/15/99
Receipt Date : 04/19/99
Report Date : 05/03/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
BOV6P3	21167-001	Mercury	7439-97-6	QCBLK198392-1	04/29/99	04/29/99	0.20	MG/KG		0.033	1
BOV6P3	21167-001MS	Mercury	7439-97-6	QCBLK198392-1	04/29/99	04/29/99	84	%REC			1
BOV6P3	21167-001MSD	Mercury	7439-97-6	QCBLK198392-1	04/29/99	04/29/99	84	%REC			1
NA	QCLCS198392-1	Mercury	7439-97-6	QCBLK198392-1	04/29/99	04/29/99	91	%REC			2
NA	QCBLK198392-1	Mercury	7439-97-6	QCBLK198392-1	04/29/99	04/29/99	0.017	MG/KG	U	0.033	1

000019



Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: S50.186

Category: Mercury
Method: SW846 7471
Matrix: SOLID

Sample Date : 04/15/99
Receipt Date : 04/19/99
Report Date : 05/03/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0V6P3	21167-001	Mercury	7439-97-6	QCBLK198392-1	04/29/99	04/29/99	0.20	MG/KG		0.033	1
B0V6P3	21167-001MS	Mercury	7439-97-6	QCBLK198392-1	04/29/99	04/29/99	84	%REC			1
B0V6P3	21167-001MSD	Mercury	7439-97-6	QCBLK198392-1	04/29/99	04/29/99	84	%REC			1
NA	QCLCS198392-1	Mercury	7439-97-6	QCBLK198392-1	04/29/99	04/29/99	91	%REC			2
NA	QCBLK198392-1	Mercury	7439-97-6	QCBLK198392-1	04/29/99	04/29/99	0.017	MG/KG	U	0.033	1

000019

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: QUANTERRA_MO Contract: 550.186
Lab Code: ITMO Case No.: SAS No.: SDG No.: W02750
SOW No.: SW846

Table with 2 columns: EPA Sample No. and Lab Sample ID. Rows include BOV6P3, BOV6P3SD, BOV6P3S and their corresponding Lab Sample IDs.

Were ICP interelement corrections applied ? Yes/No YES
Were ICP background corrections applied ? Yes/No YES
If yes - were raw data generated before application of background corrections ? Yes/No NO

Comments:

Blank lines for comments.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name:
Date: Title:



Bechtel Hanford Incorporated
3350 George Washington Way
Richland, WA 99352

Project: 550.186

Category: Mercury
Method: SW846 7471
Matrix: SOLID

Sample Date : 04/15/99
Receipt Date : 04/19/99
Report Date : 05/03/99

Client ID	Quanterra ID	Analyte	CAS Number	Blank Sample Name	Prep. Date	Analyses Date	Result	Unit	Qual.	Detection Limit	Dil.
B0V6P3	21167-001	Mercury	7439-97-6	QCBLK198392-1	04/29/99	04/29/99	0.20	MG/KG		0.033	1
B0V6P3	21167-001MS	Mercury	7439-97-6	QCBLK198392-1	04/29/99	04/29/99	84	%REC			1
B0V6P3	21167-001MSD	Mercury	7439-97-6	QCBLK198392-1	04/29/99	04/29/99	84	%REC			1
NA	QCCLCS198392-1	Mercury	7439-97-6	QCBLK198392-1	04/29/99	04/29/99	91	%REC			2
NA	QCBLK198392-1	Mercury	7439-97-6	QCBLK198392-1	04/29/99	04/29/99	0.017	MG/KG	U	0.033	1

000019

U.S. EPA - CLP

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Lab Code: ITMO Case No.: SAS No.: SDG No.: W02750
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Were ICP background corrections applied ? Yes/No YES
If yes - were raw data generated before application of background corrections ? Yes/No NO

Comments:

Three horizontal lines for entering comments.

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